Morphological Properties of Mouthings in Hungarian Sign Language (MJNY)

A corpus-based study

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Abstract

This dissertation presents the first systematic, empirical investigation of the morphological properties of mouthings in Hungarian Sign Language (MJNY). MJNY, unlike other European sign languages, borrows mouth forms from the surrounding spoken language, Hungarian, which is a Finno-Ugric language with rich inflectional morphology (Kiefer 2000). Based upon informal observations, native signers of MJNY make use of these spoken inflections in mouthings (Rácz 2010a).

This doctoral project examines which inflectional categories are exhibited in mouthings.

An MJNY video collection of interviews with Hungarian Deaf signers served as the source of the empirical data. I investigated the production of five participants (110 minutes of raw material) in order to find MJNY utterances with potential inflections in mouthings. Transcription was carried out with the annotation tool iLex (Hanke & Storz 2010). Mouthing forms were annotated as spoken Hungarian words.

The data analysis shows that the main inflectional categories used by the signers are *Person* and *Number* on verbs and nouns; other relevant categories are *Case* and *nominal Number*.

These findings are interpreted in a language contact framework. The term *cross-modal code-mixing* is used to refer to mouthings, emphasising that it is a specific language contact phenomenon not described in spoken languages. The dissertation closes with a discussion on a bilingual approach which describes mouthings with Hungarian inflection as a natural part of the dynamic bilingual linguistic repertoire of Hungarian signers. This language production provides a unique window to understand the bilingualism of Deaf signers in Hungary.

Key words: mouthings, spoken inflection, language contact, bilingualism

Acknowledgements

This page of the dissertation reveals way more about the process of completing a PhD thesis than the actual written chapters that follow. Because this short message reminds us that any act of human creation is an act of co-creation in nature. Life is the experience of connectedness between people, places and things. I cannot put into words how much I value and adore this Life in me, with me and around me. In this sense, I am truly grateful for all the support from individuals who took part in my reality and accompanied me, enriching my life, and who have contributed to my efforts to finish the present work.

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1 Introduction

1.1 The subject matter of the dissertation

The present dissertation examines inflectional characteristics of Hungarian observed in mouthings of Hungarian Sign Language. This language, known as *magyar jelnyelv* (MJNY), is a full-fledged sign language in Hungary which serves as the primary means of communication in the Hungarian deaf community. This community defines itself as a linguistic-cultural minority (Vasák 1996).[1]

The broader subject of this dissertation concerns the mouthings in MJNY. According to a common sense definition, mouthings are visual mouth movements in a sign language that originate in and are associated with the surrounding spoken language. In that, they are in contrast to mouth gestures, which are another type of mouth movement that come from the sign language itself (Boyes Braem & Sutton-Spence 2001:3; Crasborn et al. 2008:45).

Similarly to other sign languages, mouthings frequently accompany manual signs in MJNY. This statement can be confirmed by examining the various MJNY texts available in the public domain.

Some years ago, during a time of regular interaction with numerous members of the Deaf community in Hungary, it was possible for me to observe this phenomenon more closely. Based on my observations from that time and the discussion of this subject with other sign language competent persons (for details, see Chapter 2), it is clear that there are specific mouthing forms in MJNY which resemble inflected spoken Hungarian words ('autó' [car] vs. 'autóval' [by car] or 'autónk' [our car]).

These occurrences are unique because they are strongly bound to spoken Hungarian, including in terms of its grammatical characteristics, while occurring in the morphosyntactical environment of a sign language. This constitutes a very specific type of language contact that does not appear in spoken languages.

One of the main focuses in the literature on mouthings from other sign languages has been on the lexical role played by mouthings as they co-occur with signed lexical items. Mouthings usually show semantic congruency in meaning and have been observed as established elements in a number of signs (Boyes Braem & Sutton-Spence 2001; Crasborn et al. 2008; Bank, Crasborn & van Hout 2011;

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[1] Reference for this statement is available in Hungarian on the official website of the Hungarian Association of the Deaf and Hard of Hearing: http://www.sinosz.hu/?q=kozossegunk/siketseg-es-jelnyelv (as accessed on 1 December 2014)

Bank, Crasborn & van Hout 2013). Another frequently discussed role of mouthings has to do with sign language prosody. It has been reported that mouthings that spread over signs contribute to prosodic linking (Crasborn et al. 2008).

However, the indication of spoken inflection in mouthings as a morphological characteristic is very under-researched territory. Boyes Braem (2001) mentions examples from Swiss German Sign Language in which German inflections are marked in mouthing. For example, 2. Person is expressed with the sign SCHICKEN1-x and with the mouthing 'schickst' (2001:124). A more recent paper discusses this phenomenon in Irish Sign Language. Mohr (2014) states that, in some rare cases, mouthings do not just indicate the lexical meaning of the sign, but add morphological meaning (plurality through the sign PHOTOGRAPH and the mouthing 'photos' (cp. 2014:75)). The insertion of spoken inflections, however, has never been systematically studied yet.

Given the fact that spoken Hungarian has a rich variety of inflectional morphemes e.g. Person, Number, Case, Tense, Mood and Definiteness, examining the details of these features in the mouthings of Hungarian Sign Language could shed new light on the phenomenon outlined above.

The remainder of this chapter briefly describes previously conducted sign language research in Hungary (1.2). Subsequently, research questions are presented (1.3), and spelling conventions discussed (1.4). The Introduction closes with an outline of the structure of the dissertation (1.5).

1.2   Sign language research in Hungary

Academic research on MJNY has its beginnings in the mid 1990's. The first piece of work that is emblematically associated with early research in this field is the lexicon of MJNY (Lancz & Berbeco 1999). The first account that provides an overview of the grammar of MJNY was published by Vasák (1995). Further, more comprehensive research on the grammar was carried out by Mongyi & Szabó (2004). These works describe phonological, morphological and syntactic issues, as well as some characteristics of discourse in MJNY. However, these descriptions are mainly based on findings from research on other sign languages and observational evidence from MJNY. Szabó (2007) presents the first in-depth analysis of MJNY data by focusing on the phonological characteristics of MJNY in her dissertation.

These accounts were followed by sociolinguistic papers on bilingualism, language rights and deaf education. Bartha & Hattyár (2002) extensively analyse the

Hungarian legislation to show the urgent need for legal support for sign language use and bilingual education. Bartha, Hattyár & Szabó (2006) discuss MJNY structure and bilingualism in order to provide an overall 'state of the art' study in MJNY research. In her doctoral thesis, Hattyár (2008) presents the first sociolinguistic analysis of sign language acquisition and use in the deaf community.

In 2009, MJNY was recognised by the Hungarian Parliament as a language and the deaf community as a linguistic-cultural minority (Racz 2010b). Its linguistic status was officially acclaimed, bringing more and more public attention to a language which had been highly underprivileged previously. Even though MJNY is now treated as a full-fledged linguistic system, it is still poorly documented. Also, several questions are yet to be clarified regarding the characteristics of actual language use in the community. More recently, language contact phenomena have been closely analysed by Racz (2010a), who discussed the role of mouthings in Hungarian–MJNY contact situations. Szabó (2013) analysed manual structures on the phonological, morphological and syntactic level to show degrees of possible Hungarian influence. At present, the Institute of Linguistics at the Hungarian Academy of Sciences runs two projects on sign languages: one focuses on creativity in MJNY[2]; the other project has begun to systematically reveal the linguistic system of MJNY and the characteristics of its use[3]. Widely published results are yet to come.

Overall, sign language research in Hungary is still in its infancy. There is much work needed to fill the gaps in the understanding of both the basic linguistic structure of MJNY and the bilingual language use of the deaf community. My research on mouthings in MJNY contributes principally to the second agenda. It focuses on the deeper understanding of mouthings in general and their role in the context of MJNY in particular. This dissertation presents the actual linguistic research into which this general enquiry grew in the last years.

1.3   Research questions and objectives

According to the basic assumption underlying this research project, MJNY mouthings exploit spoken Hungarian inflections. However, there hasn't been any notable scientific evidence on this subject yet. The principal aim of this doctoral research is therefore the systematic empirical investigation of Hungarian inflections in the mouthings of MJNY.

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[2] http://www.nytud.hu/oszt/neurocsop/index.html
[3] http://jelesely.hu/web/?q=en/node/5

An important objective is to deal with the subject through the following three approaches: (1) Firstly, an observational approach is utilised. In this phase, preliminary observations were made in the deaf community regarding mouthings. (2) This is followed by a descriptive approach: a data-driven empirical description of the phenomenon is provided in this section accordingly. (3) Finally, I apply an explanatory approach by addressing theoretical questions such as appropriate language contact terminology for mouthings and the role of mouthings in the linguistic system of MJNY.

Another important objective is to extensively discuss a methodology that is suitable for the documentation of spoken inflectional morphemes in mouthings. Inflections in mouthings are not investigated in detail in other sign languages and thus, no methodological design is proposed for the collection and annotation of this linguistic data. In this thesis, a research-question-based methodology is presented.

To begin, I shall formulate the working hypothesis, which is a specification of my basic assumption, and describe the initial research questions.

Hypothesis 1: deaf MJNY signers make use of inflectional markers of spoken Hungarian in their mouthings.

My investigation pursues the following specific **research questions**:

1. Which spoken Hungarian morphological categories are represented in the inflectional markers in mouthings?
2. Which of these spoken Hungarian markers show systematic patterns and which are rather idiosyncratic?

I choose bilingualism and language contact research as a general framework. The final goal is to explain MJNY mouthings as a type of language contact phenomenon in the context of the bilingual language use in the Hungarian deaf community. I leave any specific questions in this regard to be answered in the discussion part of this study.

1.4   Spelling conventions

In sign language research and Deaf Studies, there is a wide-spread distinction between *deaf* as a sensory disability and *Deaf* denoting a membership of the cultural-linguistic community (Ladd 2003). As the distinction has no further

relevance in the context of this linguistic research, in this dissertation the word *deaf* with lower case *d* is used in reference to sign language users of a cultural–linguistic community (cp. similar conventions in Johnston & Schembri 2007; Eichmann 2013). Exceptions are names like *World Federation of the Deaf*, fixed terms like *Deaf Studies* and direct quotes from other sources.

Throughout the thesis, I mostly use the phrase *mouthings in MJNY* for the sake of simplicity. Note that with my wording I do not presumably mean that mouthing is a part of MJNY. As the literature shows, it is still an open debate to which extent mouthings can be seen as part of sign languages or not (cp. Bank, Crasborn & van Hout 2011; Mohr 2012). At the very end of the thesis, this particular question is extensively discussed.

1.5 Structure of the dissertation

The remaining chapters of the dissertation are organised as follows:

Chapter 2 provides background information about mouthings in the Hungarian Deaf community. Firstly, the phenomenon of mouthing is discussed. Secondly, the sociolinguistic situation of the deaf community is portrayed, focusing on bilingual language use. Thirdly, my own observations regarding the mouthings of deaf and hearing signers are described, complemented by a short summary of discussions with some sign language competent persons about this subject.

Chapter 3 outlines the theoretical background in morphology. It provides a comparative description of the morphology of Hungarian and MJNY.

Chapter 4 reviews the literature relevant for the present investigation. Firstly, concepts in bilingualism and language contact research are introduced. Secondly, language contact issues specific to sign languages are discussed. Thirdly, I flesh out the body of research available on mouthings in sign languages.

Having established the necessary background, **Chapter 5** presents the methodology of the study. To begin with, the data obtained for this research are presented. Here, considerations that played a role in choosing the linguistic material for the corpus are discussed. I exhaustively deal with data annotation of both manual signs and mouthings; different accounts are examined. Subsequently, the rationale for my research-question-based annotation conventions is given.

Chapter 6 goes on with methodology by addressing the numerous restrictions encountered towards defining the final data set of mouthings that is used for analysis.

Chapter 7 contains the findings of the empirical analyses. It provides a quantitative description of inflectional markers occurring in mouthing instances.

Chapter 8 and **Chapter 9** are devoted to the general discussion of the findings. Chapter 8 discusses mouthings in a language contact framework, revising spoken and sign language terminology that can be used to interpret the phenomenon of mouthing. Here, I also comment on core questions of mouthing research from a bilingual point of view.

Chapter 9 offers some explanations for the production of Hungarian inflections discussing them in the light of perceptual-motoric alignment of mouthing–sign co-occurrences and historically grounded psycho and sociolinguistic factors.

Chapter 10 contains the general conclusion of the dissertation. It provides an overall summary of the findings, pointing out its implications for language use in the deaf community of Hungary. Possible applications of the findings, such as the development of a large-scale corpus for Hungarian Sign Language are also discussed. As a closing remark, I consider possible directions for future linguistic research on mouthings and suggest some extensions towards psycho and sociolinguistics.

Part I. Research Background

2 Mouthings in the Hungarian deaf community

2.1 Introduction

This chapter introduces the sociolinguistic context in which mouthings in MJNY take place.

First, an overview of the phenomenon *mouthing* is given by mean of examples from different sign languages. Then, sociolinguistic attributes of the Hungarian deaf community are described. This section highlights the bilingual situation of the community and the linguistic diversity that has to be taken into account when studying the use of the mouth.

Finally, initial observations of the use of mouthing in MJNY are summarised. They are based on both the own observations of the author and the subjective experience of deaf and hearing MJNY users.

2.2 The phenomenon of *mouthing*

By adopting the general terminology in sign linguistics, this dissertation uses the term *mouthing* to refer to visual perceivable units of mouth movements that originate in a spoken language. It is usually distinguished from another kind of mouth movement, *mouth gesture,* which is formed within a sign language and not derived from its spoken counterpart (Boyes Braem & Sutton-Spence 2001:3; Crasborn et al. 2008:45). Mouthings and mouth gestures are part of the non-manual components of sign languages (Woll 2001). For the discussion on various types of mouth movement, see Chapter 4.

Although there is little empirical research on mouthings compared to other domains of sign linguistics, evidence for their existence has already been documented in various sign languages throughout the world (Crasborn et al. 2008; Zeshan 2001; Nyst 2007; Penner 2013). However, the available studies indicate differences in terms of formal attributes, frequency and the embeddedness of mouthings in those sign languages.

One of the questions regarding mouthings that has been discussed extensively concerns whether mouthings are part of natural sign languages or rather belong to contact varieties (Ebbinghaus & Heßmann 2001; Hohenberger & Happ 2001; Keller 2001). This question is investigated in further chapters of this thesis.

Mouthings can play different lexical, grammatical and prosodic functions in sign languages. Their use also indicates sociolinguistic differences within a language community. The examples below show some of these functions in six different sign languages.

(1)   ball

    RUND-KUGEL-$SAM   [DGS][4]

Example (1) shows a frequently used lexical function, which is the semantic specification of a sign. The example comes from the Hamburger lexical database of German Sign Language (DGS). The sign RUND-KUGEL-$SAM is glossed based on the citation form and the iconic value of the sign. The manual sign is glossed as RUND-KUGEL ("round ball"), referring to the iconic value; $SAM stands for collective term (*Sammelbegriff*) in the database. The manual sign alone refers to round-shaped objects. This manual instance forms an established combination with different mouthings. Together with the mouthing 'ball' in the example, the sign is classified as the lexeme BALL. In the case of this defined lexical meaning, the sign co-occurs with the mouthing. In this appearance, this lexeme is a specification of the basic citation form which has a more general semantic field (Langer, Bentele & Konrad 2002; Konrad 2011).

(2) vater

    MEIN   [DSGS]

                                  (Boyes Braem 2001:113)

Example (2), from Swiss German Sign Language (DSGS), shows a possessive noun phrase construction in which the possessive pronoun MEIN ("my") is articulated manually, while the noun possessum, 'Vater' ("father") is only present in the mouthing. The noun phrase conveys the meaning *my father*. Here, the mouthing takes place in the syntactic structure of a clause.

(3)   vatten

   SE PEK-HIT VATTEN   [SSL]

   see index-here   water   (Crasborn et al. 2008:61)

In example (3), from Swedish Sign Language (SSL), the mouthing spreads over two signs, which forms a verb–object cluster. It exemplifies the function of mouthing in prosodic binding.

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[4] Quelle: http://www.sign-lang.uni-hamburg.de/dgs-korpus/ [accessed on 23.01.2016)

(4)   problem

    PARESA:N   [IPSL]

     problem   (Zeshan 2000:173–174)

Example (4), from Indo-Pakistani Sign Language (IPSL), illustrates that the use of mouthing is a good indicator of sociolinguistic circumstances in a sign language community. This piece of data shows that the IPSL sign PARSA:N ("problem") is used with the English mouthing 'problem', which is a semantic equivalent of the Hindi mouthing 'parsa:n'. Members of the deaf community from New Delhi incorporate both spoken Hindi and English mouthing in their signing, while in other regions of IPSL, English is not present in mouthings (Zeshan 2000:173–174).

Mouthings usually show the citation form of the spoken words. However, there is some evidence in the literature regarding instances that involve productive functional morphemes of the surrounding spoken language (Boyes Braem 2001; Mohr 2012). Example (5) shows one such example coming from Irish Sign Language (ISL). Here, the English plural marking was identified and annotated in the mouthing.

(5)   holidays

    HOLIDAY   [ISL]

                                                                                            (Mohr 2012:200)

Those and similar occurrences are the subject matter of the present thesis. Another example below is taken from the MJNY corpus constructed for this dissertation. It demonstrates how mouthings can occur with spoken Hungarian inflections in an MJNY utterance.

(6)   szeretem

    SZERET AUX1-x   [MJNY]

In example (6), the sign SZERET ("like"), together with the verbal auxiliary element, bears the meaning *I like him/her*. The sign SZERET is a plain verb; it doesn't show inflection for either Person or Number in MJNY. The first person singular subject and the non-first person singular object are formally defined through the insertion of the AUX sign; it moves from the first person locus towards the non-first person locus. The back of the hand faces the signer and indicates the subject; the palm is turned towards the non-first person locus and

indicates the object (Rathmann 2003). Eye gaze and head position both refer to a third person other than the addressee (Alibašić Ciciliani & Wilbur 2006; Cormier 2012).

The mouthing 'szeretem' is an inflected form of the Hungarian verb *szeret* ("like"); the suffix -em marks the first person singular. It also expresses a definite third person object. In this way, the mouthing 'szeretem' and the sign AUX, together with other non-manuals, mark the first person subject and the third person object. Moreover, the mouthing explicitly expresses that the subject refers to a definite entity.

This example shows that MJNY can involve different articulators to overtly mark Person and Number. Such instances suggest a unique language contact unknown in bilingual language production among spoken languages.

2.3   The language community: a sociolinguistic background

The deaf population in Hungary is estimated to have a size of between 30,000 and 60,000 people (Vasák 1996:81; Bartha, Hattyár & Szabó 2006:852). This rough estimate is merely based on audiological deafness, thus the number of deaf sign language users cannot be exactly determined.[5]

Deaf signers in Hungary have been formed as an organised community since the second half of the 19th century (Vasák 1996). The national association, with its centre based in the capital Budapest, has existed since the beginning of the 1900s. Deaf clubs and sport organisations also have a long history and are present all over the country (ibid. 1996).

MJNY is known to be used in seven regional dialects throughout Hungary (Vándorffyné Lancz 2009). These dialects are based around seven residential schools for the deaf (see Figure 2.1), of which the first was founded at the beginning of the 1800s (Vasák 1996:27).

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[5] The official website of the National Association of the Deaf and Hard-of-Hearing (SINOSZ, www.sinosz.hu) doesn't have a more exact figure for the size of *signers* either. A brochure about the community states that the current number of official memberships with the organisation SINOSZ amounts to almost 13,000. Notice, however, that it does not clarify the number of MJNY users. At the same time, it definitely fails to include those signers (incl. children) who are beyond the scope of the association. (See reference under http://issuu.com/carpinelli_/docs/ira_nytu_/5?e=8188637/4886336 [as accessed on 3. December 2014]
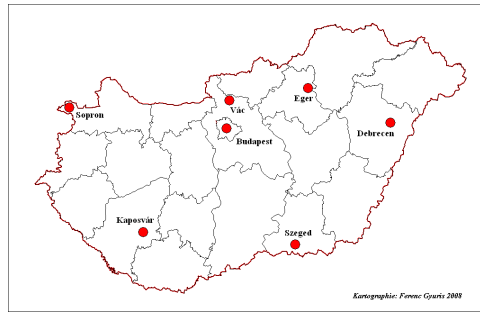
Figure 2.1: Residential deaf schools in Hungary

2.3.1 The tradition of oral education and the medical perspective

Deaf people in Hungary have been traditionally seen as individuals with hearing impairment and not as a linguistic–cultural minority similar to other Western countries. (This topic is well-documented in Branson & Miller (2002) and Ladd (2003)). MJNY was mainly used within the deaf community and held little prestige in general society.

In the first half of the 19th century, different oral and manual methods had still been used at schools for the deaf; however, the speech-therapy-based oral education was established in Hungary in 1873 (Vasák 1996:29). Oral education was ideologically strengthened after the conference of Milan (Branson & Miller 2002:154, 168f) in Hungary as well. Towards the end of the century, it gained more and more acceptance among educators of the deaf (Vasák 1996:29). To this day, oral education, supported by technology, remained the only framework at schools for the deaf.

One can strongly assume that, during the last almost 150 years, oral education made a strong impact on the linguistic behaviour of deaf MJNY users, as well as on their mouthing use. In this diglossic situation, Hungarian was always the language of prestige in contrast to the immensely underprivileged MJNY which did not even gain linguistic status.

2.3.2 Shift in current political and educational settings

Until quite recently, the disability perspective on deafness (Ladd 2003) was the dominant educational and general political discourse in Hungary. As a result, deaf people shall be regarded as a highly discriminated group without legal support in maintaining their language and culture as a linguistic minority (Bartha & Borbély 2006). MJNY use was poorly regulated by disability law and mostly limited to interpreter services (Bartha & Hattyár 2002).

In the last 15 years, however, a growing cultural awareness has been taking place. The deaf community is getting more and more active in gaining public attention

for MJNY and the deaf culture. The rate at which hearing people had learned MJNY had reached high, never-before-seen numbers (Racz 2010b). In this period of time, the deaf community aimed to gain legal recognition of MJNY as a language and the community as a linguistic-cultural minority. This law was accepted in 2009, opening the door for a new era for the deaf community, including the implementation of bilingual education for the deaf (Racz 2010b).

MJNY research and training is currently being established in academics. The ways of implementation of the law in deaf education and teacher training are still under discussion (Racz 2010b).

Such changes in the life of a linguistic minority will also inevitably influence language use. The tangible impact on MJNY, including mouthings, cannot be estimated now. Nonetheless, it is important to note that the linguistic practice of the deaf community will likely be subjected to dynamic changes over the next decades. The results presented in this dissertation are of limited validity and have to be updated by further research in order to adjust to this transformational situation.

2.3.3 Sociolinguistic diversity

For the present study, it has to be pointed out that MJNY users form an extremely heterogeneous group. In line with earlier studies in Hungary, it is assumed that the wide-spread categorisation and ratios that characterise modern Western deaf communities (Ladd 2003) also fit the Hungarian situation (Bartha, Hattyár & Szabó 2006).

According to Ladd (2003), one important subgroup is comprised of deaf persons from deaf families (one or multi-generational). They acquire MJNY from birth and it usually remains their preferred language throughout their lives. Deaf children with two deaf parents only make up about 5%; another 5% have one deaf and one hearing parent (2003:42–44).

The other 90% of deaf persons are born into hearing families. A significant amount usually comes into contact with MJNY in deaf kindergartens or schools. Others within this 90% who go to mainstream schools usually get in touch with the community in their adolescence or even later in their lives.

There are also hearing users of MJNY who make up nearly the same percentage as deaf signers. In a broader sense, these people can also be members of the community (Ladd 2003:42–44). These are primarily children of deaf adults (codas) and hearing family members.

In addition, hearing parents of deaf children and people who work intensively in the community can also be active MJNY users. By sharing the community-based

cultural values, these persons can gain partial membership in the deaf community (ibid.).

Finally, interpreters form another distinct group of MJNY users; their embeddedness in the community strongly varies.

These groups of hearing signers are not included in this research. If it is not indicated otherwise, the label *MJNY user* in this dissertation refers to deaf signers.

The diversity of sociolinguistic background is also mirrored in language production. There is a strong body of evidence that proves that the age of acquisition, together with family and educational background, has a strong impact on sign language proficiency.

In this respect, there is a basic difference between early and late signers. Among the early signers, deaf persons from deaf families (10 %) are usually labelled as native or early L1 signers (Mayberry & Eichen 1991). Deaf from hearing families who are exposed to a sign language before the age of 5 are called near-native or late L1 signers (ibid.). With regards to sign language proficiency, early and late L1 signers are known to have much stronger signing skills than late learners (Morford & Mayberry 2000; Boudreault & Mayberry 2006; Mayberry 2010).

Late or L2 signers grew up with spoken language and got into contact with MJNY after the age of 8 or even as young adults. They vary in competency and in their relationship towards the deaf community and deaf culture in general. There is a tendency observed and also documented in deaf-related literature that their identities shift later on in life: many of them will become culturally deaf. They become integrated into the community, learn the sign language and share the values of the deaf community (Ladd 2003; Nakamura 2006).

There is anecdotic evidence from the Hungarian community about such attitudinal changes. There are persons who identified themselves with deaf culture in adolescence or later and established strong MJNY competence. Some of them even became teachers of MJNY and at times serve as language models for research purposes.

Differences are also present in the competency of the majority language. The acquisition of spoken Hungarian is influenced not just by the degree of hearing and the quality of speech therapy at schools; it also depends on the social and educational situation of the individuals (family members, peers, teachers etc.). As for written language, Chamberlain & Mayberry (2008) found that, for English, early signers perform significantly better in written language tests than late signers; in some cases, they even perform better than the hearing control groups. Bartha, Hattyár & Szabó (2006) assume the situation in Hungary would be similar. Note, however, that due to the lack of empirical evidence on different

groups, no exact statement can be made about the written Hungarian competency of deaf signers.

When it comes to language preference, it is important to highlight the influence of language attitudes towards the sign language and the signer community. Studies show that the so-called attitudinal deafness (cp. Ladd 2003:42), based on family background and cultural identity, plays a crucial role in deaf people's language choice, including different signing varieties (Burns, Matthews & Nolan-Conroy 2001).

In the Hungarian community, rumour has it that certain persons' shift from hearing to deaf identity could be observed over time in language preference, as well as in their way of signing and mouthing. As young people, they were strongly integrated into the general society, used more spoken Hungarian and mouthed extensively during signing; today, they define themselves as culturally deaf, use MJNY and use noticeably fewer mouthings.

At present, it is assumed that the sociolinguistic diversity also affects mouthing behaviour. Different signers use various amount of mouthings; the mouthing structures can sometimes be more or less similar to Hungarian words. Therefore, the research has to continuously reflect on the sociolinguistic background of informants in both the data collection and interpretation of certain linguistic features in the findings.

2.4 Observations of mouthings in the deaf community

Prior to choosing the linguistic data used in the descriptive part of the study, observational data on mouthings had been gathered as a supplement to descriptive data analysis. First, preliminary observations made by the researcher are presented. This is followed by the summary of participant observations in various settings in the deaf community and some informal interviews with MJNY users.

Preliminary observations were made between 2006 and 2009. The extended use of mouthing was among my first experiences while getting closer to the deaf community in Hungary. As L2 learners of MJNY in formal classes back in 2006, we found it amusing to learn signed lexical items that shared the exact phonological parameters and were disambiguated merely by mouth configuration.

Later on, I started to get involved in informal deaf groups and began to use MJNY in natural settings. Although I was still not always able to recall the "right sign" in a conversation or produce it phonologically correctly, it didn't seem to be an obstacle for deaf people to understand my signed utterances. I then observed the

phenomenon and realized that deaf sign language users also rely on mouthings that accompany signing, especially when hearing people use it.

I asked various members of the deaf community about mouthings. According to the responses, mouthings take part in the comprehension of the interlocutor's utterances. It happens even in a deaf-only environment without hearing people present.

In a pilot study (Racz 2010a), I annotated mouthing occurrences of some MJNY videos that were captured in formal contexts independently from the study. I chose written Hungarian to annotate the visual mouth forms and I wrote down what I could clearly infer from the mouth. I noticed a number of occurrences that showed inflected forms of spoken Hungarian.

Between 2009 and 2010, I regularly spent time with deaf MJNY users in numerous informal situations. Although these interactions were private, they allowed me to make some closer observations regarding mouthing behaviour and get information about the subjective experience of users when they reflected on them. This type of supplementary data collection had the advantage associated with the method of rapid and anonymous observations originally used by Labov (1972). Linguistic features of, as well as statements on, language productions could be collected without the 'observer's paradox' (ibid.). In my case, signers were not aware that they were being observed, as it was in fact not the intention of my participation to collect data. However, any time I heard a story told by a deaf person, discussed in the group of friends or made observations of utterances, I took notes of them as soon as possible. Only later on was the decision made that I use them for the present thesis. People were not recorded and the description remains perfectly anonymous. The disadvantage of this type of data collection is that one can only collect a limited amount of data and cannot be as complete or accurate as recorded video data, for example (see Schilling-Estes 2007 for the discussion of this method). Nevertheless, the information could be used for initial assumptions for this study. They are also there to supplement the descriptive empirical evidence in the further chapters of this dissertation. The following subsections summarise the observations.

2.4.1 Mouthings reflected in opinions and judgements

Mouthings were very often used among deaf signers to make judgments about one's identity. For example, Lucas & Valli (1992) reported that, for American Sign Language (ASL), using continuous and clearly articulated mouthings equalled a lack of strong deaf identity. The obvious reason is that mouthings are basically associated with hearing people and oral education.

I usually encountered these judgments when it came to the description of an individual's identity shift, as previously mentioned: using extensive mouthings adheres to a stronger hearing identity.

There are also signs in MJNY indicating the signing of orally deaf persons. For instance, there is a modification of the lexeme SIGN or SIGN LANGUAGE glossed here as WASHA1.

Figure 2.2:On the left: the neutral lexeme SIGN. On the right: the modified lexeme WASHA1with the usual mouthing' washa(-washa)'

It denotes the signing of a person who uses clearly articulated mouthings and an MJNY that is associated with sign-supported speech. As I observed, this modification, in contrast to the lexeme SIGN, is carried out more slowly with the continuous mouth movement 'washa-washa', referring to the active mouthing during signing.

A similar example is the modification of the sign meaning glossed as MOUTHING. The basic lexical sign is carried out with a curved 3-handshape and repeated circular movements in front of the mouth, but it is either accompanied by the mouthing 'artikuláció'/'artikulal' ("articulation"/"articulate") or by no mouth movement at all. However, in the pejorative sense, MOUTHING is also used with the mouth pattern 'washa-washa' (or 'washa-washa-washa'). This sign, glossed here as WASHA2, can indicate the use of spoken language in general, although I observed it in relation to orally deaf persons, usually combined with negative facial expressions.

Figure 2.3:On the left: the lexeme MOUTHING. On the right: the modified sign with the usual mouthing 'washa(-washa)'

The MJNY skills of hearing people were also regularly judged based on their mouthing. Based on my experience in the deaf community, regardless of intermediate to advanced MJNY skills, hearing persons (especially L2 learners of MJNY) were not seen as "good" signers if they still used continuous mouthing. Irrespective of its formal and functional characteristics, the use of mouthing in general can be clearly observed in various examples of MJNY use. Interestingly, some controversial opinions came to light regarding its function and accurate use when I spontaneously asked deaf people what they think about it. According to the usual response, mouthings sometimes contribute to the understanding of signed utterances. I also encountered suggestions from deaf teachers to use mouthings in case of signed homonyms. In contrast, another two deaf MJNY teachers with whom I roughly discussed mouthings emphasised that they would not be essential in MJNY use.

2.4.2 Mouthings in dialects and jokes

I found that the presence of mouthings is also a part of everyday discussions among deaf friends. One case is the use of signs from different dialects. In several cases, I noticed deaf signers explicitly referring to the fact that mouthings help them to overcome little misunderstandings due to lexical differences in signs.

In my experience, if a dialectal or home sign is used in a discussion, MJNY users are not so much irritated due to the intelligibility through the common mouthing. But sometimes they make comments on these different signs. During these short excursions, the manual signs change but the common mouthing remains constant throughout the conversation, which again speaks for the intelligibility through mouthing.

Another area is creative language use, e.g. sign-games. Modifying a person's sign name was a common sign-game among deaf signers with whom I was in contact with. In this case, the mouthing invoked one lexical concept; the sign could be changed in location, handshape or replaced by another sign in order to show associations with other concepts. I recall such a sign-game I was once retold. In the example, the 2-handed sign BOLDOG (happy), which has a delta handshape (Δ), was replaced by a distinct handshape borrowed from a person's name sign. In that context, it referred to that person being happy.

2.4.3 Experience of hearing L2 signers

I also made valuable observations among hearing signers enrolled in sign language courses and interpreting training. As for L2 students, switching off the continuous mouthing appeared to be an obstacle that they needed to overcome in

order to achieve MJNY proficiency. From my experience, gained by being taught by various teachers at various levels, one reason has to do with the tradition of MJNY training. The use of the mouth was present at the beginning level of L2 MJNY classes, mostly because teaching lexical signs made up a significant part of a class. In these cases, the sign concepts regularly go together with mouthings. By the time students obtain intermediate and advanced signing skills, they already form a strong habit of using mouthings.

The other reason, I assume, is rooted in communication settings. Deaf signers tend to use more mouthings with hearing signers, e.g. interpreter students. In turn, they also rely on the mouthings of the students since their signing may not always be well-formed, which could lead to misunderstandings. In that way, MJNY with continuous use of mouthings remains a part of the students' signing variety.

My impression was also confirmed by a hearing MJNY signer who worked at that time as a trainer in the interpreter programme. I conducted an informal interview on this subject with her and asked about her experience with the mouthings of hearing interpreter trainees. The interview was not recorded on tape. I used simple notes to capture some of the relevant statements. According to my interviewee, hearing learners have trouble with using MJNY just like deaf people. They are often too close to spoken Hungarian in mouthing and use less non-manual marking.

An anecdote shared with me also supports the statements above. According to the story, deaf and hearing interpreter trainers once discussed the importance of an authentic MJNY use in contact with hearing students. As one of the deaf trainers put it, they should call attention to the fact that MJNY is not based on spoken Hungarian and that it has its own linguistic structure.

Ironically, shortly after this statement, another trainer pointed out that the first signer had just happened to use the sign RŐL ("about") together with the corresponding suffix in mouthing ('ről'). The signed suffix comes from the Hungarian inflectional suffix *-ről* and is sometimes combined with noun signs (e.g. JELNYELV RŐL, that is *about sign language*). The situation pointed to the lack of awareness regarding the influence that spoken Hungarian has on signers.

My interviewee also stated that there is still confusion in Hungary about MJNY being a full-fledged independent language; mouthing contributes to this confusion. For hearing people who are unfamiliar with MJNY and unaware of the linguistic research of sign languages, its use evokes the impression that MJNY would be some kind of sign-supported speech. Thus, a better understanding of the incorporation of mouthings in MJNY would clarify some misconceptions about MJNY in the larger society.

2.5   Summary

This section provided a short introduction into mouthings in the Hungarian deaf community. First, data from different sign languages exemplified various functions of mouthings. One of them, inflectional marking from MJNY, demonstrated how manual and non-manual articulators mark Person and Number. The community of deaf sign language users was also shortly introduced, emphasising the sociolinguistic diversity among signers. It was pointed out that the different linguistic–cultural background (language proficiency, attitude) contributes to diversity in bilingual language use, as well as in mouthing behaviour.

Examples for mouthing use in the signing community were given from my personal point of view. Also, stories and opinions on mouthings were reported using a rapid and anonymous observation technique (Schilling-Estes 2007) and an informal interview. These were used to demonstrate the subjective experience of deaf and hearing signers regarding mouthings.

When I asked various persons about mouthings, not everybody could directly reflect on this topic, but I received some feedback that there seems to be different ways in which mouthings are used and one of them is certainly Hungarian-based (e.g. mouthing with inflections). However, it remained unclear to which extent these forms co-occur with sign language structure and, more generally, what kind of language contact one faces here.

3   Inflectional Morphology: a brief overview of Hungarian and MJNY

3.1   Introduction

This chapter focuses on the overview of inflectional morphology in Hungarian and MJNY. Although the empirical investigation deals only with the Hungarian inflectional characteristics of mouthings, for the sake of a general understanding of the contact situation of MJNY and Hungarian, a background is provided for their very different morphologies. Theoretical suggestions for the description of the contact situation will be discussed extensively in chapters 8 and 9.

I begin with an introduction of the general morphological approach used for analysing inflectional marking. This is followed by a presentation of the terminology of inflectional processes and a short typology of inflections based on spoken languages. Subsequent sections provide a brief overview about inflectional marking in Hungarian and MJNY.

3.2   A descriptive morphological framework

The present dissertation examines linguistic data from sign–spoken bilinguals. According to Mackey (2005), "Bilingualism is not a phenomenon of language; it is a characteristic of its use. […] It does not belong to the domain of "langue" but of "parole"." (2005:22). In that sense, this research focuses on the empirical–descriptive investigation of individually realised linguistic patterns that can be found in MJNY utterances with mouthings.

In order to consider the morphological approach, which can be applied to these data, one must keep in mind that we deal with a unique kind of contact phenomenon.

Mouthings are ubiquitous linguistic entities. A mouthing is the visually perceivable part of a phonologically realised spoken word. According to the basic assumption of this thesis, mouthings can represent the inflectional marking of Hungarian words linked to abstract categories such as Person or Number. If this is the case, it can be argued that spoken Hungarian is partially represented through mouthings in MJNY utterances. Based on this assumption, it was a logical step to utilise Hungarian morphology for the analysis of mouthings. However, note that analyses in coming chapters will deal with visually realised surface forms of

Hungarian, that is, elements of paradigms appearing in mouthings. It is not possible to apply entire linguistic models to mouthing data that are used for spoken Hungarian words. Therefore, only a descriptive presentation of Hungarian morphology is possible without any further theoretical discussion on the grammar of Hungarian.

The other basic issue emerges from the highly disputed morphological system of sign languages. The description of inflections in mouthings is linked to spoken Hungarian, using its well-defined set of morphological processes. At the same time, one encounters the basic problem of the morphological status of elements in MJNY. Sign languages are generally known today to use a combination of formal linguistic devices and gestural representation in order to convey several meanings that adhere to morphology in spoken languages. A good example is the marking of first person as a morphologically encoded process and non-first person, which is said to be realised gesturally (Mathur & Rathmann 2012).

To sum up, instead of taking one structural or functional theory of human language with its respective analytical tools, a descriptive linguistic analysis is used that focuses on overt forms in the two languages.

In addition, the investigation of overt inflectional patterns with a morphological approach comes from spoken Hungarian. It also means that one has to avoid generalisations about MJNY based on inflectional attributes of spoken Hungarian. The Item-and-Process approach was chosen for morphological descriptions. According to Aronoff & Fudeman (2005), this approach doesn't provide an independent status of items; they rather arise through the construction of patterns. From this viewpoint, one analyses complex words, not in terms of morphemes and their structure, but as a result from different simple words and inflectional rules (like "make plural") operating on a simple word (2005:47). The applicability of these rules is conditioned by, for example, phonological form or a particular morphological class (Stump 2001:38). This approach to inflectional morphology emphasises the paradigmatic relations between word forms.

Example (1) shows that the word form *bags* arises from the root *bag* and the inflectional formative *–s*, which is an allomorph of a plural morpheme. It can be represented as:

1)   a.   [Plural bag] → bag + s

The general rule or inflectional formation can be given as:

2)   b.   [Plural N] → N+ s

This linguistic operation applies to nouns (N being any possible value) and specifically derives the plural (cp. Matthews 1991:127).

This Item-and-Process, or Word-and-Paradigm, approach was chosen as a notational tool for morphological processes discussed in this chapter. The one advantage of this approach (strongly based on Matthews (1991)) lies in its easy applicability for the notation of inflectional patterns. In the present study, which focuses on the description of such patterns in mouthings, it can be adopted without a broader theoretical linguistic model. This approach was already used for Hungarian by Kiefer (2000) and É. Kiss, Kiefer & Siptár (2003), which are the main references for Hungarian inflectional processes in this thesis.

In addition, Aronoff & Fudeman (2005), as well as Haspelmath & Sims (2010), suggest that, in contrast to an Item-and-Arrangement, or Morpheme-Based, approach, in which morphemes are analysed by breaking words down to component morphemes (e.g. stems + affixes), an Item-and-Process approach is a better way to include both concatenative (affixational) and non-concatenative inflectional formations. Given that sign languages strongly make use of non-concatenative morphology (Mathur & Rathmann 2011), the approach seemed to provide a description usable for sign and spoken data alike.

3.3 Applied terminology

The subject of this dissertation concerns Hungarian inflections in mouthings. That is, it focusses on realisations of *morphological categories*, for example Person or Number, which are underlying abstract representations. It is generally assumed that basic categories are universally present in the syntax in languages of the world, even if they are not expressed overtly. For example, agreement remains abstract in many languages. There is only one possibility in which they can be morphologically encoded (Aronoff & Fudeman 2005:186). This process also shows differences in languages in terms of classificatory morphological categories and overt phonological realisations (Aronoff 1999).

In order to deal with Hungarian and MJNY as extremely different in both language structure and modality, it is necessary to further specify the term *inflection* in this contrastive morphological description. Following Aronoff & Fudeman (2005), I differentiate between morphological and syntactical inflections. In *morphological inflection*, the abstract categories are morphologically coded through bound morphemes and have distinct phonological realisation (2005:186). In Hungarian, these categories are typically encoded morphologically. They are denoted as *morphosyntactical category*, *inflectional*

category or *inflectional feature* (see Aronoff & Fudeman 2005; Haspelmath & Sims 2010).

In MJNY, basic abstract categories are not always morphologically coded, or at least not necessarily through bound morphemes (e.g. Person and Number can be expressed through auxiliaries). This case is explicitly labelled as *syntactical inflection* (Aronoff & Fudeman 2005:186). Such a distinction can be useful to handle the linguistic processes of the two languages within a single descriptive frame. However, for the sake of simplicity, the term *inflection* will be used to refer to morphological inflection if it is not indicated otherwise.

To denote the specific morphological units of paradigms, I use the words (*inflectional*) *morpheme, value* or *property* (Aronoff & Fudeman 2005; Haspelmath & Sims 2010). In that sense, a past morpheme is a property or value of the verbal category Tense; plural is a morpheme of the nominal category Number. These values share semantic properties and are mutually exclusive (e.g. a noun is coded for singular or plural).

Phonologically realised morphemes or values will be named *morphs* or *allomorphs* (if there is more than one) or, generally speaking, *marker*s. Accordingly, the morph [z] in *bags* is a phonological realisation of a plural morpheme of the category Number.

3.4   A general typology of inflectional morphology

Inflectional morphology can be characterised through the wide-spread dichotomy of inflection and derivation. Stump (2001) and Haspelmath & Sims (2010) make several main distinctions between the two groups. Opposed to derivation, inflection is (1) usually determined by syntactical context, (2) it doesn't change the core lexical meaning of a word, (3) inflected forms are productive (the same rule can be assigned to many words) and (4) obligatory. (5) They tend to take positions at the end of word forms, so that no further derivation is possible, (6) show regularity in semantics and (7) are assumed not to be present in the lexicon (Haspelmath & Sims 2010:90). In sign languages, inflection is considered to be optional rather than obligatory. Also, in the case of Person and Number agreement, the applicability is often constrained by phonological form (Rathmann 2003; Rathmann & Mathur 2005; Steinbach 2012).

Haspelmath & Sims (2010) emphasise that these distinctions are by no means strict; the opposition of inflection and derivation can be better understood as a continuum with more or less canonical examples (2010:99). In the languages of the world, there are very common, prototypical inflectional features like Person,

Number, Gender and Case marked on many word classes (nouns, pronouns, verbs, adjectives, adpositions etc.). Common verbal categories are Tense, Aspect and Mood (ibid. 2010:82).

Inflection can be further split into the categories *inherent* and *assigned* or *contextual*. Inherent inflection is not determined by syntactical context. It depends on independent categorical information based on some semantic properties. Two examples are the category Number for nouns and lexical (e.g. Locative) Case. (Haspelmath & Sims 2010:100). An assigned or contextual inflection is defined by syntactical context. Examples include Number for adjectives, which are determined by nouns, or the category Case for nouns and pronouns, to which they were assigned by the verb depending of their position in the sentence (Aronoff & Fudeman 2005:156).

The assignment can be carried out by means of government or concord (also agreement). In government, a word dictates the form of another. For instance, the verb dictates the form of nouns in Case inflection; in concord, one element takes on the morphosyntactical property of another element as in noun–adjective agreement (Aronoff & Fudeman 2005:156).

Matthews (1991) uses the term *exponence* for the phonological realisation of morphological categories via inflection (1991:175). Exponences show a one to many/many to one relationship between syntax and phonology (1991:179). A simple exponence is a single morph that corresponds to one morphological category, as is the case in agglutinative languages, e.g. Number and Case in the Hungarian *hajókhoz* (to ships): -*k* marks plural, while -*hoz* marks allative.

In cumulative exponence two or more categories are expressed through a single morph, e.g. Person and Number in the Hungarian 1st person singular form *könyvem* (my book). It characterises inflected languages. In extended exponence, an inflectional category is simultaneously realised in more than one morph, e.g. past Tense in the English *sold* containing vowel change and the suffix -*d* (Matthews (1991:180).

In terms of phonological realisation, Aronoff & Fudeman (2005) further differentiate between context-free and context-sensitive inflection. Context-free inflection is always realised identically, e.g. the English morpheme present participle with the ending -*ing*. The realisation of context-sensitive inflection depends on the lexeme to which it is attached, e.g. different allomorphs for the English morpheme past (ibid. 2005:155).

The influence of the stem on the realised inflectional marking can lead to various forms of the same morpheme (allomorphs). Here, Matthews (1991) discusses lexical, morphological and phonological reasons. Alternation between these allomorphs can be conditioned in a lexical manner if certain lexical morphemes

determine it (e.g. the lexeme *swell* conditions the morph *-en* in contrast to the regular past marker *-ed*). But the vowel in *swells* or *swelling* as opposed to *swoll* after the past participle is conditioned morphologically. Phonological conditioning happens if allomorphs alternate depending on the phonological structure of the stem, like in vowel harmony in Turkish or Hungarian (Matthews 1991:116–117).

There are different inflectional processes involved in phonological realisations. Matthews (1991) describes three main groups of inflectional processes: affixation, reduplication and modification.

Affixation involves a sequential pattern. It is constructed by adding a distinct and constant morph to the base. Such an example is the English past marker *-ed* in *sailed*. The process can be represented as [V Past] → V+ed (Matthews 1991:131).

Reduplication is gained by partially or fully repeating the base. A complete repetition is, for example, the optional plural in Indonesian: kuda (horse) vs. kuda-kuda (horses). It can be formalised as [N plural] → N+N (Aronoff & Fudeman 2005:167).

The third type of inflectional process, modification, includes different ways of modifying the base itself as exemplified below. The base is changed without adding further segments (Haspelmath & Sims 2010:36).

The one way of modification is through apophony, where the internal vowel of the stem is changed. It is characteristic for many Germanic languages (e.g. English verb: sing vs. sung).

In root-and-pattern morphology, which is often found in Semitic languages, modification is realised by internal variations of vocalic or syllabic patterns. An example is the Arabic noun for soul: nafs [singular] vs. nufuus [plural] in Aronoff and Fudeman (2005:166). In contrast to these partial modifications, the process of suppletion shows a total internal modification (Matthews 1991:139). It can be exemplified by many high-frequency words like go/went or am/are/is.

The examples above come from spoken languages. Later sections provide further details on sign language-specific realisation patterns.

3.5 Inflectional morphology of Hungarian and MJNY

There are various differences between Hungarian and MJNY. An obvious difference lies in modality: the one language is auditory-vocal, while the other uses the visual-gestural modality. It basically affects the preferences and limitations of how linguistic meaning can be conveyed. Generally speaking, Hungarian, like other spoken languages, is driven on sequential processes, while

MJNY, like other sign languages, makes extensive use of its multiple articulators, which results in simultaneous constructions.

In terms of morphological typology, Hungarian, which is a Finno-Ugric spoken language, can be characterised as a synthetic language: it shows a high morpheme-per-word ratio. As for morpheme combination, it has a predominantly agglutinative system. Morphemes are realised in separate morphs in a one-to-one match. This is typical for its derivational morphology, and mainly holds for its inflectional morphology as well. However, the inflectional morphology also exhibits fusional characteristics such as the cumulative expression of Person and Number feature. See examples from Kiefer (2000:573):

3)   a. meg+emlék+ez+és+ül   (prefix+stem+verb.   deriv.+nom. deriv+Case infl.) "as a memento"

      b. barát+ok+ért (stem+Number infl.+Case infl.) "for friends"

      c. tanul+unk (stem+Person and Number infl.) "we learn"

Sign languages are known to exhibit a high morpheme-to-sign ratio similar to the high morpheme density in spoken polysynthetic languages (Bauer 2003:233). In terms of combination, their inflectional morphology is strongly fusional: they overlay many morphemes to denote grammatical change. Canonical examples include verb agreement or polymorphemic classifier constructions, which are generally found in sign languages (Aronoff, Meir & Sandler 2005). Discussing MJNY, Mongyi & Szabó (2004) also highlight its fusional and polysynthetic characteristics (e.g. the capability of fusing verb and subject into classifier). In addition, they point out that word order and free morphemes can also be used for meaning change, which is rather typical for isolating languages (ibid. 2004:68).

Interestingly, both Hungarian and MJNY exhibit very rich inflectional morphology, as they are capable of expressing morphologically complex constructions. In Hungarian, these word forms contain multiple syllables. In MJNY, as is true for other well-established sign languages, lexemes are usually monosyllabic in spite of their morphological complexity (Aronoff, Meir & Sandler 2005).

Although inflectional morphology plays a crucial role for both languages, the morphological processes involved and the formal device they use for their phonological realisation differ considerably.

Hungarian makes strong use of the explicit grammatical marking of syntactical relations through concatenative morphology: morphemes are arranged in order one after the other (Haspelmath & Sims 2010:34). Hence, constraints on word order are much less obvious. Beside functional words, affixation is the most

common concatenative strategy for conveying grammatical relationship in Hungarian (Korchmáros 2009:26). Affixation appears in all morphological processes e.g. derivation, inflection and compounding.

There is a plethora of base forms in Hungarian words. Affixes attached to the base undergo alternations which depend on phonological, semantic and grammatical factors that result in a rich set of allomorphs (Keszler 2000:44). There are rich paradigms for inflectional categories that are marked on many word classes. The number of inflected word forms of nouns without phonological alternation exceeds 800, the full verbal paradigm of intransitive verbs consists of 36 members and transitive verbs have 78 forms (Kiefer 2000:577; Korchmáros 2009:30).

Hungarian has extensive aspectual morphology. However, *aspect* is not considered to be a grammatical category in Hungarian, thus it is not discussed in the realm of inflectional paradigms (Kiefer 2000; Keszler 2000). Rather, it functions as a semantic property of the lexeme which influences sentence structure (Korchmáros 2009:30).

In contrast to Hungarian, MJNY typically makes use of simultaneous, non-concatenative morphology. Non-concatenative morphology refers to any kind of non-sequential morphological pattern (Haspelmath & Sims 2010:34). According to Rathmann & Mathur (2000), morphemes with an incomplete set of phonological parameters in non-concatenative patterns make up a sign with a complete set of phonological parameters and a new meaning (2000:3). This kind of morphology is present in inflectional, derivational and compounding patterns of MJNY. The typical inflectional realisation process used here is modification. New meaning comes from the manipulation of the base.

The verb TÁMOGAT "support" (on the left) is an example of non-concatenative morphology: it changes a phonological component, the orientation, to indicate the non-first person subject and the first person object (on the right).

Aronoff et al. (2004) and Aronoff, Meir & Sandler (2005) consider simultaneous non-concatenative inflectional morphology, which can be derived from visual-spatial cognition, to be a general feature of sign languages. It is a unique phenomenon that, despite their youth, established sign languages already show very complex inflection. In contrast, creole languages exhibit a much lesser degree of morphological complexity because the morphological system in those languages is subject to a much slower grammaticalisation.

The three important inflectional morphological subsystems, which serve as formal devices for abstract syntactic representations in sign languages, are verb agreement, classifier constructions and the aspectual system (Aronoff, Meir & Sandler 2005). The processes of morphological coding and their realisations in the first two subsystems are presented in the next section.

3.6   Morphological categories in Hungarian and MJNY

Abstract grammatical categories are represented heavily in the language structure of Hungarian through morphological coding. MJNY also uses morphology for this aim but it has other syntactic and discursive tools too.

This section discusses several categories of the two languages and describes their realisations in the respective formal subsystems. It is not the intention to pursue a complete discussion of inflectional features; rather, the description is confined to those features and their markings which will form the basis of empirical analyses in chapters 7 and 8. The primary aim is to provide some background information on the morphological phenomena to which further chapters will refer.

Note again that the Hungarian paradigms that are showed have to be understood as the underlying set of word forms that can possibly be inserted into mouthings by signers. It is a purely descriptive demonstration that excludes any intention of mouthings being grammatically well-formed instances of spoken language that consistently operate in Hungarian inflectional paradigms. Accordingly, reference grammars are used in order to provide the concrete values and paradigms that underlie visualised mouthing patterns. Hungarian morphological processes that are described here using the Item-and-Process approach have the purpose of elaborating on the Hungarian inflectional markers which are assumed to underlie mouthing patterns.

The morphological categories that will be discussed include Person, Number, Case, Class and Possession; Tense, Aspect, Mood and Definiteness will be briefly mentioned, along with arguments for or against their inclusion into a mouthing analysis.

Any morphological analysis basically depends on the model that one applies, as pointed out by Kiefer (2000), for Hungarian, and for sign languages, as pointed out by Mathur & Rathmann (2012). As for Hungarian, I follow Kiefer (2000) and É. Kiss, Kiefer & Siptár (2003) in their description of morphological processes underlying the paradigms. However, stress is rather placed on the overtly formal characteristics of these paradigms that play a role on visualised mouthings rather than on the possible theoretical considerations of the segmentation of Hungarian words. Reference grammars used for paradigm descriptions include Kiefer (2000), Keszler (2000) and Korchmáros (2009).

3.6.1   Person and Number in Hungarian

The two most important morphological categories for this research are Person and Number. Since they are often applied together, they are discussed in one section.

The nominal category Person is used for the expression of the referent of a sentence (Stump 2001). According to the well-entrenched categorisation, there are three persons in the languages of the world: first, second and third (Aronoff & Fudeman 2005:159). Nouns refer to third person, while pronouns refer to first, second or third person. For alternative models, see Heath & Arbor (2000). Number, as an inherent category of nouns, distinguishes quantity, which a noun phrase refers to (Stump 2001:26). A basic distinction can be made between the singular referent and plural referent. In both spoken and sign languages alike, expression of the referent and its quantity can also be expressed by means of syntactic or discursive tools (Iturrioz-Leza & Skopetas 2000; Steinbach 2012). Both Person and Number are often assigned to verbs and adjectives through agreement.

In Hungarian, Person follows a three-value paradigm: 1st, 2nd and 3rd. Number is expressed morphologically into two values: singular (as ∅ morpheme) and plural.

3.6.1.1 Person and Number on nouns and in noun phrases

Nouns overtly realise the plural morpheme through three allomorphs: *-k*, *-i* and *-ék*. The first one, *-k,* is the general, unmarked form also known as the absolute or homogenous form. It expresses multiplication (Korchmáros 2009:82). Note that if nouns are modified by quantifiers, they cannot be marked for plural (see example below).

4) *ajtó – ajtók*   *egy ajtó – három ajtó*
   door – doors.   one door – three doors

Depending on the phonological structure of the base (ending in vowels or consonants, vocal harmony rules), the *-k* marker appears in different combinations with vowel insertion (*-ak*, *-ok*, *-ek*, *-ök*). According to the terminology in Matthews (1991), it is a case of phonologically influenced alternation, however, as Kiefer (2000) points out, these are not considered to be allomorphs on their own (2000:588). Following Kiefer (2000), the general rule of plural marking on nouns can be defined as:

5) [N plural] → N+(V)k

N stands for any nouns and (V) stands for any vowel. Possible plural forms with examples are shown in Table 3.1.

Tab. 3.1: Realisation patterns of the plural marker -k

-k	*-ok*	*-ak*	*-ek*	*-ök*	*-ek*	*-ek*
almá**k**	asztal**ok**	szamar**ak**	kés**ek**	kör**ök**	köv**ek**	term**ek**
"apples"	"tables"	"mules"	"knives"	"circles"	"rocks"	"classrooms"

Following the same phonological patterns, adjectives and demonstrative pronouns are assigned the *-k* marker from the noun in a noun phrase agreement.

6) *Ez a ház szép*   *Ez**ek** a ház**ak** szép**ek***

   This house is nice   These houses are nice

The other plural marker, *-i*, is much more specified in usage. It occurs only in possessive relationship and refers to more than one possessum:

7) *kertje – kertje**i***   "his/her garden" – "his/her gardens"

   *Ez Péteré – Ezek Péteré**i***   "This belongs to Péter" – "These belong to Péter"

In contrast to the multiple plural marker *-k*, the last plural allomorph, *-ék*, expresses heterogeneous or additive plurality (Keszler 2000:186; Korchmáros 2009:82). It identifies the speaker and his/her associates similarly to the first person plural pronoun *mi = én + mások* "we = me + others". The named person is a member of the group. The marker can be used for any group with which the speaker is familiar, often referring to his/her relatives:

8) *Kovács**ék***   *Mari**ék***   *apám**ék***   *ügyvéd**ék***

   the Smiths   Mary and her   my father + his   the lawyer and
                   family/group   family/group   his/her associates

The inflectional rule reads as such:

9) [plural N {its group}] → N+ék (cp. Kiefer 2000:589).

The above rules also apply to any nominalised word, regardless of original word class. For example, adjectives or numerals, if nominalised, can also show plural markings:

10) *az első**k***   *ezek a csúnyáké**i***

   the first ones   these belong to the ugly ones

The morphological expression of the categories Person and Number is also revealed by the *possessive personal marker* in noun phrases: the possessed object agrees in Person and Number with the possessor, which is a noun (3rd person) or a pronoun (1st 2nd or 3rd person). In this paradigm, the two categories are expressed as cumulative exponents in a single Person–Number morph. An example of agreement is shown in Table 3.2.

Tab. 3.2: Possessive Person–Number markers

	Singular possessor	**Plural possessor**
1st	az (én) autó**m** "my car"	a (mi) autó**nk** "our car"
2nd	a (te) autó**d** "your car"	a ti autó**tok** "your car"
2nd formal	az (ön) autó**ja** "your car"	az ön**ök** autó**ja** "your car"
3rd	az (ő) autó**ja** "his/her car"	az (ő) autó**juk** "their car"
3rd noun	Péter autó**ja** "Péter's car"	Péter és Mari autó**ja** "Péter's and Mari's car"

Person and Number are not morphologically marked on pronominal possessors; the marking is carried by the agreeing possessed noun, with the exception of the second person formal pronoun in plural. In this case, the plurality is only indicated by the pronominal possessor and not by the possessed noun (Korchmáros 2009:125). Brackets indicate that Hungarian is a pro-drop language, which means that the expression of pronouns is not obligatory; it is rather used for emphasis.

According to Kiefer's segmentation, the forms of possessive Person–Number morphs in the three-person-two-number paradigm include *-m, -d, -ø* in singular and *-nk, tVk, -k* in plural (2000:594). The following table shows different realisations of the possessive personal marker on stems with different phonological structures. The examples are based on the segmentation of Kiefer (cp. 2000:595–596). Note that in second person formal and third person, the ending *-ja* stands for the possessive morph; not for the personal marker. For an alternative segmentation, see Keszler (2000) and Korchmáros (2009).

Tab. 3.3: Possessive personal markers with various phonological realisations

	hajó "ship"	ház "house"	kéz "hand"	pad "bench"
1Sg	hajó**m**/hajói**m**	háza**m**/házai**m**	keze**m**/kezei**m**	pado**m**/padjai**m**
2Sg	hajó**d**/hajói**d**	háza**d**/házai**d**	keze**d**/kezei**d**	pado**d**/padjai**d**
3Sg	hajója/hajói	háza/házai	keze/kezei	padja/padjai
1Pl	hajó**nk**/hajói**nk**	házu**nk**/házai**nk**	kezü**nk**/kezei**nk**	padu**nk**/padjai**nk**
2Pl	hajó**tok**/hajói**tok**	háza**tok**/házai**tok**	keze**tek**/kezei**tek**	pado**tok**/padjai**tok**
3Pl	hajóju**k**/hajói**k**	házu**k**/háza**ik**	kezü**k**/kezei**k**	padju**k**/padjai**k**

It can be seen that the plural marker -*i* is inserted between the lexical stem and the Person–Number marker.

3.6.1.2 Person and Number on pronouns and adverbs

In relation to Person–Number marking, the formal characteristics of pronouns and person-marked adverbs deserve a closer look.

Hungarian features a rich and heterogeneous set of paradigms related to personal pronouns. In nominative, they can serve as the subject of a sentence; they cannot take inflections for other syntactical functions. An exception is the accusative form, which reveals a suppletive paradigm. In other cases, the pronoun's role is played by a specific system of person-marked adverbs (Kiefer 2000; Korchmáros 2009). Table 3.4. shows the nominal and accusative forms, as well examples of other syntactic functions used through person-marked adverbs.

Tab. 3.4:   Personal pronouns and person-marked adverbs in various cases

	1Sg	2Sg	3Sg	1Pl	2Pl	3Pl
Nominative	én	te	ő	mi	ti	ők
Accusative	engem	téged	őt	minket	titeket	őket
Dative	nekem	neked	neki	nekünk	nektek	nekik
Instrumental	velem	veled	vele	velünk	veletek	velük
Inessive	bennem	benned	benne	bennünk	bennetek	bennük
Illative	belém	beléd	belé	belénk	belétek	beléjük
Allative	hozzám	hozzád	hozzá	hozzánk	hozzátok	hozzájuk

The base of these adverbs preceding the Person-Number marker is either made up of case inflections themselves or postpositonal forms, which can be found on nouns (*Ildivel* "with Ildi" – **velem** "with me") (*a ház alatt* "under the house" – **alattunk** "under us"). However, as É. Kiss, Kiefer & Siptár (2003) point out, they are all postpositions historically (2000:109). Case inflections include, for

example, *vel* "with", *ben* "in", *nál* "at" or *től* "from". Synchronically used postpositions include, for example, *alatt* "under" or *után* "after". 13) exemplifies the fact that these stems can be seen in the usual position of inflections and postpositions: attached or coming after nouns:

11) *Ildi**vel** – **vel**em*   *a ház **alatt** – **alatt**unk*
   with Ildi – with me   under the house – under us

There are also archaic postpositions like *belől* "from inside" and *rajt* "on" which do not co-occur with nouns anymore.

All of them adopt the basic synthetic feature of Hungarian: while they express the syntactical relationship, they also behave like new paradigmatic stems to which inflectional markers can be attached (Korchmáros 2009:125). These person-marked adverb inflections follow a distinct paradigm: *-Vm*, *-Vd*, *-a/-e*, *unk-/ünk*, *VtVk*, *uk/ük* (cp. Kiefer 2000:220).

Note that the system of person-marked adverbs does not exhibit the full set of case inflections and postpositions. A number of these forms cannot be combined with Person-Number markers.

In addition to the person-marked adverbs in pronominal function, there are some other pronouns that can also show inflections for Person and/or Number. Some of them can take the general plural *-k* like relative, interrogative and demonstrative pronouns: *ami –ami**k*** "which", *ki – ki**k*** "who", *az – azo**k*** "that" – "those".

The reciprocal pronoun *egymás* "each other" can take the possessive marker *–é*, followed by the plural marker *–i*, resulting in the word form *egymás**éi*** "each other's" (Korchmáros 2009:129). The general universal pronoun *minden* and its negation, *semmi*, shows the personal possessive marker inflected for Person and Number, as discussed with nouns (ibid. 2009:134).

Finally, reflexive pronouns have to be mentioned here. At first sight, they show already known Person-Number markers (Table 3.5).

Tab. 3.5:   *The paradigm of Hungarian reflexive pronouns*

1Sg	magam
2Sg	magad
3Sg	maga
1Pl	magunk
2Pl	magatok
3Pl	maguk

However, synchronically, they can no longer be segmented as separate markers of bound morphemes; rather, they have become frozen forms and they follow nouns in syntactic behaviour (Korchmáros 2009:127). In contrast to personal pronouns, they can show up in various syntactic functions: as subject, object, possessive premodifier or adverbs. In an adverbial function, they exhibit case markers. Sometimes, they also take the possessive plural marker *-i* (ibid. 2009:128).

12) Plural marker *-i*: *Törődj a* Case marker *-ban*: *magam**ban*** *magadé**i**val*

  Deal with your own things   in myself

3.6.1.3 Person and Number on verbs, auxiliaries and infinitives

There is an elaborate system of Person-Number marking on Hungarian verbs. These paradigms are similar to those of nouns and person-marked adverbs in that they are originally all products of the tight connection to personal pronouns and their grammaticalisation (Korchmáros 2009:85).

In these paradigms, the two inflectional categories are also expressed as cumulative exponents in a single morph. For example, *játsz**unk*** "let's play" contains Person and Number in a single morph. The present third person singular form is phonologically equivalent with the lexical stem. The inflectional paradigms always start from this form (Kiefer 2000:601).

13) *néz*   *ő néz*
   look   he/she looks

The Person-Number morphs contain a variety of formal realisations; a full account of their representation and the underlying inflectional rules go way beyond the scope of the present sketch. For this reason, it is restricted only to demonstrating some usual characteristics that apply to a wide range of Hungarian verbs.

A basic formal distinction can be made between the Person-Number marker in the present indicative and every other that contains markers of Tense and Mood (Korchmáros 2009:31). In the first case, the inflectional markers are directly attached to the verb stem, while in other cases, they are placed after Tense and Mood markers.

Furthermore, Hungarian distinguishes a general or indefinite paradigm from a definite paradigm. In the latter, the conjugation refers to, beside the subject, a third person definite object. The former is used in every other case. Person-Number markers of the indefinite conjugation include: *-Vk, -asz/-esz/Vl, - Ø, -*

unk/ünk, (V)tVk, anak/enek. In the definite paradigm, it reads as follows: *-Vm, -Vd, -ja/-i, -juk/-jük, -játok/-itek, -ják/-ik* (cp. Kiefer 2000:603–604).

In addition, there is a paradigm of the so-called *-ik* verbs, which in singular disagrees with the general form as well. This contains some frequent verbs like *eszik* "eat", *iszik* "drink", *alszik* "sleep" or *játszik* "play". Most verbs have consonant-final stems to which the markers are attached after a harmonising vowel. This results in various phonological variants. The following table shows some possible forms of the present indicative of the indefinite, definite and *-ik* paradigms.

Tab. 3.6:   *The three verb conjugation types in Hungarian*

	Indefinite (general)	-ik	Definite
1Sg	-ok, -ek, -ök	-om,-em,-öm	-öm,-em,-öm
2Sg	-(a)sz/-ol		-od,-ed, -öd
	-(e)sz/-el		
	-(e)sz/-öl		
3Sg	-Ø	-ik	-ja,-i
1Pl	-unk,-ünk		-juk,-jük
2Pl	-(o)tok,-(e)tek,-(ö)tök		-játok,-itek
3Pl	-(a)nak,-(e)nek		-ják,-ik

The other set of conjugations includes Person-Number marking after preceding Tense and Mood inflections. The category Tense is inflected only for the past (future is expressed analytically in Hungarian). Mood contains two marked values: conditional and imperative. After these inflections (which are discussed in a later section), verb forms follow more similar patterns (cp. Kiefer 2000).

Kiefer (2000) demonstrates that, without the harmonizing vowels, which are there to stress the base and make the paradigms easily distinguishable, the actual Person-Number markers show great similarities that apply to most verb forms.

The following are in indefinite paradigm: *-k, -l, m, - Ø, -nk, -tVk, -nak.* Those in the definite paradigm include: *-m, -d, -a/-e, -k, -tVk, -k* (2000:612).

Lastly, the conjugation of the infinitive and some common auxiliary verbs has to be mentioned because they also occur in the mouthing data.

Auxiliary verbs that co-occur with nominals (copulas) enable them to take the function of predicates (Korchmáros 2009:184). Such are the auxiliary verbs *van* and *less,* which are roughly identical in usage with the English verb "be". *Van* refers to the present, *lesz* to the future:

14) *Éhes vagyok – Éhes leszek*

   I am hungry – I will be hungry

These auxiliaries do not make up a full verbal paradigm. However, the two highly common elements are used together in a suppletive way to cover the whole set.

Tab. 3.7:   The suppletive paradigms of the copula "be" (van, volt, lesz)

	Indicative		Conditional		Imperative
	Present	Past	Present	Past	Present
1Sg	vagyok	voltam/lettem	volnék/lennék	lettem volna	legyek
2Sg	vagy	voltál/lettél	volnál/lennél	lettél volna	legyél/légy
3Sg	van	volt/let	volna/lenne	lett volna	legyen
1Pl	vagyunk	voltunk/lettünk	volnánk/lennénk	lettünk volna	legyünk
2Pl	vagytok	voltatok/lettetek	volnátok/lennétek	lettetek volna	legyetek
3Pl	vannak	voltak/lettek	volnának/lennénk	lettek volna	legyenek

As can be seen in the table, some parallel forms exist as well in past and present. The meaning and usage of them, however, are not dealt with in this short overview, nor do I go into detail about archaic verb forms like the *-vol* stem in the past tense and conditional mood. A more detailed account of this subject can be found in Keszler (2000) and Korchmáros (2009).

Another common auxiliary that is used with verbs is *fog* in the analytic future tense. Here, the lexical verb is replaced by the infinitive, while the inflection is carried by the auxiliary element. The inflection is used according to the present tense.

15) *Mi most játszani fogunk*

   We will play now

Similar to the English modal verbs, there is a set of verbs that used to express subjectivity: *akar* "want", *tud* "can", *szabad* "may/be allowed", *lehet* "can/be allowed", *kell* "need/must/have to". However, with the exception of *szabad*, they have a full flectional paradigm and can also function as predicates alone (Korchmáros 2009:187). Example 17 shows a predicate role, whereas Example 18 shows an auxiliary function. In the second case, the modal auxiliary is analytically combined with the infinitive. Here, the Person-Number marking is carried by the infinitive.

16) *Nem kell**ek** semmire*

    I am not needed for anything

17) *Nem kell megcsináln**od***

    You don't need to/have to do it

Among further auxiliary verbs, which also function in combination with infinitives, some are used to refer to aspectual meaning like the iterative *szokott* "used to". This element also lacks full paradigm. In Standard Hungarian, it is only used as a past form and does not have present conjugations (Keszler 2000:120).

18) *Nem szokt**am** ilyet csinálni*

    I am not used to doing something like this

The aspectual *kezd* "begin" refers to the beginning of an event.

19) *A tanár olvasni kezd*

    The teacher begins to read

It can also be considered as an auxiliary (cp. Keszler 2000:121), although it is capable of functioning as a predicate similar to lexical verbs (Korchmáros 2009:189). The verb *tetszik* "like" is also used as an auxiliary in a polite request that was formally restricted to third person.

20) *Tetszik kérni egy pohár vizet?*

    Would you like to drink a glass of water?

The infinitive that appears in the aforementioned analytical constructions with auxiliaries is derived from the lexical verb by the *-ni* suffix. It has a verbal meaning but does not function as predicate itself. The infinitive serves as the grammatical subject of the Hungarian sentence and can be optionally marked for Person and Number. In this case, the marker resembles the inflection of the base verb and, in this way, establishes the relationship to the subject (cp. Korchmáros 2009:145–146). Example 22 shows the infinitive without a Person-Number marking. Example 23 displays the same sentence with the optional inflection.

21) *Hamarosan indul**ni** kell*

    We must leave soon

22) *Hamarosan induln**unk** kell*

   We must leave soon

In addition to its role in the sentence, this Person-Number marking paradigm also connects the infinitive with nouns rather than verbs. It follows a very similar pattern to possessive person markers (É. Kiss, Kiefer & Siptár 2003:220). Example 23 shows the suffixes on infinitives, compared to the possessive person marker suffixes of nouns in Example 24.

23) *-Vm, -Vd, a/e, -unk/-ünk, -VtVk, -uk/-ük*

24) *-m, -d, - Ø -nk, -tVk, -k*

The marking follows vocal harmony rules and results in different alternations. The *-i* from the *-ni* derivational suffix is mostly deleted, while the Person-Number marker is attached to the full suffix only in the third person. The table below shows examples of marked infinitives with different phonological realisations.

Tab. 3.8:   *Exemplary inflectional markers on infinitives*

	beszélni "to speak	dolgozni "to work"	segít "to help"	venni "to buy"
1Sg	beszél**nem**	dolgoz**nom**	segíte**nem**	ven**nem**
2Sg	beszél**ned**	dolgoz**nod**	segíte**ned**	ven**ned**
3Sg	beszél**nie**	dolgoz**nia**	segíte**nie**	ven**nie**
1Pl	beszél**nünk**	dolgoz**nunk**	segíte**nünk**	ven**nünk**
2Pl	beszél**netek**	dolgoz**notok**	segíte**netek**	ven**netek**
3Pl	beszél**niük**	dolgoz**niuk**	segíte**niük**	ven**niük**

If the noun or pronoun subject also occurs in the sentence, it has to agree with the infinitive in Person and Number. In that case, the noun or pronoun shows the dative case *-nak/-nek*. It also hints at the fact that the inflection of the infinitive is nominal and not verbal (Korchmáros 2009:144):

25) *Péter**nek** mennie kell*

   Péter must go

26) ***Nek**em se szabad innom*

   I am not allowed to drink either

This section provided a brief overview of the main patterns of Person and Number marking in Hungarian. As showed, there are similar forms across paradigms with a great number of phonological alternations. This summary dispensed with most of the irregularities and did not deal with phonological and syntactical rules that influence morphological forms. These can be found in every reference grammar of Hungarian and are discussed according to relevance in the concrete mouthing examples.

To sum up the issue of Person-Number markers, the overall mechanism underlying formal accordance is due to morphological agreement, which explicitly shows syntactical agreement on the surface. In terms of agreement, the category Person is only marked on verbs and not on nouns or pronouns, even if a noun constitutes part of the predicate. In contrast, overt Number marking (plural value) is indicated on predicates of all kinds. See the following examples from (Kiefer 2000:615):

27)   a. Verbal: Péter**ék** már hazament**ek**. "Peter has already gone home."

        b. Nominal: Ő**k** is ember**ek**. "They are people as well."

        c. Nominal–Verbal: A gyerek**ek** jól vann**ak**. "Those children are fine."

Based on Kiefer (2000:615), the rules behind these agreement patterns in Hungarian can be summarised as follows:

28) Number: [N +/– plural] ↔ [Pred. +/– plural]

29) Person: [N $1^{st}/2^{nd}/3^{rd}$ person] ↔ [Pred. $1^{st}/2^{nd}/3^{rd}$ person].

3.6.2 Person and Number in MJNY

One of the main attributes of sign languages is the use of space in conveying various meanings. The scope within which the hands of signers can reach is called *signing space* or *gestural space* (Perniss 2012; Mathur & Rathmann 2011) and can be used for numerous linguistic and discursive functions. The functions that are in relation to linguistic meaning encompass every level known in spoken languages: from phonology to morphology and syntax to lexical–pragmatic issues. This thesis narrows down the main focus to the morphological level.

As mentioned above, Aronoff et al. (2004) and Aronoff, Meir & Sandler (2005) discuss non-concatenative inflectional morphology as a universal characteristic of

sign languages; it provides them with a rich set of morphology despite the early stage of development to which they adhere compared to spoken languages of similar age, such a Creole. They claim that the iconically motivated spatial–visual system which sign languages use enable them to rapidly develop an abstract morphological mechanism (Aronoff, Meir & Sandler 2005:337).

However, the main issue here around which relevant discussions on sign languages are centred is the interaction of the abstract linguistic system with gestural space. The keyword in these discussions is the *locus* in signing space, which is used in various subsystems of sign languages. Its status of being gestural and/or linguistic is highly disputed (Liddell 2003).

Within the realm of this empirically oriented research, stress is put on the explanation of possible Person and Number markings with the aim to provide the basic understanding on the analysis of mouthings. Also, possible follow-up research can explore the interaction between mouthings and manual signs in terms of inflectional marking. Thus, at this point, the central issue of the grammatical status of Person and Number realisation is addressed. It is important to note, however, that it is not seen as the task of this dissertation to go into the details of this debate.

In the following, those characteristics of the formal properties of MJNY are briefly reviewed, which are responsible for marking the abstract categories of Person and/or Number. These include personal pronouns, agreement verbs and classifiers. In doing so, I assume that the rather universal characteristics that were found for most known sign languages basically apply to MJNY as well. Initial grammatical descriptions of MJNY seem to affirm this statement (Mongyi & Szabó 2004; Szabó 2007). Note, however, that a closer look at the grammar of MJNY is necessary to identify language-specific properties and compare them to well-documented sign languages. Such an account has to be the subject of future research.

3.6.2.1 Person and Number on personal pronouns

The functional equivalent of personal pronouns in Hungarian is carried out in MJNY by means of pointing signs. Pointing signs are frequently used as the gestural supplement of demonstratives in spoken languages, too; in this sense, they serve deictic functions. However, pointing signs in sign languages exhibit several specific functions such as pointing to real world objects, time and spatial reference, as well as establishing nominal reference in a discourse or referring back to whole propositions (Sandler & Lillo-Martin 2006).

When discussing pronominal functions based on ASL and BSL, Cormier (2012) uses the term *pronouns* as a superordinate category for pointing with a pronominal

role and makes a basic distinction between personal pronouns, which refer to speech-act participants, and *preforms*, which include every other pronoun as simply reflexive, relative and reciprocal pronouns, indefinites, interrogatives, and demonstratives. The marking of Person and Number in MJNY is discussed using the example of personal pronouns.

 In the MJNY personal pronoun system, as in many sign languages, the signer directs a pointing sign (typically the index finger) towards a specific locus in signing space to indicate pronominal reference that is associated with the given locus. The main function of personal pronouns is the establishment and maintenance of referential loci throughout the discourse (Cormier 2012:229).

In terms of a morphological analysis, the widely used argument of Meier (1990) for a two-value system of the Person feature in ASL can also be applied to MJNY. The first person has a single location, (near) the signer's chest, which is fixed in both singular and plural form. A non-first person includes the addressee and any other non-addressed referents. First person has a distinctive phonological realisation and can be seen as spelling out the abstract morphological feature. In contrast, a second or third person distinction cannot be made by phonological realisation. Instead, an infinite number of loci can be used to indicate both the addressee and the non-addressee, which cannot be defined in terms of listable morphemes. This, however, would be required for a categorical value of the Person feature. The only fixed phonological parameter is the handshape. This issue is known as the listability problem (Rathmann & Mathur 2002; Cormier 2012), which generated heated debates within sign linguistics that pointed to the conclusion that pronouns are rather gestural than linguistic (McBurney 2002; Cormier, Schembri & Woll 2013). Any further distinction within non-first person is made on the pragmatic level (Rathmann & Mathur 2005:236).

Rathmann and Mathur propose a featural analysis for sign languages discussed in the context of verb agreement (Mathur & Rathmann 2012) and elaborated in Rathmann & Mathur (2008). This analysis provides an explanation for the listability problem and, at the same time, explains the categorical nature of the first person marking. The authors suggest two inflectional values for the category Person: first person, which is realised on or near the location of the signer's chest, and non-first person, which is realised in the form of zero morpheme. Morphological rules can be formulated as follows:

30)   [Person: first] → on/near chest
      [Person: non-first] → ∅

Following Jackendoff (2002), they claim that the realisation of the unmarked non-first person is carried out by a deictic gesture which is produced within gestural space that serves as an interface between spatio-temporal conceptual structures and articulatory-phonetic systems (Mathur & Rathmann 2012:143). With this account, they acknowledge that pointing signs interface with gestures. At the same time, they maintain the connection to the linguistic system which provides a modality-specific categorical structure on the morphological level resembling the abstract syntactical inflection.

In addition, Mongyi & Szabó (2004) denote eye gaze as a co-occurring characteristic to distinguish second person from third person (2004:61). It is similar to Berenz (2002) and Alibašić Ciciliani & Wilbur (2006), who claim that eye gaze alignment or the misalignment and direction of pointing in LSB and HZJ grammatically distinguish between second and third person. In contrast, results from Thompson (2006) for ASL and Hosemann (2011) for DGS indicate that eye gaze alignment does not occur systematically enough to be considered as being linguistic.

This further distinction in MJNY, of non-first person referents, can indeed be made by non-manual markers such as eye gaze, head and torso orientation. However, arguing with Cormier (2012), these phenomena do not clearly differ from findings on the co-speech gestures of hearing non-signers. Although they also have to be accounted for in my analysis, the present thesis assumes that such distinctions in MJNY function on the pragmatic level and are not considered within the scope of morphology.

The realisation of the category Number in MJNY pronouns follows a widely observed classification of singular, dual and plural forms (Mongyi & Szabó 2004; Cormier 2012). The formal appearance of the singular, which is carried out by an index finger pointing to a specific locus, was discussed above. In the plural form, the pointing can either be replaced by a circular movement of the hand, as described by Mongyi & Szabó (2004) and Szabó (2007), or with a single back-and-forth movement between given loci in space, as seen in Vincze (1996:50). This refers to multiple or collective plural (Steinbach 2012:121). A distributive or exhaustive plural form in pronouns was also mentioned for other sign languages, e.g. DGS, ASL, BSL and IPSL (Zeshan 2000; McBurney 2002; Steinbach 2012; Cormier 2012). It shows repetitions of the singular form along an arc movement (Steinbach 2012:122). Such a pronoun form is not attested as a distinct plural marking in MJNY, although it is possible to produce it by reduplication of the singular form.

The dual pronoun is carried out with an L-handshape (probably originating in the sign TWO) and the same oscillating movement as in the second variation of the

collective plural. In addition, number-incorporated pronouns serve to denote the plurality of the referents and are carried out by a small circular movement in the associated location (Steinbach 2012:122). Szabó (2007) points out that an upward palm refers to inclusive forms, while the downward orientation refers to exclusive forms (2007:151).

In order to conceptualise the morphological marking of Number, let us again turn to the featural analysis. Rathmann & Mathur (2005; 2008) distinguish between only two morphological features for sign languages: singular and collective plural. The first is marked by a ∅ morpheme. In MJNY pronouns, the second is overtly marked by the distinct pattern of a horizontal back-and-forth movement or a circular movement. In this thesis, these two forms are assumed to be phonological alternations.

31) [Number: plural] → horizontal circular / back-and-forth movement
[Number: singular] → ∅

The case of the dual pronoun as morphologically marked needs further investigation. At best, it can be argued that it has some specific attributes. First, it has a fixed L-handshape that makes it different from the index form and its usage is semantically restricted to the concept of duality. The other argument is based on the specific movement (cp. Steinbach 2012). The dual pronoun does not use the circular movement like number-incorporated pronouns, but rather the back-and-forth movement, identical to the other plural marker mentioned above. This movement is also used involving third person. It could be argued that the handshape of the dual form together with the oscillation movement function as dual morpheme. McBurney (2002) also claims that, in ASL, the use of the dual form is obligatory in contrast to number-incorporated pronouns and suggests that it has morphological status. If one accepts the argumentation above, a possible morphological realisation could be noted as follows:

32) [Number: dual] → L-handshape + single horizontal back-and-forth movement

More research is needed to prove the morphological status of dual pronouns in MJNY.

To sum up, the issue of Person and Number marking was discussed by using the example of personal pronouns in MJNY. Based on Meier (1990) and Mathur & Rathmann (2012), we arrived at a two-value paradigm for Person: first and non-first; and a two-value paradigm for Number: singular and plural with a possible

extension to dual. Note, that this featural account is still under discussion in sign linguistics, and there are other models as well which do not assume such categories.

According to the model applied here, an overt morphological marking for Person can be seen as a morphemic location on or near the signer's chest. Other distinctions have a pragmatic nature. In plural, marking the two distinct realisations are the circular and the back-and-forth movement, however, it is possible that the handshape is also categorically defined for dual pronouns. Another mean of expressing plurality with pronouns is the use of incorporated quantifiers.

There is limited evidence for the role of pronouns in grammaticalisation. One such proposal comes from Pfau & Steinbach (2006) and Pfau (2011). They assume an evolutionary process from pointing gestures which first became demonstratives, then personal and relative pronouns, and finally agreement auxiliaries and agreement markers.

In later chapters, this dissertation will aim to discuss some Person and Number marking strategies that co-occur with Hungarian markers in the mouthings.

3.6.2.2 Person and Number on agreement verbs

Following the lines of Padden (1990), MJNY verbs can be subdivided into three inflectional classes. These verbs generally use the same set of inflectional realisations of certain morphological categories (Aronoff 1996). According to a classical categorisation based on morphological criteria proposed for ASL by Padden (1990), (1) plain verbs cannot mark the Person and Number of subject and object; they are only involved in aspectual marking. (2) Agreement verbs can mark the Person and Number of subject and/or object. (3) Spatial verbs are connected to locative inflection. Rathmann & Mathur (2011) propose that these classes can be predicted based on the argument structure of verbs. Verbs that only show aspectual inflection (roughly equates to plain verbs) fall into a first category; the second group shows Person and Number agreement (agreement verbs); the third participates in a locative/class agreement process (verbs of motion and location) (2011:205).

The following overview concerns the second class; that of agreement verbs.

Using three main criteria for defining the set of verbs that use overt agreement, Rathmann & Mathur (2008) emphasise (1) two animate arguments, (2) subject and object reference and (3) specific phonological change in realisation.

Person and Number agreement takes place between the two animate arguments (in the form of nouns or pronouns) and the verb. Some verbs agree in Person and Number feature only with the object, while others agree with both subject and

object. Phonological change usually involves the direction or orientation of movement or a combination of both (Mathur & Rathmann 2012:139). Also, agreement verbs can be classified, according to the type of movement, as forward or backward (Padden 1990). The examples below illustrate agreement verbs in MJNY with different morphological and phonological properties as discussed by Szabó (2007).

Figure 3.1: VÁLASZOL "answer"(left) changes movement and orientation of hands; KÜLD "send"(right) changes orientation only.(figure by Vincze 1996)

The realisation of Person and Number marking on verb agreement was another extensively debated subject in sign language literature (see issue 37/3-4 of the journal *Theoretical Linguistics* and Mathur & Rathmann (2012) for a review of different accounts). Put briefly, agreement verbs face the same listability problem as described above for personal pronouns.

Following the reasoning of the same featural analysis, the morphological process of agreement expresses the features of the argument on the verb. In that sense, agreement verbs show the same set of Person and Number features: first vs. non-first as the properties of Person and plural vs. singular morpheme as the properties of Number. Based on the proposed agreement process in Mathur & Rathmann (2012), the rules in MJNY can be formalised as follows:

33) Number agreement: [Pro +/– plural] ↔ [V{agr.} +/– plural].

34) Person agreement: [Pro +/– first] ↔ [V{agr.} +/– first].

Pro stands for the pronominal pointing sign that usually shows the reference in space; V {agr.} means all verbs that fall into the class of agreement verbs.

The process of agreement realisation is proposed by the featural analysis as follows: the verb uses the non-concatenative tool of modification to create agreement. For example, first person morpheme specifies an area on/near the signer's chest. The orientation and /or movement parameter of the stem change to indicate agreement with this area. In case of the first person object, the movement

is carried out towards this area and the palm usually faces this area. First person subject is indicated through a movement from this location towards another in signing space and the palm then usually faces the non-first person object. However, there is no lexically specified phonological content. That is, there is no specific area for the non-first person that could constrain the movement and orientation of the verbs. Instead, the feature is phonologically zero and is realised through the interaction with gestural space, in which the exact location is established in the given discourse (Mathur & Rathmann 2011:58).

As mentioned above, the main issue of listable morphemes for the category Person is solved by Rathman and Mathur by postulating an interface between the linguistic system and the signing space in which this realisation occurs. The authors argue that this kind of non-concatenative morphological process is specific for the visual modality and can only be found in sign languages (Mathur & Rathmann 2011:59). An infinite number of possible realisations of non-first person are constrained by articulatory limitations. There is a restriction to those areas which are possible reach for the signer. Referents can be indicated only in this space regardless of their presence in the immediate situation. Also, there are some physiological limits for the articulators: elbows and wrists cannot be twisted in any degree to maintain the reference. The constraints above can be summed up as "phonological constraints on the degree of articulation" (2011:60).

The featural analysis assumes that the singular form is unmarked and realised only by a Ø morpheme; the collective plural form is marked by an arc movement. According to Mathur & Rathmann (2012), the phonological process can be seen as affixation and not stem modification because the realisation of the Number is ordered after that of the Person.

In addition, there are two other plural indications that also apply to MJNY: *distributive* and *dual*. The distributive plural is realised with the help of reduplication following an arc movement (Steinbach 2012:124). Here, however, the featural analysis does not assume additional morphemes. Instead, the distributive form is seen as a result of several conjoined singular agreements. The dual plural is, in that sense, just the subcase of the distributive form (Rathmann & Mathur 2005:238).

As for some frequently occurring agreement verbs in my corpus, this argumentation could also be used. For instance, a distinct movement for dual plural as described for MJNY pronouns is not produced on verbs so that a dual form just follows a single reduplication of the singular form. This issue is left open for further research of MJNY verb agreement and is not addressed in more detail in this thesis.

Person and Number agreement is not always marked overtly. Studying three different sign languages (ASL, DGS and Nihon Shuwa), Rathmann & Mathur (2005) point out that there are some types of agreement verbs in which features remain unexpressed. For instance, some agreement verbs cannot mark plural or first person objects. They analyse such phenomena as phonologically governed syncretism. They emphasize that the main reason for replacing the marked feature by the unmarked one is due to articulatory constraints e.g. the awkward movement that would be required in the first person object plural in the ASL sign GIVE-US. The two tendencies of syncretism they observed include: (1) if the verb cannot express first person, it marks the non-first person while other features remain constant; (2) if the overt marking of the plural morpheme is blocked, verbs use the unmarked form while the other features remain constant (2005:249). These patterns are assumed to hold for MJNY in general. However, detailed empirical evidence is not available at the moment. In cases of relevance, these patterns will be addressed in the discussion of the corpus data.

In the present context, the case of MJNY verb auxiliary has to be mentioned. In plain verbs of DGS that cannot mark agreement with the subject and object due to phonological or pragmatic reasons (typical for body anchored signs), there is a possibility to mark these features with the help of an auxiliary element called Person Agreement Marker (PAM) as described in Rathmann (2003). A similar function is carried by the MJNY sign with the delta handshape, which is glossed as AUX:

Figure 3.2: The delta handshape used in the sign AUX to indicate subject-object agreement with plain verbs (figure by Vincze 1996)

Although Szabó (2007) describes it as a pronoun, based on observations from the analysed corpus, it correlates more with verbal auxiliaries observed in DGS or NGT (Galini Sapountzaki 2012). It is combined with plain transitive verbs which can occur with two animate arguments. It is a functional element which is semantically empty and stands in sentence-final position. However, in contrast to DGS, for example, it can only indicate the Person feature of the subject and object without any additional overt plural marking. Although it may have evolved from a

pronoun by changing the pointing sign to the more specific delta handshape, it is assumed, for the present thesis, that it fits the function of a verbal auxiliary.

Further proposals are known to discuss the role of non-manuals in verb agreement, especially eye gaze (see Neidle et al. 2000 for ASL). However, the findings of other studies, such as Thompson (2006) or Hosemann (2011), indicate the lack of consistency in this kind of marking. As argued above in the previous subsection on pronouns, non-manuals are not interpreted in the dissertation as grammatical features in MJNY verb agreement, but rather as pragmatic instances.

3.6.2.3 Number marking on nouns

Similar to Hungarian, the Person feature itself is not marked on MJNY nouns. Only the plural value of the inherent nominal category Number can be overtly expressed. Steinbach (2012) discusses two main plural marking strategies used to indicate the plural morpheme on the head noun in sign languages: zero marking and reduplication. The choice between these strategies is mainly influenced by phonological characteristics of the noun.

Zero marking is generally used by body-anchored signs and those non-body-anchored signs whose basic lexical stem show a complex movement. Similar to DGS, as discussed by Pfau & Steinbach (2006) and Steinbach (2012), MJNY signs with these characteristics cannot mark plural on the noun itself, as reduplication would be discordant with the place of articulation or the complex change in movement they exhibit (Steinbach 2012:115). Instead, MJNY marks plurality through other means. A common possibility is to insert a subsequent classifier predicate with overt plural marking. In the case of body-anchored signs that refer to animate entities, the noun SZEMÉLY ("person") can also be utilised. In this case, the reduplicated sign SZEMÉLY carries the plural marker.

Figure 3.3: The sign SZEMÉLY "person" is usually attached to nouns to indicate plurality: e.g. TANÁR SZEMÉLY+ "teachers"

The other plural marking strategy, the only one that can overtly indicate the Number feature on the noun, is reduplication. Based on examples in Mongyi & Szabó (2004), it characterises nouns in MJNY whose place of articulation is lateral and expressed by a sideward movement in which the base form is repeated. These are usually two repetitions that are carried out by a somewhat shortened movement, thus applying for partial reduplication (Steinbach 2012:117).

The exact number of reduplications is also subject to other articulatory influences. Steinbach (2012) mentions five such influencing factors. (1) the complexity of signs influencing the effort to produce a reduplicated plural form; (2) the speed of articulation and (3) the synchronisation with non-manual features like mouthing, (4) the prosodic structure (e.g. prominent positions associated with more repetitions) and (5) the individual variation among signers (2012:114).

Steinbach (2012) also discusses another simple reduplication in DGS applied to midsagittal nouns like BOOK, which shows the double repetition of the movement indicated by BOOK++. Due to the lack of documentation of MJNY, such plural marking cannot be clearly confirmed to exist, however, it would be possible form. What is typical for MJNY, though, is the combination of nouns and classifier verbs. The plurality of the noun is indicated by the predicate only.

Finally, according to my observations of the research corpus and other MJNY materials, it is not obligatory to mark plurality in every sentence respectively if this function has been once established for a noun within a given discourse.

Sign languages like ASL, DGS and Israeli SL have in common that, in a noun phrase, number agreement is not expressed similarly to many spoken languages (but cp. NGT, ÖGS) (Steinbach 2012). Instead, the concept of plurality is indicated by only one element. For example, adjectives do not show plural the marker of the noun. Also, if a numeral or a quantifier is used, the head noun remains uninflected (Steinbach 2012:120). This statement runs into controversies in MJNY. Anecdotal evidence of MJNY shows, for example, that lateral nouns, e.g. GYEREK (child), can also be reduplicated with numerals and quantifiers: HÁROM GYEREK++ (three children). Specific cases will be thoroughly discussed in the empirical part of the present work.

3.6.2.4 Number marking on classifier constructions

There is a subset of verbs of motion and location that can indicate overt plural marking: these are called classifier predicates or classifier verbs (Zwitserlood 2012). They are addressed in another subsection below. In terms of plurality, however, they deserve mentioning here.

These verbs of motion and location indicate a certain class of nouns by handshape. Also, they can be modified in the signing space to indicate the

plurality of a noun instead of marking it on the head noun itself (Steinbach 2012). In MJNY, a collective plurality is conveyed by a (typically sideward) single movement of the classifier verb. A collective meaning refers to more than one entity whose number is unspecified. A sideward reduplication can also be used to indicate more than one object with a distributive reading (where the number of objects is specified). In DGS, two repetitions signal a simple unspecified plural form (Steinbach 2012:126). It is still an open question as to whether it applies to MJNY.

Numerals or quantifiers do not block this kind of reduplication: in this case, the reduplication is in accordance with the number specified for the noun (ibid. 2012:126).

The interpretation of these plural marking strategies depends on the morphological analysis applied to classifiers. In line with Zwitserlood (2003; 2008), classifier verbs lack an inherent phonological representation for handshape. Accordingly, the verb root would only be specified for movement and orientation. Assuming that such a verb root is present, the movement patterns would apply to plural inflection through a modification or reduplication of the root.

Finally, it is important to mention that the movement patterns of verbal classifier constructions not only denote plurality; they also refer to spatial localisation and arrangements (Steinbach 2012).

3.6.3 Categories other than Person and Number

3.6.3.1 Possession in Hungarian and MJNY

The morphological category Possession represents a relationship of belonging between two entities: the possessor and the possessum (Heine 1997; Serzisko 2000). The general description can be subdivided into attributive and predicative constructions. The first refers to an inherent possession marking in noun phrase between a pronoun/noun and another noun, e.g. *My father* or *Peter's hand*; Predicative possession expresses a less inherent relationship that has to be established. This establishment involves the entire clausal structure, e.g. *Peter has a car*. Languages of the world differ in how possessor and possessum are marked, if at all, morphologically (Serzisko 2000). A brief look is now taken into the possessive constructions of Hungarian and MJNY, indicating some basic patterns.

In Hungarian, the category Possession is expressed morphologically. In attributive constructions, the possessum agrees with the possessor using a distinct Person-Number paradigm described in the previous subsections. Hence, Hungarian does not use possessive pronouns here, but rather a combination of nominative

pronouns/nouns and the Person-Number marking system attached to the possessum.

In Kiefer's (2000) approach, the actual possessive morpheme has, in most cases, zero marking. It shows up phonologically only on three spots:

in third person singular with a singular possessum, it takes the form of *-a/-e* or *-ja/-je*. There is no overt Person-Number marker. Number 35, below, shows the morphological rule and number 36 provides an example.

35) [Possession N {sg. possessum; sg. 3. person}] → N+ *-(j)a/-(j)e*

36) *Az ő kutyája* "his/her dog".

In third person plural with a singular possessum, the nominal possessive marker is *-(j)u/-j(ü)*. The rule reads as follows:

37) [Possession N {sg. possessum; pl. 3. person}] → N+ *-(j)u/-(j)ü*.

38) *kutyájuk* "their dog"

In number 38, the ending *-k* represents the personal possessive marker indicating the third person plural.

The third rule comes into play with plural possessum and takes the form *-(j)a/-(j)e*. This is formalised as follows:

39) [Possession N {pl. possessum}] → N+ *-(j)a/-(j)e*.

40) *asztalaim* "my tables"

In number 40, *-a* stands for the nominal possessive marker, *-i* for the plural marker and *-m* for the personal possessive marker, which indicates first person singular (cp. Kiefer 2000:595).

Pronouns are not obligatory and thus not required to use, as the Person-Number morph is identified on the noun:

41) *a(z én) kutyám* "my dog"

Overt pronouns are used mostly for emphasis. Nouns use the same form:

42) *Kati kutyája* "Kati's dog"

Here, the possessor can be underlined by using a dative case marking -*nak*/-*nek*.

43) *Katinak a kutyája* "Kati's dog"

The case marking is also used by interrogative and general pronouns, e.g. *kinek a kutyája?* "whose dog?", *mindenkinek a kutyája* "everybody's dog". Sometimes, the predicate can be inserted between the nominal construction, making the connection less tight between possessor and possessum (Keszler 2000:188).

44) *Pistának elveszett a könyve* "Pista's book is lost"

The one way of expressing possession in predicative constructions follows the same pattern. It operates with the same nominal construction using case marking for the possessor and the possessive marker and Person-Number marker for the possessed object. But the existential copula *van* (or *nincs* as its negation) is added to express the have-type possession:

45) *Pistának van (nincs) sok könyve* "Pista has (does not have) many books"

In this way, Hungarian belongs to the languages which derive the have-construction from a basic existential quality (H. Varga 2007:22). Compare examples 46 and 47.

46) ***Van** sok könyv* "There are many books"

47) *Pista**nak** van sok könyve* "Pista has many books"

In this type, the case marking -*nak*/-*nek* is obligatory; otherwise the possession cannot be indicated:

48) **Pista **van** sok könyve*.

Another phonologically realised allomorph of the possessive morpheme is the –*é*, which appears in belong-type predicates. This construction emphasises the possessor rather than the possessum. The marker is attached to the former:

49) *Az autó Zoli**é*** "The car belongs to Zoli"

It can also appear after a personal possessive marker:

50) *A kerék az autóm**é*** "The wheel belongs to my car"

The -*é* marker can also be used with pronouns. This means that Hungarian utilises a possessive pronoun:

51) *A könyv az **enyém*** "The book belongs to me/the book is mine"

This pronoun, which has its own paradigm, can be historically derived from a personal pronoun (Korchmáros 2009:128).

Tab 3.9:   Possessive pronoun

	Singular possession	Plural possession
1Sg	enyém "is mine"	enyéim/enyémek "are mine"
2Sg	tied/tiéd "is yours"	tieid/tiéid "are yours"
2Sg Formal	öné/magáé "is yours"	önéi/magáéi "are yours"
3Sg	övé "is his/hers"	övéi "are his/hers"
1Pl	mienk/miénk "is ours"	mieink "are ours"
2Pl	tietek/tiétek "is yours"	tieitek/tiéitek "are yours"
2Pl Formal	önöké/maguké "is yours"	önökéi/magukéi "are yours"
3Pl	övék/övéké "is theirs"	övéik/övékéi "are theirs"

MJNY also exhibits attributive and predicative possessive constructions. The basic marker of possession is a B handshape sign (glossed here as POSS), which Szabó (2007) denotes as a possessive pronoun derived from the basic personal pronoun with the index finger.

 This interpretation is in line with the most frequent usage of possession marking found in a typological study of 31 sign languages all over the world (Zeshan & Perniss 2008). The difference to personal pronouns is seen only in the handshape, thus it can be interpreted as the morphological marker of the abstract category of Possession. The possessive pronoun shares the basic Person and Number marking characteristics, as previously discussed; however, there seem to be some restrictions in the paradigm. Based on observations of MJNY teaching materials and my own corpus, the non-first person plural form can sometimes be replaced by the singular. Existence of a possible multiple form with a circular movement needs further clarification. Conversely, the first person plural form can be frequently observed in MJNY using the circular movement with the B handshape.

Dual forms are assumed to be reduplications of the singular, like in agreement verbs.

In attributive constructions, the basic syntactical structure in sign languages is: possessor POSS possessum. However, the analysed corpus data indicate that MJNY rather shows a (possessor) possessum POSS order. Some patterns, like repeated movement, the replacement by personal pronouns and the omission of POSS (merly junxtaposition of possessor and possessum), will be discussed together with the empirical results.

There are two usual predicative possession constructions in the languages of the world that were also observed in a number of sign languages: the so-called have-type and belong-type constructions (Serzisko 2000; Zeshan & Perniss 2008). These differ mainly in information status: the have-type stresses the possessor; the belong-type stresses the possessum.

As Zeshan and Perniss (2008) point out, data on sign languages do not always offer this clear categorisation. As a tentative categorisation, it is assumed that MJNY shows both constructions.

The more general have-type is expressed by virtue of an existential element, like DGS and ÖGS (Chen Pichler et al. 2008; Zeshan & Perniss 2008). The sign VAN is the basic existential sign. The possessor can be expressed by personal pronoun or the possessive pronoun POSS. Especially the second case shows striking similarities with the Hungarian construction with the copula *van* and the case marking as discussed. The similarity is also strengthened by the oftenaccompanied mouthing of the person-marked adverb.

> 52)   auto   nekem van
>   AUTÓ POSS VAN
>   "I have a car"

A belong-type construction with a different structure is also found in MJNY. In this case, the order follows a possessum POSS order, as seen in Example 52. But here, the POSS sign takes the function of the predicate. The manual structure is identical to the attributive construction, e.g. AUTÓ POSS "my car" vs. AUTÓ POSSpred "the care is mine".

It is possible that we deal with the same construction as proposed by Abner (2013) for ASL. Interestingly, the mouthing usually further distinguishes between the attributive and the predicative usage. The predicative POSSpred is used with the mouthing 'enyém' "mine", which is the corresponding mouthing of the Hungarian possessive pronun *enyém* used in the equivalent Hungarian predicative construction.

3.6.3.2 **Case in Hungarian**

Case is a category which distinguishes between the relations that a noun phrase may bear to a governing head (Stump 2001:27). It is a canonical example of context-dependent inflection in Hungarian.

Besides Person and Number, the Case feature demonstrates another highly productive inflectional paradigm in Hungarian. Kiefer (2000) distinguishes between 18 Case values that can be marked on nouns, various pronouns and person-marked adverbs. There are three values that can usually be inferred from the syntactical context (nominative as the subject, accusative as the direct and dative as the indirect object), but further values can be stored in the lexicon as obligatory to a verb's arguments (Kiefer 2000:579). Hungarian is rich in locative and directive Case markers. Word forms with Case inflection can be derived through inflectional rules.

As mentioned, there are a high number of Case markers (18). The inflectional affixes always follow vocal harmony rules which results in various phonological realisations. As the whole Case marking paradigm is not relevant to the empirical analysis, I rather draw the attention to some word forms that appear frequently in the data.

Example 53 shows the rule for accusative marking and Example 54 shows the rule for dative marking:

53) [N+ affix, accusative] → N+t

54) [N+ affix, dative] → N+-nak/nek

Example 55 is a portrayal of Case marking in action. The direct and the indirect object of the sentence are expressed through Case inflection:

55) *Péter könyvet adott Annának* "Péter gave a book to Anna"

The rules for Inessive and Instrumental are as follows:

56) [N+ affix, inessive] → N+-ban/ben

57) [N+ affix, instrumental] → N+-vel/vel

Example 58 includes both Insessive and Instrumental:

58) Mozi**ban** voltam a fiú**val** "I was at the cinema with the boy"

The rules for Illative and Allative are as follows:

59) [N+ affix, illative] → N+-ba/be

60) [N+ affix, allative] → N+-hoz/hez/höz

Example 61 includes both Illative and Allative:

61) Rakd be a kenyeret a sütőbe és menj át a szomszédhoz' "Put the bread in the oven and go to the neighbour"

The following table serves as an overview to show the phonologically distinct realisations of the inflections discussed. Those and similar forms will be the subject of the analysis of Case markers in mouthings.

Tab. 3.10:   Frequently used Case markers on different nouns

Nominative	fiú	ebéd	könyv	mérnök	szamár
	"boy"	"lunch"	"book"	"engineer"	"donkey"
Accusative	fiú**t**	ebéd**et**	könyv**et**	mérnök**öt**	szamar**at**
Dative	fiú**nak**"	ebéd**nek**	könyv**nek**	mérnök**nek**	szamár**nak**
Inessive	fiú**ban**	ebéd**ben**	könyv**ben**	mérnök**ben**	szamár**ban**
Instrumental	fiú**val**	ebéd**del**	könyv**vel**	mérnök**kel**	szamár**ral**
Illative	fiú**ba**	ebéd**be**	könyv**be**	mérnök**be**	szamár**ba**
Allative	fiú**hoz**	ebéd**hez**	könyv**höz**	mérnök**höz**	szamár**hoz**

3.6.3.3 Class in MJNY

The name Class or Classifiers is used in this thesis to refer to the syntactic category which distinguishes between classes of nominal lexemes (Stump 2001:26). Their basic function in the languages of the world is the semantic categorization of nouns. The term used for the feature is often dependent on the linguistic tradition used for the type of language in question. Aikhenvald (2000) distinguishes between two basic morphological means of noun classification: Gender, which is usually sex or animacy-based, and Classifier, which is often shape or material-based (2000:1040). Class membership can be marked on the noun itself or be assigned to other verbs or numerals and possessive elements in a noun phrase (Grinevald 2000).

In the context of sign languages, classifier constructions are predominantly discussed as verbal classifiers. A Class or Classifier morpheme is assigned to the verb to indicate a given class of the noun argument. Zwitserlood (2012) describes some basic properties of verbal classifiers that apply more or less to both sign and spoken languages. (1) Classifiers appear in the form of a bound morpheme on the verb that is linked to the verb's arguments. (2) The categorisation normally roots in the semantics of the noun that is usually based on physical or functional characteristics or animacy. (3) The morpheme is taken by a specific subset of the verbs. (4) They primarily serve anaphoric functions in a discourse (Zwitserlood 2012).

In sign linguistics, there are various partially overlapping categorisations that exist for classifiers proposed for different sign languages (see Supalla 1986 for ASL; Engberg-Pedersen 1993 for DSL; Schembri 2003 for Auslan; Zwitserlood 2008 for NGT). Following current terminology, I refer here to two main types: Whole Entity classifiers (WECL) and Handling classifiers (HCL). According to Zwitserlood (2012), Whole Entity classifiers "directly represent referents by denoting particular semantic and/or shape features" (2012:161). These contain morpheme assignments upon (1) semantic classes like humans or vehicles, (2) size and shape of an entity, (3) body parts representing themselves (hands as hands, eyes as eyes etc.) and (4) tools represented while being manipulated.

Conversely, Handling classifiers "represent entities that are being held and /or moved often (but not exclusively) by a human agent" (2012:161). Representations of the hands, as they hold and/or manipulate entities, fall into this category (instrumental hand classifiers and some body part classifiers according to Supalla (1986)).

Classifers were found to be strikingly similar among sign languages with some cross-linguistic differences. As Mongyi & Szabó (2004) basically refer to the same classifier types for MJNY as mentioned in the categorisations above (although using idiosyncratic terminology), it is assumed in this thesis that these general characteristics suit the classifier system MJNY.

Following the definition of Zwitserlood (2012), a specific set of verbs in MJNY that show class morpheme are those which indicate the referent's motion in space, a change of posture, it's localisation or it's existence in space and handling of referents (2012:164). In the following, I focus on the issue of their morphological structure.

There is a specific group of verbs in sign languages that take the Classifier feature: those which provide only an incomplete phonological set. A number of studies analyse a class morpheme and a verb root, although different accounts were proposed on the phonological structure and their morphemic status as well

(see Supalla 1986; Glück & Pfau 1998; Meir 2001; Liddell 2003; Zwitserlood 2008). According to these accounts, the verb stem consists of the movement or localisation of signs, while the classifier is defined by the handshape and orientation (together hand configuration) as an additional inflectional morpheme. It is also argued that the classifier morpheme functions as an agreement marker that matches a certain class of nouns based on the given semantic or physical property. After establishing a noun followed by a classifier verb, it can be used in a discourse to denote the referent by its hand configuration parameters. According to Benedicto & Brentari (2004) and Benedicto et al. (2007), the type of classifier morpheme also determines the transitivity of the verb. While Whole Entity classifiers are generally intransitive, Handling classifiers account for transitive verbs.

There are still debates surrounding the morphological structure of classifier verbs. In contrast to the initial analysis of Supalla (1986), which subscribes different morphemes to phonological parameters, only a partial morphological status is currently accepted (Supalla 2003). While there are stronger claims for the hand configuration or the movement to be morphemic, the analysis of agreement, with a source or goal loci of the verb, runs again into the problem of defining those loci as morphemic as discussed above regarding agreement verbs.

3.6.3.4 Tense, Mood, Definiteness and Aspect

There are some other important morphological categories that are worth mentioning here. They form an integral part of the inflectional morphology of Hungarian and/or MJNY, although they will not be included in a detailed empirical analysis (see arguments in further chapters).

Such are the verbal categories Tense, Mood and Definiteness. According to Stump (2001), Tense specifies a finite verb's temporal reference. Mood differentiates between ways in which a proposition may relate to actuality. Definiteness expresses whether a reference of a noun phrase is presumed to be uniquely identifiable in a given context (Stump 2001:27–29).

Tense only has two morphological values in Hungarian: past and present. Future is expressed through the auxiliary verb *fog*, which uses the Person–Number marker of the present morpheme. As the present is phonologically unmarked, Hungarian shows overt Tense inflection only for the past. It refers to any event and state prior to the moment of speaking (Korchmáros 2009:42). The possible Tense markers are *-t* (*áll – állt* "stand"), *-Vtt* (*oszt – osztott* "divide", *veszt – vesztett*, "lose") or in some cases *-tt* (*lő –lőtt*, "shoot"). To simplify matters, the general morphological rule can be provided as follows:

62) [V past] → V+Vtt/t

The first V stands for any verb and the second V stands for any vowel (cp. Kiefer 2000:606). The stem used for the past can often be inferred from the infinitive form of that verb:

63) *hisz* "believe" – **hi**nni "to believe" – **hi**ttem "believed"

The Person–Number markers follow the Tense marker, e.g. *-t*:

64) *aludt**am*** "I slept"

65) *szállt**unk*** "We flew"

However, it is important to point out again that verbs get the markers attached to them based on their endings (certain types of consonants or vocals) and the given vocal harmony rule. The marker can also change within a given Person-Number paradigm.

Tab. 3.11:   *The 4 types of the past marker in 3 Person and 2 Number*

	Type 1 hagy "leave"		Type 2 vár "wait"		Type 3 iszik "drink"		Type 4 áld "bless"	
	Indef.	Def.	Indef.	Def.	Indef.	Def.	Indef.	Def.
1Sg	hagy**tam**	hagy**tam**	vár**tam**	vár**tam**	it**tam**	it**tam**	áld**ottam**	áld**ottam**
2Sg	hagy**tál**	hagy**tad**	vár**tál**	vár**tad**	it**tál**	it**tad**	áld**ottál**	áld**ottad**
3Sg	hagy**ott**	hagy**ta**	vár**t**	vár**ta**	iv**ott**	it**ta**	áld**ott**	áld**otta**
1Pl	hagy**tunk**	hagy**tuk**	vár**tunk**	vár**tuk**	it**tunk**	it**tuk**	áld**ottunk**	áld**ottuk**
2Pl	hagy**tatok**	hagy**tátok**	vár**tatok**	vár**tátok**	it**tatok**	it**tátok**	áld**ottatok**	áld**ottátok**
3Pl	hagy**tak**	hagy**ták**	vár**tak**	vár**ták**	it**tak**	it**ták**	áld**ottak**	áld**ották**

Hungarian Mood has three values: indicative, conjunctive and imperative, the last two of which are overtly marked. The rule of the conjunctive is as follows:

66) [V conjunctive] → V+n

Besides the marker *-n*, which can also be realised as *-(a)n/-(e)n*, some words also use *-nn*. Examples 67 and 68 show the respective usage.
67) *János szívesen vár**na** rád* "János would gladly wait for you"

68) *Ők odate**nn**ék a poharat* "They would put the glass over there"

The imperative rule is noted as follows:

69) [V imperative] → V+j

70) Csinál**j**unk valamit! "Let us do something!"

In the two marked Mood values, numerous phonological rules apply to verbs according to their stem ending whose descriptive is beyond the scope of this thesis. Some examples of these realisation patterns in conditional and imperative are provided in the table below (see Kiefer 2000; Korchmáros 2009).

Tab. 3.12:   *Inflections in conditional and imperative Mood*

| | néz "look" | | | | ír "write" | | | |
| | Conditional | | Imperative | | Conditional | | Imperative | |
	Indef.	Def.	Indef.	Def.	Indef.	Def.	Indef.	Def.
1Sg	néz**nék**	néz**ném**	néz**zek**	néz**zem**	ír**nék**	ír**nám**	ír**jak**	ír**jam**
2Sg	néz**nél**	néz**néd**	néz**z(él)**	néz**(ze)d**	ír**nál**	ír**nád**	ír**j(ál)**	ír**jad**
3Sg	néz**ne**	néz**né**	néz**zen**	néz**ze**	ír**na**	ír**ná**	ír**jon**	ír**ja**
1Pl	néz**nénk**	néz**nék**	néz**zünk**	néz**zük**	ír**nánk**	ír**nánk**	ír**junk**	ír**juk**
2Pl	néz**nétek**	néz**nétek**	néz**zetek**	néz**zézek**	ír**nátok**	ír**nátok**	ír**jatok**	ír**játok**
3Pl	néz**nének**	néz**nék**	néz**zenek**	néz**zék**	ír**nának**	ír**nák**	ír**janak**	ír**ják**

Although both Kiefer (2000) and Keszler (2000) consider the category Definiteness as a feature in Hungarian, it does not appear with distinct overt phonological realisation. It rather applies to syntactical inflection as established by (Aronoff & Fudeman 2005). The two postulated values, indefinite and definite, are overtly distinguished from one another through respective inflectional paradigms of the Person-Number morphs in each Tense and Mood paradigm. The definite paradigm identifies the subject and a third person definite object. The indefinite or general conjugation applies in all other cases.

Using the terminology as discussed in Section 1.3 of this chapter, Tense in MJNY exists as a syntactical inflection, but it is not encoded by bound inflectional morphemes on verbs. Time reference is mostly carried by morphologically free

time adverbials like VOLT for past and LESZ for future. It is similar to most sign languages and some spoken languages like Chinese (see, however, morphological Tense markers in Zucchi (2009) for LIS). Also, MJNY makes use of time lines using the space for time reference as attested in many sign languages together with non-manual markers (Mongyi & Szabó 2004; Pfau, Steinbach & Woll 2012).

Epistemic modality that is partially represented by the inflectional feature Mood in Hungarian is carried out in MJNY mainly by non-manual markers and not directly attached to manual verbs. The particle HA "if" is commonly used to indicate the conditionality of a sentence. Possibility and uncertainty is also carried by modal verbs (Wilcox & Shaffer 2006).

There is no exact equivalent to the Hungarian Definiteness in MJNY that refers to a third person definite object. However, pronominal pointing signs combined with certain eye gazes and other non-manuals could denote definite and indefinite objects (see Barberà Altimira (2015) on this subject in LSC). This subject will be covered in cases of relevance in later chapters.

Aspect refers to the internal temporal consistency; the situation of an event in a particular time interval (Stump 2001:28). Aspect is not considered as a morphological feature in Hungarian, and thus cannot be part of the present work which focuses on the inflectional forms of mouthings.

In MJNY, however, it is marked on verbs with different values expressing various subtle differences. The inflectional realisation includes non-concatenative strategies, like stem-internal modification, usually affecting the movement component, and reduplication. Aspect values found in many sign languages are continuative, iterative and habitual (Pfau, Steinbach & Woll 2012; Rathmann & Mathur 2000). For a more detailed categorisation, especially for ASL, see Rathmann (2005).

Along similar lines, Szabó (1999) also identifies some aspectual modulations in MJNY: (1) a continuative aspect which extends the duration of an event and (2) an iterative showing repeated action. Further types include (3) a continuative-iterative quality that refers to an action carried out repeatedly on different occasions and (4) a diminutive quality which denotes an action carried out with decreased intensity. For other mixed types, like executive, frequentative etc., see Szabó (1999).

In addition, completive/perfective aspectual markers have been described for several sign languages that appear as free morphemes, like FINISH in ASL, ALREADY in Israeli SL or FERTIG in DGS (Rathmann 2005; Meir 1999). The signs KÉSZ "done" and VOLT "been" or NEM-VOLT "not been" are used in a similar fashion in MJNY, however, there has not been any closer analysis on their actual grammatical and discursive behaviour.

3.7   Summary

This chapter summarised some of the basic inflectional properties of Hungarian and MJNY. A descriptive approach was used to focus on inflectional processes and their realisation patterns without involving underlying syntactical mechanisms and a detailed account on morphophonological characteristics.

As we see, both languages have fusional features and use inflectional morphology for conveying a variety grammatical meanings. More importantly, Hungarian uses affixation and shows highly productive inflectional patterns, resulting in a wide range of paradigms for common word classes (nouns, verbs, pronouns). Morphs and allomorphs use vocal harmony rules, resulting in different phonological forms depending on the stem. The demonstration of paradigms was restricted to simply illustrating some of the frequent patterns. There are several exceptions and partial paradigms that were not dealt with in this account.

MJNY typically uses a non-concatenative, simultaneous inflectional morphology that utilises signing space. This was demonstrated on subsystems such as pronouns, verb agreement and classifier constructions.

It expresses Person and Number features on pronouns, agreement verbs and a verbal auxiliary. Classifier verbs and nouns participate in Number marking. One important issue discussed is the various phonological restrictions that block overt marking, e.g. for plural or first person/non-first person objects, in some cases due to articulatory restrictions. In contrast to Hungarian, there is a tendency towards zero marking. Other syntactical, semantic or pragmatic devices are also used to convey the meaning that Hungarian mainly indicates through morphological means. The bound interaction with gestural space, especially in the case of Person marking, is another modality-specific issue in sign languages.

A featural approach was followed based on Rathmann & Mathur (2008; 2011), who argue for a categorical system of morphemes in sign languages and an interaction of the linguistic system with gestural space. However, note again that, especially for sign languages, the interpretation of the interaction between the phonological realisation of abstract linguistic subsystems and gestural space is a hot topic. Any analysis strongly depends on the account used.

A basic problem that was encountered concerns the uncertainty of morphological phenomena in MJNY due to limited empirical evidence. It is necessary to emphasise that some of the morphological patterns and their categorisation is only used as tentative descriptions within the frame of the present thesis.

As will be revealed from this sketch, both Hungarian and MJNY use a concord system that can be derived in both languages by the grammaticalisation of personal pronouns. The agreement of nouns, pronouns and verbs in Person and

Number seems to be the area in which the analogous morphological coding of Hungarian in mouthing and MJNY could even co-occur. The following table compares, once again, the main characteristics of Hungarian and MJNY as described in this chapter.

Tab. 3.13:   Main characteristics of MJNY and Hungarian compared

Main characteristics	MJNY	Hungarian
Modality	visual-gestural	auditive-vocal
Morphological typology	synthetic to polysynthetic (very high morpheme-to-sign ratio) strongly fusional	synthetic: high morpheme-per-word ratio mainly agglutinative with some fusional features
Inflectional morphology	non-concatenative	concatenative (affixation)

The table below reviews the main morphological categories.

Tab. 3.14:   *A comparison of the morphological categories: MJNY vs. Hungarian*

	MJNY	Hungarian
Person		
Status	partially morphological	morphological,
Value	1. person, non-1. person	1., 2., 3. person
Realisation	on pronouns through spatial location, on agreement verbs and auxiliaries through movement and/or orientation	on pronouns, nouns, verbs, person-marked adverbs, auxiliaries through Person-Number markers
Number		
Status	morphological	morphological
Value	singular, plural, dual	singular, plural
Realisation	on pronouns, agreement verbs, auxiliaries through movement component	on pronouns, nouns, verbs, person-marked adverbs, auxiliaries through Person-Number and nominal Number markers
Possession		
Status	morphological	morphological
Value	1 possession value	1 possession value
Realisation	on pronouns through POSS morpheme (B handshape)	on nouns, pronouns through possessive marker, personal possessive marker
Case		
Status	n/a	morphological
Value	n/a	18 case values
Realisation	n/a	on nouns, pronouns, person-marked adverbs through Case markers
Class		
Status	morphological (?)	n/a
Value	1 class morpheme (?)	n/a
Realisation	on a subset of verbs of motion and location, nouns through CLASS morpheme (?)	n/a

Finally, an important issue has to be underlined in terms of a spoken language–sign language comparison. As Cormier (2014) points out, basic subsystems of sign languages like pronouns, agreement verbs and classifiers differ in various aspects from spoken languages, although they take the same or similar functions. Concepts and descriptions based on spoken language linguistics are not automatically usable for sign languages. Also, what may be true for many sign languages is not necessarily true for every sign language. As recent research in typology shows, variations also take place among sign languages (Zeshan 2006; Zeshan & Perniss 2008). The present research is aware of the fact that categories and concepts used to describe Hungarian do not always fit MJNY and should not directly be imposed on any empirical analyses. In addition, assumptions have been made for several MJNY phenomena to fill in the gaps coming from the under-documentation of the language. Empirical data will be crucial to help find more evidence for some characteristics of MJNY.

4 Literature Review on language contact and mouthings

4.1 Introduction

This section reviews the literature relating to language contact and mouthings. It serves as the immediate scientific context for the empirical investigations of MJNY mouthings.

To begin with, a short overview of spoken language research is provided, emphasizing the current understanding of mixed spoken languages from a holistic, bilingual perspective. It is followed by the examination of some of the key concepts and models of sign–spoken language contact that have implications for mouthing research. Previous findings concerning the MJNY–Hungarian contact situation are discussed here as well.

The evaluation of studies on mouthings makes up the core part of the literature review. Various approaches to mouthings are discussed, while emphasis is placed especially on those which deal with mouthings from a language contact point of view. Finally, possible applications of holistic, bilingual views for the present study are discussed.

4.2 Bilingualism and language contact research

The study of language contact, with its own theoretical and methodological paradigms, was mainly influenced by the seminal works of Haugen (1953) and Weinreich (1953), both of whom also coined many terms in bilingual language use (interference, code-switching, borrowing etc.).

Following this line of research, the study of spoken language became a much more relevant subject of linguistics than ever before. The diverse topics of language contact studies demonstrate that, in subsequent decades, bilingual language use has been investigated by various disciplines from various perspectives (for an overview, see Gardner-Chloros 2009). The following references are by no means exhaustive, but they exemplify the wide range of research devoted to bilingualism and language contact among spoken languages.

(1) There are studies which are engaged in explaining the structural, linguistic features in the speech of bilinguals (Poplack 1980; Poplack & Sankoff 1984; Muysken 2000; Myers- Scotton & Jake 2001).

(2) Neuro and psycholinguistic studies investigate individual language development, bilingual language production and processing (Paradis & Libben 1987; Fabbro 1999; Clyne 1972; De Bot 1992; Grosjean 2008).

(3) From the perspective of discourse analysis, an examination on how bilinguals mix and switch between languages and varieties in terms of conversational strategies is performed (Auer 1984; Auer 1998).

(4) Sociolinguistic–ethnographic studies analyse the social meaning of different mixing techniques and the function of languages in bilingual communities (Fishman 1965; Blom & Gumperz 1972; Gal 1979; Myers-Scotton 1993).

A range of applied linguistic studies focuses on minority linguistic rights and education in bilingual communities (Skutnabb-Kangas & Phillipson 1994; Cummins 2003).

Although this dissertation deals with the analysis of linguistic phenomena in the first place, the thesis also refers to concepts of other psycholinguistic, conversational and sociolinguistic approaches, as they help in explaining linguistic findings in the broader context of bilingual language use.

In the study of the linguistic outcome of contact situations, a key issue was the alternating use of two or more languages. Different models were proposed to account for language switching or mixing (Poplack 1980; Auer 1998; Muysken 2000; Myers-Scotton & Jake 2001), and there is no general consensus about the definition of these processes.

Research on bilingual code-switching and code-mixing was often dominated by a monolingual tradition in linguistics. It affected the data collection, as well as the framework of interpretation.

Many studies were criticised that had designed methodology under the presupposition that bilinguals have two individual and separate languages. Grosjean wrote extensively on the misleading nature of this fragmental or monolingual view (Grosjean 1989; Grosjean 1992; Grosjean 2008). Instead of seeking two monolinguals in bilinguals, he offers a holistic view according to which bilinguals' language use ought to be treated on their own rights; he emphasises that (spoken) bilinguals are fully competent speaker-hearers whose two languages serve the same functions as the one language in cases of monolinguals (2008: 14).

As Grosjean (2008) describes, the crucial difference lies in that bilinguals use more than one language to meet their communicational and socio-cultural needs so that the languages are in a functional distribution. Therefore, the competency of bilinguals in each separate language is not comparable with monolingual competency in both languages, respectively. This is because, for bilinguals, the two languages make up the whole (2008: 14.). He also emphasises that, in

conducting studies from this perspective, one always has to take the bilingual nature of participants into consideration, e.g. that bilinguals often use a third system that is the combination of the two languages to the extent that is required by the environment (ibid.). In that sense, Grosjean defines bilingualism from a functional perspective, highlighting two key components: the regularity of usage and the sociocultural need to use both languages in a given functional distribution (Grosjean 2008).

> Bilingualism is the regular use of two (or more) languages, and bilinguals are those people who need and use two (or more) languages in their everyday lives (Grosjean 1992: 51).

Assuming the bilingual perspective, Grosjean proposes the model of language mode. It describes the dynamic interaction between the languages of bilingual speakers and signers. According to him, "Language mode is the state of activation of the bilingual's languages and language processing mechanisms at a given point in time" (Grosjean 2008: 39).

His claim is that this activation depends on whether bilinguals are at the monolingual or bilingual end of a continuum, which is also determined by many factors, e.g. context, interlocutor or topic.

In terms of spoken languages, bilinguals code-switch less in monolingual mode. In contrast, bilingual mode is characterised by intensive language interaction. The model also implies that there is a language that governs processing at a given point of time. In bilingual mode, however, it can change often and rapidly.

Grosjean claims that experiments carried out with bilinguals have to count for language mode in order to understand bilingual language production (Grosjean 2008). The model was tested on various data in different languages (Grosjean 1997) and proved of value.

This model was also discussed for sign–spoken situations (Grosjean 2008; Mohr 2012).

The main scientific contribution of the research on language contact situations is the deeper understanding of human language that challenges theories based on the linguistic research of monolinguals. Overall, language contact studies point to one key issue which is of great importance for the present empirical research: rules and models of grammaticality, based on structuralist and generative theories, that were initially developed for monolingual situations, cannot fully capture the highly variable data of bilingual code-mixing (Romaine 1995; Grosjean 2008; Clyne 1987: 744). It is often misleading to force the outcome of language contact into the one or the other linguistic system, assuming that this outcome is the sum

of two separately existing grammar (Gardner-Chloros 2009). In contrast, bilinguals' creativity in language use has often proved that a unique or third system can evolve from intensive language contact (Romaine 1995; Grosjean 2008). Chapter 9 discusses a proposal for mouthings in MJNY in accordance with this bilingual view.

4.3   Language contact in sign-spoken bilingualism

Bilingualism is a pervasive characteristic in most deaf communities (Nadolske & Rosenstock 2007). It contains the use of sign, spoken and written languages with rich code-mixing patterns influenced by the diverse psycho and sociolinguistic background of signers (Ann 2001; Plaza-Pust 2005). As mentioned in Chapter 2, this basic statement holds for MJNY users as well.

Language contact research relating to sign languages tries to capture the linguistic features found in deaf bilinguals and it has already been studied extensively (Lucas 2001a, 2006; Plaza-Pust 2005; Adam 2012; Quinto-Pozos & Adam 2013). Cross-linguistic influence between sign languages is one type of research in this field (Quinto-Pozos 2008; Adam 2012). The other type concerns the interaction between sign and spoken languages. The spoken language can be present as a written system; it can also be any other kind of secondary system that emerged in relation to deaf communities, like finger alphabets and manually coded systems. However, in the context of this thesis, I concentrate on studies conducted in sign–speech contact situations, that is, when a primary signed and a primary spoken linguistic system interact. Further, I simply refer to this field as sign–spoken or cross-modal language contact research.

Linguistic events, in which both spoken and sign languages are used simultaneously, shed light on the complexity and uniqueness of bilingual language use. What makes the analysis of sign–spoken situations challenging is that the languages in interaction come from two distinct modalities: auditory-vocal and visual-gestural (Berent 2006).

Sign-spoken bilingualism includes a number of research areas, most of which have implications for mouthing as well. First, some linguistic and psycholinguistic research is discussed.

One of the studies deals with influences of spoken language in the sign language production of hearing interpreters (e.g. fingerspelling, mouthing or manually coded systems) (Cokely 1983; Davis 1989; Napier 2006; Monschein 2009). Interpreter situations are a specific case of language contact. There is one important question regarding mouthings in this context: is the usage of mouthings

governed by interpreter strategies and, if so, do those strategies have particular features, or are they similar to the mouthing patterns of deaf signers? Both Davis (1989) in ASL and Napier (2006) in Auslan found that native interpreters use similar mouthing patterns as deaf signers. L2 hearing signers who became interpreters, however, showed more mouthings and less mouth gestures than deaf signers (Napier 2006; Monschein 2009).

Another scope of research that has received closer attention more recently focuses on the linguistic and psycholinguistic features in *bimodal bilingualism*. This term, originally used by Emmorey, Borinstein & Thompson (2005), refers to the language production of Codas (hearing children of deaf parents) who are native signers competent in both sign and a spoken language. Studies cover three bigger research topics: language acquisition and mother–child interaction (e.g. Petitto et al. 2001; van den Bogaerde & Baker 2008), language production and code-mixing phenomena (Emmorey et al. 2005, 2008 and 2010) and socio-cultural aspects of Codas, as well as Coda-identity (Bishop & Hicks 2008).

A main issue of research here is the investigation of the unique bimodal language contact called *code-blending* (Emmorey et al. 2005). In a narrower sense, it means the simultaneous language mixing in sign and speech, i.e. speaking and signing at the same time. For Baker and van den Bogaerde (2008), the use of voice is not a necessary criterion; they also include combinations of mouthings in this concept (2008: 6). In that sense, the term has recently been adopted by papers discussing the simultaneous use of signs and mouthings (e.g. Bank et al. 2011, 2013, Johnston et al. 2015).

Results gained by the study of code-blending indicate that both languages (English and ASL) remain active in bilinguals (Emmorey et al. 2008). It was demonstrated that lexical inhibition of the one language has higher psycholinguistic costs than a dual-language selection or co-activation of sign and spoken language (Emmorey et al. 2010). That is the reason why bimodal bilinguals prefer code-blends over code-switches.

As Bishop and Hicks (2008) emphasise, findings on the simultaneous language activation in bimodal communication really points out that there are only biological limits in both mono and bilingual non-signers for simultaneous language use. That is, unimodal monolinguals and bilinguals would also code-blend rather than code-switch if it were possible (2008: 89).

The use of English with an ASL-based structure called Coda talk is another research topic (Lucas & Valli 1992; Bishop & Hicks 2005, 2008). English sentences are produced with ASL word order, while function words are often omitted (2005: 204–210). Additionally, particular pragmatic phenomena which happen in Deaf families and form the experience of Codas are also included. Such

an instance is, for example, deaf voice; the way in which deaf people produce acoustic signals. In sum, this special kind of English use contains all the communication features that Codas naturally acquire in childhood (2008: 91). As the two languages are combined in a very unique way, Bishop and Hicks argue, alongside Romaine (1995), that Coda talk should be treated as a third system on their own right similar to bilingual discourses in which mixing techniques have their own rules (2005: 219).

Yet there is another research currently in its development phase: the investigation of sign-speaking at UCLAN in the UK[6]. In this field of study, natural utterances are examined in which the sign or spoken language is not adjusted to the one another, even though their syntactic and semantic properties remain strongly intact. This can be the case if a signer communicates to both another signer and another hearing non-signer at the same time. As the first findings from Indian Sign Language/Hindi bilinguals indicate, sign-speaking shows frequent semantic and/or syntactic mismatches between the spoken and a signed part of the utterance, while the content still remains the same. Differences in the formal expression of meaning can be expected from the different structures. However, the possible extent of divergence between a signed and spoken utterance has yet to be explored more closely. This issue is also touched upon in the empirical analysis of the MNY-Hungarian data.

There is another main area of sign–spoken language contact research, which directly analyses mouthings. It is centred on the influence of spoken language in deaf communities.

Seminal studies of cross-modal language contact already discussed the presence of language varieties that come to existence through the contact of spoken and sign language (see Woodward 1973; Lee 1982; Cokely 1983 for ASL; Lawson 1981; Deuchar 1984 for BSL).

According to the general observation discussed in these studies, hearing people sign differently than deaf people. Moreover, spoken language can have various degrees of influence on the sign language use of deaf signers. Differences in language use always depend on psycho and sociolinguistic factors (like the formality of the situation, the hearing status of the audience and the language competence of signers etc.).

This influence of the spoken language can be transparent (1) in the use of mouthings and voice, as well as (2) in the visual representation of spoken language (e.g. using artificial systems like Manually Coded English). As Deuchar

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[6] This description refers to an ongoing project without a published paper. For the source of information described here, please see:
http://www.uclan.ac.uk/research/explore/projects/multilingual_behaviours_sign_language_users.php [accessed on 03.12.2015]

(1984) summarises it, the outcome of these communication situations contains various signing varieties including sign language, spoken and signed English and different mixed forms (see Deuchar 1984: 149). Note that this description of the contact situation in deaf communities was not based on a strong empirical fundament.

With their in-depth analysis of language contact, Lucas and Valli (1992) provided empirical evidence for the ASL–English situation. Their elicited data showed that, in addition to ASL, deaf signers used a contact variety between ASL and the strongly English-syntax-based signed English (1992: 63). The use of this variety, which they called *contact signing*, was influenced by sociolinguistic factors, e.g. the hearing status of and the familiarity with the interviewer or the formality of the situation.

With respect to the linguistic features, contact signing is composed of the morphological features of both ASL and signed (visually represented) English. On the one hand, English word order, prefixes, prepositions and finger-spelled English inflectional morphemes were found to have occurred in their data; on the other hand, ASL word order, syntactic use of space, eye gaze, WH-questions and constructed action were also found in these stretches of discourse (1992: 101–102).

In terms of mouthings, they emphasised that ASL uses, if at all, very few, isolated, often reduced mouthings, whereas contact signing typically uses full and continuous mouthings with or without voice (1992: 79).

Lucas and Valli understood their findings in a dynamic framework of bilingual language use. They proposed that the use of contact signing could be seen as resulting from within a language continuum with individual variations (ibd. 105). In some cases, the signing is more close to ASL, while in other cases, it's more close to signed English.
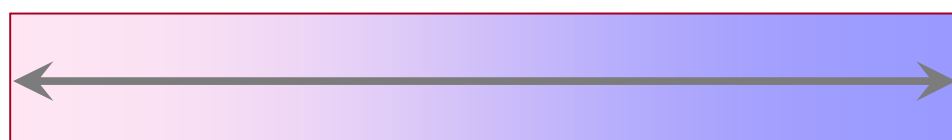
| Sign Language | Contact Signing | Signed Language | Sp. Language |

Figure 4.1: The Sign-Spoken Language contact continuum

It is important to note that they considered contact signing to be a unique third system and not a variety of ASL. The reasons for doing so were (1) the identification of some mixed features that occurred more consistently in their

sample and (2) the mutual intelligibility of the signers during the use of contact signing (1992: 104).

This concept resembles the view of Romaine (1995) and Grosjean (2008), who argued that language mixing in bilinguals can be better explained as a system on their own and not as a mix of two existing languages with their respective rules. However, Berent (2006) argues against this view, stating that it is indeed possible and desirable to define principles that constrain cross-modal language mixing comparable to similar attempts in spoken language research (Poplack 1980; Myers-Scotton 2002; Toribio 2001).

Schermer (1990) reported similar findings in NGT (Sign Language of the Netherlands). In her study, she also described different influences of spoken Dutch and argued for the existence of a contact variety besides the full-fledged NGT. More importantly, she focused on the characteristics of mouthings in this contact situation and found evidence for different types of mouthings. For example, full continuous mouthings usually appeared in utterances which were ruled by spoken Dutch; dominance reduced mouthings were more typical in stretches of discourses with NGT. The implication of these results for this thesis is the sensitivity of mouthings to changes along the language contact continuum (1990:137).

It was already mentioned in Chapter 2 that the sociolinguistic diversity of Hungarian signers follows the general patterns found in Western deaf communities. Thus, similar language contact phenomena can be encountered. Two recent studies looked at the Hungarian–MJNY situation. Szabo (2013) provides a collection of examples for Hungarian influence on the lexicon, morphology and syntax of MJNY. These include (1) the impact of different fingerspelling systems on MJNY in the form of initialised signs, (2) the use of Signed Hungarian morphemes (signed version of spoken Hungarian affixes) and (3) Hungarian word order in MJNY.

Racz (2010a) examines what mouthings can reveal about the degree of spoken influence. The study assumes that the contact situation of the sign and spoken language in Hungary can also be conceived as a continuum. The investigation found preliminary evidence for different mouthing patterns. Similar to the findings of Schermer (1990) and Lucas and Valli (1992), mouthings which showed stronger Hungarian influence on morphological and syntactic levels were accompanied by more Hungarian-based sign structures (2010a: 46).

There is subjective everyday experience of a more Hungarian-governed signing in the deaf community. Different terms are in use to describe the phenomenon, e.g. "jelet magyar" (signed Hungarian) or "jellel kísért magyar" (sign-supported Hungarian). These are also discussed in educational materials for MJNY

interpreters (Lancz 2001:158; Henger & Kovács 2005:16-17). However, the two recent studies cited above emphasise the lack of linguistic evidence behind these terms. They both point out that, due to the lack of documentation, there is confusion about these contact phenomena; an issue which contributes to uncertainty in the term's usage (Racz 2010a: 35; Szabó 2013: 44). To gain more insight into these phenomena, empirical research is definitely needed on the code-mixing patterns of MJNY users, as well as their discourse strategies and the sociolinguistic factors that affect the linguistic outcome.

The studies reported are not meant to give a full account of the research in sign–spoken bilingualism, but indicate some core areas and contact phenomena. They all point to one relevant issue: analysis of spoken bilinguals' speech already challenges our understanding of language. The research in sign–spoken bilingualism demonstrates that the involvement of two modalities can reveal even further mechanisms that cannot be investigated in unimodal bilinguals.

This general conclusion is definitely useful for the present dissertation, which deals with mouthing as an outcome of spoken–sign bilingualism. It hints at the fact that the interaction of two languages and modalities can influence the organisation of linguistic materials in a still widely unexplored way (Mohr 2012). Also, the study of these unique linguistic entities coming from such interactions leads one to discuss the explanatory power of language contact terms and models based on spoken language research and their application for sign-spoken bilingualism. A discussion on some of these questions in relation to mouthings is covered in Chapter 9.

For the present research, another key issue revolves around the dynamic nature of bilingual language production that is influenced by the application of the linguistic strategies of bilinguals to meet their everyday sociocultural needs (Grosjean 2008). As for deaf communities, this dynamic in bilingual language production can be conceived as a sign–spoken continuum. Evidence has shown that mouthings can hint at the different degrees of spoken influence that indicates how singers move on this continuum.

4.4   Mouth actions

It is well-known that sign languages use different articulators when expressing linguistic meaning, such as the hands, face, mouth, upper body etc. More importantly, they use these articulators simultaneously. It basically contrasts them with spoken languages, which most commonly function in a sequential manner.

Although manual components have received the widest attention in sign linguistics so far, there is already a strong body of research available on non-manual components as well. The studies exhaustively discuss their different lexical, grammatical and prosodic functions (Wilbur & Patschke 1998; Sandler & Lillo-Martin 2006; Pfau & Quer 2010). These studies concern facial expressions as part of the lexical description of signs, eye gaze and head movements in verb agreement, as well as head and brow movements as syntactic markers (interrogative and conditional sentence, topic marking and relativisation). Intonational functions and their contribution in syntactic binding are more recently covered in Sze (2008) and Sandler (2012); prosodic features and their link to discursive functions in sign languages are dealt with in Hermann (2010) and Fenlon (2010).

In sum, non-manuals exhibit a variety of linguistic information that forms an integral part of sign language communication and has to be separated from non-manual expressions that have merely affective functions. At the same time, their linguistic status and the relation to gesture is still subject to debate.

Over the last few decades, even less attention was devoted to the mouth as an articulator in sign languages. The question of function and exact status of mouth actions has generated strong and controversial responses in this area (cp. Boyes Braem & Sutton-Spence 2001). Their nature and embeddedness in sign languages is still not fully understood; many questions, especially regarding mouthings, are hitherto disputed (Mohr 2014:50-51).

As mentioned in Chapter 1, there is a general agreement that mouth actions can be split into two main categories: mouth gestures and mouthings (see Boyes Braem & Sutton-Spence 2001; Crasborn et al. 2008; Bank et al. 2011, 2013; Mohr 2014). Mouth gestures are basically treated as inherent elements of a sign language, whereas mouthings are seen as originally derived from the surrounding spoken language (Crasborn 2008 et al.; Bank et al. 2011).

With respect to mouth gestures, Crasborn et al. (2008) provided a fine-grained categorisation in which they distinguish four types. (1) The first type consists of mouth actions with mostly adverbial function. They specify the meaning of verbs in manner and degree (2008: 49). Similarly, they can modify nominal signs giving adjectives meaning (ibid.). These mouth gestures occur productively with signs and are referred to as bound morphemes.

(2) Semantically speaking, empty mouth gestures do not have additional meaning. They rather reflect or echo the motoric structure of manual signs (Crasborn et al. 2008:49). In the terminology of Woll (2001) and Woll (2009), they are analysed as echo phonology (the mouth follows, i.e. echoes, the closing and opening movements of signs). More recently, Wallin (2013) provided such an analysis on

Swedish Sign Language, showing different temporal alignment patterns of signs and mouth gestures.

(3) Enacting mouth gestures performs a real action like chewing or shouting (Crasborn et al. 2008: 50). Finally, (4) the mouth can function as an active part of the whole-face activity, like in affective facial expressions (ibid.).

Johnston et al. (2015) used a similar categorisation for their study of Auslan mouthing actions. In some cases, they distinguished between further types, e.g. among the Whole-face activity (called W-Type in Crasborn et al. 2008). They used spontaneous W-type if the mouth gestures were involuntary expressions of mental states, e.g. amusement or concern (ibid. 8). The editoral W-type was used for mouthing gestures that show a meta-linguistic comment on the signed utterance, e.g. disapproval of a statement expressed by curled lips, furrowed eyebrows etc. Congruent W-types were those which did not add meaning but simply matched the signed content, eg. a person looks happy (slight smile) while signing HAPPY. If there was an adverbial expressive facial activity (e.g. enjoyment together with the sign DANCE), of which the mouth was a part, the authors labelled it as *adverbial expressive* W-type. They were distinguished from other adverbial mouth gestures in which the adverbial expression was restricted to the mouth. In the Auslan study, W-type mouth actions in constructed actions were also categorised separately (2015: 9).

This fine-grained categorisation is here to show that mouth gestures have been recently studied in more detail. In conclusion, mouth gestures carry independent meaning in some cases and can be bound to lexical signs, while in other cases, they are rather linked to motoric constraints in sign production or affective functions. They can play a role as prosodic features of sign languages, e.g. spreading over manual signs (Crasborn 2008; Bank et al. 2011; 2013).

Both the study of Crasborn et al. (2008), as well as that of Johnston et al. (2015) adhere only one separate category to mouthings, indicating that it is clearly a separate subject. In the following, the focus of this dissertation, mouthings, is more extensively discussed.

As Bank et al. 2011 put it, "Mouthings are silently mouthed instances of (parts of) spoken words and they are assumed to have the same meaning as their voiced spoken language counterparts" (2011: 149). They also provide a further typology of mouthings based on their data on NGT. (1) Standard mouthings (reduced or full form) occur most frequently with manual signs and have the same meaning as those signs. (2) Mouthing variants are those that differ from standard mouthings. (3) In overlapping cases, mouthings are not accompanied by the related signs, but rather by their neighbours (2011:256).

4.5 Approaches to mouthings in sign languages: theories and findings

In Section 4.3, studies investigating cross-modal language contact were introduced. The common subject of these studies included the different types of linguistic phenomena that emerge through bilingual interaction. These articles discuss mouthings as one type of language contact.

There is another set of studies that focuses primarily on mouthings. They discuss them not in the context of typical bilingual interactions (e.g. interpreting, communication of Codas and deaf–hearing interaction), but rather as phenomena in the sign languages of deaf communities.

A main issue in these papers is the status of mouthings in sign languages. In other words, do they belong to the sign language system or are they rather code-mixing patterns emerging from bilingual interactions similar to those in the studies mentioned above?

As portrayed in this section, those papers show a high degree of controversy, as they provide different viewpoints on the status and nature of mouthings. Opinions differ regarding whether mouthings are a part of sign languages or cross-modal code-mixing phenomena. Bank et al. (2011) and Mohr (2014) suggest placing these approaches on a continuum in terms of how they evaluate the status of mouthings.

The idea of the continuum has already been outlined in previous language contact studies. The different types of mouthings are associated with a cross-modal language contact continuum. Some mouthings are more established in a sign language, while others are shown to have strong spoken language influence (Davis 1989; Lucas & Valli 1992; Schermer 1990).

This continuum seems to be a useful model to discuss mouthing-related questions. Thus, based on Racz (2011) and Racz-Engelhardt (2013), I also use it in this discussion to specify different approaches and current findings.

4.5.1 A semiotic model of sign languages

A unique attempt to explain mouthings in sign languages is represented by Ebbinghaus & Heßmann (1990; 1994; 1995; 1998; 2001). Working on DGS, they don't define the relationship of signs and mouthings in a language contact framework; they rather propose a model for a distinct sign language system.

In this model, there are two types of symbols: signs and words. The authors state that using DGS means the use of DGS signs and German words. German words contribute mainly to the understanding of the message. The two symbols interact and mutually contextualise each other in the process of meaning construction.

(1990: 65; 1994: 484). They form an interdependent relationship. Signs usually contribute to the system with their visual representation force, whereas words contribute with their denotative character (1995: 60).

Although Ebbinghaus and Heßmann consequently refer to mouthings as words in these papers, they acknowledge that signers don't simply use speech. In this semiotic system, words also have a unique quality. These words often show lack of morpho-syntactic features and are produced without voice. Although they have their root in German, these instances become a distinctive class of meaning units that do not have a comparable analogue in spoken languages (1990: 67–68).

From this point of view, the authors reject the notions of language contact in describing the phenomenon of mouthings. Code-mixing, which also borrows other linguistic terms, they claim, are not appropriate when speaking about a sign language system (2001: 138–139).

They also explain several structural characteristics of mouthings through the functionality and intelligibility of communication. If a sign in a given context is understandable for the partner, full mouthings are often replaced by a shortened reduced form. In other stretches of discourse, full or continuous mouthings can be necessary. Core features of mouthings, like being dynamic, unpredictable and having individual variations, therefore, can be explained by the dynamic nature of context that requires an actual adaptation of mouthings (1995: 55–57).

Ebbinghaus and Heßmann assume that deaf signers are exposed to both sign and spoken language. Their bilingual competency is always present in sign language production. Their ability to understand mouthings comes from lip-reading, to which all sign language users are exposed and all even master (1998: 443–444).

This approach cannot be directly conceived as a model based on the language contact continuum. Mouthings, regardless of different forms and functions, are an essential part of a sign language. Ebbinghaus (2012) points out that this semiotic system is an example of dual-representation language in which arbitrary signs (mouthings) co-exist with iconic signs primarily produced by manual and non-manual elements (Ebbinghaus 2012: 242).

Intriguing details of a perception mechanism underlying this semiotic system are not addressed by the authors and would need further research. The question that needs more attention is whether spoken language competence is always necessary in sign language use. A critique against this approach concerns foreign signers and children with little or no knowledge of a given spoken language. As other authors point out, these groups may rather interpret mouthings as they do mouth gestures and still learn their common use in that sign language (Vogd-Svendsen 2001; Keller 2001).

Also, the authors focus on the lexical-semantic functions of mouthings in the first place. Grammatical or prosodic features of mouthings are no direct concerns of this model. As discussed below, studies in a language contact framework can definitely elaborate on such features of mouthings.

4.5.2 Mouthings as performance phenomena

From a Chomskyan point of view, Hohenberger and Happ (2001) claim that mouthings are not embedded into the sign language structure and competence; they are merely phenomena of language performance.

According to their explanation, mouthings obviously emerge through language contact with spoken languages due to oral education and the usually high prestige of spoken language. However, they disagree with the statement of Ebbinghaus and Heßmann (2001), arguing that (in their case) German mouthings have not become part of the DGS system.

With their data, Hohenberger and Happ demonstrate that mouthings are not obligatory; they are highly context-dependent and mainly serve lexical denotation functions. They are also associated with nouns rather than verbs and other functional categories of DGS (2001: 164–165).

According to their data, DGS mouthings are, if there are any, rather sign-governed. If, for example, mouthings appear on a verb, they will not be inflected in terms of German, but underlie sign language morphology (2001: 160). They provide a list of examples for the grammatical and prosodic adaptation of mouthings in DGS. For example, mouthings can echo iterative aspectual modulation matched with the production of signs; they can also follow the prosodic structure by spreading over signs.

At the same time, the authors argue that mouthings still remain a kind of second code in sign language production and do not influence the abstract language competence. Also, they support the view that the extended use of mouthings becomes noticeable when signers produce contact signing. In this case, when spoken language influence is more dominant, different forms of code-mixing occur.

From a language contact point of view, this approach is partially in line with the findings of Lucas & Valli (1992) or Schermer (1990). Mouthings basically characterise a sign–spoken contact variety with higher spoken influence. In this context, they can be seen as code-mixing phenomena. However, the authors represent a very strict view by separating contact situations from DGS.

4.5.3 Kinematic approach

Keller (1998, 2001) provides yet another perspective on mouthings. For him, they form an integral part of sign languages, although not in the sense of Ebbinghaus and Heßmann (2001), but rather as sets of visual segments (kinemes). He places emphasis on the fact that mouthings are perceived visually, not auditory, by deaf signers and primarily produced without voice. He states that mouthings are not phonetic-phonemic in nature. On the contrary, they show similarities with mouth gestures that are known to have no correspondence with spoken languages.

As Keller points out, mouthings in terms of spoken language units do not appear to be obligatory, systematic and predictable. Regarding forms and functions, they rather seem to be much more occasional and individual. According to Keller, the lack of regularity in mouthing patterns comes from their phonemic-morphemic-segmentation, which he regards as a methodological pitfall in annotation (2001: 202).

Opposite to this tradition of annotation, he argues for a visual segmentation of all mouth actions, which could shed light on regularities and the common nature of mouthings and mouth gestures.

Keller applies his theory only to a pure sign language representation model. He focuses only on early pre-lingual deaf signers of deaf parents who have theoretically minimal contact with a spoken language early in life. In their case, he assumes, signs, along with any kind of mouth activity, are perceived as unimodal-visual triggers (2001: 225). This common visual ground may also be the reason why mouth gestures can often replace mouthings.

Keller hypothesises that, later in life, spoken language can have an impact on deaf signers' perception of mouthings. He admits that they can be interpreted as contact phenomena, like code-mixing or loan words. But from his perspective, code-mixing rather applies to the situation of late-learners, as is this case with mouthings that are more strongly influenced by speech. These phenomena, however, are not subjects of Keller's analysis.

In sum, Keller (2001) clearly separates mouthings occurring in the context of bilingual language production from those which form part of a pure sign language system. An analysis of mouthings in connection with spoken words would only be valid in the former. In this regard, the approach resembles Hohenberger & Happ (2001), who also assume a type of contact signing with code-mixings and a distinct sign language vernacular of deaf signers without spoken influence in mouthings.

In contrast to the previous two approaches, there is some empirical evidence in favour of a kinematic approach. Bergmann & Wallin (2001) provide a first kinematic analysis on Swedish Sign Language using a limited set of visual units

for both mouthings and mouth gestures. They found some preliminary evidence that these two types of mouth actions tend to show similar forms. With their words, mouthing occurrences were adapted to the native patterns with which they referred to features typical for the spoken language-independent mouth gestures (2001: 61).

More recently, Udoff and Nip (2013) demonstrated a kinematic analysis on ASL mouthing reductions. Their overall findings indicate that native signers represent mouthings separated from speech. Also, they suggest that, in their terminology, co-sign mouthings could be modelled based on motoric coordination patterns.

4.5.4   Language contact approach

The majority of studies on mouthings examine them as borrowings or loans from spoken languages adapted to their respective sign languages. It was reported about numerous sign languages that these mouthings reveal considerably different attributes than those found in contact situations. They don't correspond to the spoken language syntax and morphology; rather, they show distinct visual structures and gain other functions in sign languages.

4.5.4.1 Formal characteristics of mouthings

Common forms of the adaptation of mouthings to sign languages are the formal reduction and modification of the visual properties of spoken words. In most of the sign languages, a large amount of occurrences show similarities to visual forms of words, but they typically don't show the grammatical properties of the spoken language, like inflection. The most frequently used word classes, nouns and verbs, are preferred to be used in their uninflected citation forms (Hohenberger & Happ 2001: 159; Zeshan 2000: 173; Boyes Braem 2001: 124; Pimiä 1990: 117). These unmarked forms only convey lexical meaning. Grammatical meaning of the spoken language can no longer be detected on mouthings.

Studies report on certain frozen forms that come along in an established combination with manual signs. Examples are 'have' for the ASL sign HAVE (Davis 1989: 96), or 'ferdig for' for the Norwegian sign FERDIG (Vogt-Svendsen 1983: 86). These mouthing instances usually appear in a single, frozen form so that they would be considered as ungrammatical in spoken language. In their respective sign languages, these forms gained their own status in combination with manual signs. Mouthings can differ from the original spoken words in terms of word class. For example, mouthed verbs or past participle forms are often used as particles for marking perfect like 'fi(ni)sh' with the sign FINISH in ASL, or 'gewesen' with the sign GEWESEN in DGS (Rathmann 2005: 261–262). Another

example is the frozen form 'soc' in IPSL, which applies to both the Hindi/Urdu noun for *thought* and the verb stem *think* of the verb *socnaa* (to think) (Zeshan 2001). In contrast to the original spoken word, with which different word forms distinguish between the nominal and verbal functions, the corresponding mouthing 'soc' can be used in both nominal and verbal meaning in IPSL (Zeshan 2001: 262).

This shift in mouthings from spoken to sign language elements is more transparent in mouthings which are governed by sign inflectional morphology. Such a case is the reduplication in exhaustive plural or iterative aspect. The repeated movement of manual verbs (e.g. EAT EAT EAT) is echoed in the mouth ('eat eat eat') instead of being inflected for person or number like spoken verbs are (Vogt-Svendsen 2001: 28; Zeshan 2001: 263).

These examples demonstrate that mouthings underlie structural changes when being borrowed in sign languages. With respect to form, they can clearly be distinguished from mouthings in typical code-mixing situations (e.g. the signing of late deaf signers and hearing L2 learners). Those usually keep the different formal characteristics of the spoken language, mirroring the spoken morphological properties.

Schroeder (1983) already mentioned that late signers, just like hearing L2 learners, pronounce spoken words relatively clearly so that it borders on speaking. Morphological properties of the words are often pronounced. The use of voice-like whispering is also a common feature (1983: 198). Also, in a more spoken-oriented stretch of discourse, mouthings can occur without manual signs, filling lexical gaps (Schermer 1990, Boyes Braem 2001). Schermer stated that discourses, in which such mouthings occurred in her NGT data, often indicated spoken language-regulated syntax that is typical for a contact variety (1990: 122).

Similarly, Sutton-Spence (2007) showed examples of English functional words in mouthings (e.g. 'a lot of people' or 'from Bristol') which were used most often by signers from hearing families. According to her interpretation, they should be treated as instances of code-mixing, rather than borrowing that is already adapted to BSL (2007:155).

Boyes Braem's (2001) found that, for Swiss German Sign Language (DSGS), mouthings with spoken inflections, for example, are more typical in late than in early signers, whereas early signers show reduced much stronger reduction in mouthings (2001: 104-105).

In conclusion, the studies mentioned here do not separate an intact sign language from a contact variety per se. Nevertheless, their examples also suggest that mouthings in a sign language vernacular of deaf signers differ from mouthings that can be understood as bilingual code-mixing phenomena.

4.5.4.2 Influence on the sign language lexicon

The role of mouthings is quite obvious on the lexical level. Studies from various sign languages report that mouthings are bound to lexical signs. The most frequent type of mouthings is those which are semantically redundant, that is, have the same meaning as the co-occurring manual signs (Schermer 1990; Boyes Braem 2001; Bank et al. 2011; Mohr 2014).

Another type of mouthing adds meaning to signs; these mouthings can disambiguate or specify manual items (Schermer 1990; Boyes Braem 2001; Rainò 2001; Langer et al. 2002; Bank et al. 2011; Mohr 2014). This function is also paralleled with the disambiguating role of fingerspelling in ASL (Boyes Braem 2001; Nadolske and Rosenstock 2007). Vogt-Svendsen (2001) even considers this disambiguation in meaning in NSL as a phonological characteristic, looking at mouthings as meaningless visual phonemes which fulfil the function of minimal pairs. However, this view was not put forward by other researchers.

The lexical function may also be subject to cross-linguistic variation. Although it was observed in many European sign languages, the multilingual settings of Indo-Pakistani Sign Language shows that if a sign language is exposed to more than one spoken language, (here IPSL with English, Hindi and Urdu), the specification of meaning through mouthing is not really common (Zeshan 2001: 266).

In the literature, the question was raised regarding whether mouthings are perceived as part of the lexical signs or rather as separate spoken elements. As already mentioned, a kinematic approach (Keller 2001; Udoff & Nipp 2013) treats mouthings as visual units and not as spoken words. However, two current studies on lexical storage support the view that mouthings operate as a separate code.

Capek and colleagues (2008) found that signs with mouthings are perceived in the brain similarly to when deaf people use speech-reading. These differed from signs without mouthings, or signs with mouth gestures. Hence, mouthings appear to function as speech-like activity, but other mouth actions unrelated to spoken language like echo phonology (Woll 2001) seem to be coded as other non-manual elements of sign language (ibid. 2008).

Using picture naming and translation tests, Vinson et al. (2010) also found evidence that lexical signs with mouthings may be processed as two languages at the same time. They concluded that mouthings are not stored together with the sign lexical items; they might rather be processed similar to spoken words.

These findings imply that the mouth, as an articulator in sign languages, has a double character: depending on whether its use is related to the spoken language or not, it functions as a spoken or signed element.

The conclusion of these two studies converges with the results of Bank et al. (2011), who report from a larger corpus-based analysis on lexically bound

mouthings in NGT. Their results show that mouthings are omnipresent in the corpus and frequently accompany common signs. Those seem to be established parts of lexical signs. At the same time, occurrences were not proven to be highly systematic, which the authors assumed would be the case if they were all established parts of signs (2011: 265–266). Hence, they maintain the assumption that mouthings could rather be instances of code-blending, that is, the simultaneous mixing of spoken and sign language as described in bimodal bilinguals (e.g. Emmorey et al. 2008).

In sum, mouthings are known to have lexical functions in various sign languages and, as such, they often systematically included in dictionaries (Schermer 1990; Rainò 2001). At the same time, their status is debated. As more recent studies indicate, they are stored in the brain as spoken words. Also, in the light of the NGT larger corpus analysis, they do not occur with the consistency that is expected from a fully integrated sign element. Therefore, the integration of mouthings as part of lexical signs remains controversial. There is certainly a need for more spontaneous language material for any further evaluation of this issue.

4.5.4.3 Morphological properties

Mouthings also contribute to the morphology of sign languages. Boyes Braem (2001) discusses mouthings in DSGS as being a highly productive source for new lexical items and can drive derivational processes (2001:126). This was also observed in other sign languages. For instance, signed verbs can be accompanied by mouthings, which results in nominal lexical items (Boyes Braem 2001; Nadolske & Rosenstock 2007; Bank et al. 2011).

Another example is the supplementary combination of signs and mouthings. Noun signs are often combined with mouthed adjectives or adverbials. Vogt-Svendsen (2001) shows the example of what she calls compound signs. For example, the NSL sign AREA, accompanied by the mouthing 'white', has the meaning *white area* when put together (2001:22). Vogt-Svendsen (2001) and Crasborn et al. (2008) consider mouthings in these cases as bound morphemes in sign languages since the mouth carries independent meaning that modifies the signs.

Boyes-Braem (2001) describes possessive noun phrases in DSGS in which the possessor is signed and the possessed object is mouthed. She gives the example of the sign MEIN and the mouthing 'vater', resulting in the meaning of *mein Vater* (my father) (2001:113).

Sutton-Spence (2007) mentions similar functions of mouthings in data from BSL. The verb TURN-OVER occurs with the nominal mouthing 'boat', or the noun FINGER occurs with 'bite'. They show that verbs and nouns can make up verbal phrases together (2007:158).

4.5.4.4 Prosodic features

The duration of mouthings usually exhibits a high degree of temporal coordination with manual signs. It also holds for occurrences that spread over two or more signs. The spreading of mouthings was found in several sign languages and discussed as a prosodic feature (Sandler 1999; Boyes Braem 2001; Crasborn et al. 2008; Bank et al. 2013; Mohr 2014).

The investigation of three European Sign Languages (SSL, BSL and NGT), conducted by Crasborn et al. (2008), showed that mouthing occurrences usually spread in a similar way to frequently used mouth gestures (2008: 57).

Mouthings are most often spread over one neighbouring sign. Although they found language-specific patterns for the direction of spreading (leftward or rightward), the common feature was the rightward (or progressive) spreading (2008:64-65).

The source sign of the spreading items usually belonged to the core lexicon, whereas the target sign concerns the productive or more gestural part of the lexicon. In terms of word classes, the dominant direction of spreading moved from content words (open class items) towards function words (closed class items), especially for SSL (ibid. 63).

They also found evidence that mouthings bind morphological and syntactic domains (e.g. lexemes with clitics, noun phrases and verbs with objects) (ibid. 61). These findings show similarities with the DSGS examples of Boyes Braem (2001).

In conclusion, Crasborn et al. (2008) opposed the view that mouthings were an online code-mixing with spoken language and argued that they rather function as linguistic elements within the structure of sign language (2008: 64).

A more recent study by Bank et al. (2013) provides even more detailed insight into the prosodic features of mouthings. In contrast to the study from Crasborn et al. (2008), which focused only on two signers per language, they have the advantage of analysing a much larger dataset of the NGT corpus.

They investigated 810 mouthing instances spreading over more than one sign produced by 46 signers. They found that the phenomenon of spreading occurs in a considerably large part of the corpus produced by most of the signers. The direction of spreading showed a predominantly rightwards movement (94 % of the data). The scope typically affected one or two neighbouring signs (2013: 8–9). In addition, the authors also emphasise that leftward movement and spreading over multiple signs was not an idiosyncratic phenomenon either (ibid. 12).

They also point out the relevance of individual differences. Spreading features seemed to be strongly signer-bound; they have not found any correlation with factors like gender age and region. Moreover, the available information about

deafness in the immediate family of signers could not be seen in relation with spreading patterns either (ibid. 13).

Similar to Crasborn et al. (2008), the data indicated a "content word to function word" spreading. It was exemplified by lexical signs followed by pointing signs. Interestingly, the examination of the exact length of spreading (in milliseconds and in terms of syllables) provided further evidence that the reason for spreading is much more than incidents of motoric planning of different articulators, even if motoric constraints influence these processes. Together with the findings of Sandler (1999) on ISL (Israeli Sign Language), they propose that spreading seems to demarcate short prosodic domains, binding morphosyntactically relevant sign combinations(2013:13).

4.5.4.5 Stylistic and discourse functions

Boyes Braem (2001) discusses further discursive and stylistic functions of mouthings. She notes that early signers regularly use mouthings in DGS while establishing and later re-introducing referents. In these sequences of nominal signs and pointing signs, the nominal element co-occurs with more clearly articulated mouthings throughout a discourse. She argues that the redundancy of mouthings in these cases could also be explained by a referential function (2001:114).

An example for stylistic use is "constructed speaking". In this case, signers can draw attention to non-signer hearing persons in a story by using mouthings that show strong spoken language influence similar to the language use of late signers. These mouthings include morphological properties of spoken words and the production of functional words (2001:117-118).

4.5.4.6 Spoken inflections in mouthings

Mouthings with spoken inflections are the subject of this dissertation. Hence, it is important to mention some relevant data from other sign languages in this regard.

As previously outlined, if mouthings are borrowed from spoken languages, they usually show the citation form of the corresponding words or become reduced in morphological features. Thus, spoken inflections are not expected to show up frequently in sign language mouthings. Pimiä (1990), for example, reports that, in Finnish Sign Language, mouthings mostly remain uninflected despite the inflectional characteristics of Finnish (1990: 117). Similarly, Hohenberger and Happ (2001) report that spoken inflections in DGS don't come along with mouthed verbs (2001: 160). Such influence is rather typical for bilingual discourses, like in the use of contact signing. Emmorey et la. (2008) and Baker & van den Bogaerde (2008) found that, for ASL and NGT respectively, hearing

signers in bilingual discourses indeed produce such instances. Sutton-Spence (2007) also discusses examples of English morphological markers as code-mixing produced primarily by signers from hearing families (2007:155).

In contrast, Zeshan (2001) found for IPSL that more a extensive use of mouthings, including inflections for gender, person, number or tense, can occur with IPSL grammar; these are rather exceptions though (2001:253).

Akin to Zeshan, Mohr (2012, 2014) also discusses spoken inflections in Irish Sign Language as one of many types of mouthings found in ISL. She provides examples of tense marking on verbs and plural marking on nouns. Based on Emmorey et al. (2008) and Baker & van den Bogaerde (2008), she argues that spoken inflections in ISL can co-occur with sign structures, indicating congruent morphological marking, e.g. the same temporal reference or pluralisation as in the mouthing. She draws attention to the fact that the examples of semantic and morphological congruence appeared in ISL in a rather monolingual sign language setting and not in bilingual discourses (2014: 76).

Bank et al. (2011) mention spoken inflections in the NGT corpus in the explanation of the temporal reductions of mouthings. Infinitive suffixes (/-en/) in mouthings can be replaced by inflected forms for first, second or third person, e.g. 'zegen' ("to say") reduced to 'zeg' ("say") or 'zegt' ("says"). The final consonants in these cases are usually not clearly visible (2011: 264). Similarly, the sign CAN frequently co-occurs with Dutch mouthings, indicating formal or informal second person marking: 'kan' or 'kunt' (ibid.).

Although the authors did not focus on grammatical context, they assume it would provide more evidence for the bilingual activation of NGT and Dutch if the alignment of spoken inflections with the morphological properties of NGT were further investigated (2011: 264).

Boyes Braem (2001) also suggests that this type of morphological combination of sign and spoken language is worthy of detailed analysis in DSGS. Referring to Poplack & Meechan (1998), she suggests an investigation of conflict sites (the same functions in two languages with respectively different markings) (2001:124). According to her, it would reveal more about the status of mouthings being borrowings in some cases, or rather instances, of code-mixing (code-switching in her terminology). For example, rare mouthings that show spoken inflections and occur rather rarely would apply for code-switching, while mouthings could be categorised as borrowings if they were more consistent and inflected according to the sign language morphology (like in accordance with sign iteration) (ibid. 125).

To sum up, spoken inflections in sign language production were reported in several sign languages. Usually, they are associated with code-mixing and

bilingual discourse rather than borrowings in a sign language. Nevertheless, there are documented cases in ISL, NGT, IPSL and DSGS for this phenomenon. More importantly, these limited findings indicate the possibility that spoken inflections can also co-occur with inflected verbs and nouns of the respective sign language, resulting in both semantic and morphological congruence. At the same time, it is safe to say that such grammatical congruence is very atypical in sign languages. Therefore, it is intriguing to look at MJNY-data, examining not only the mouthing forms with inflections, but also the grammatical structure of MJNY utterances.

4.6   Summary

This chapter reviewed the literature on language contact and mouthings and examined some issues which are relevant for the present empirical research.

First, it was pointed out that bilinguals are characterised by a rich set of mixing patterns, in which the languages cannot always be analysed as being clearly separated from each other. The outcome is often hard to define in terms of established linguistic systems (Grosjean 2008: 10; Clyne 1987: 744; Gardner-Chloros 2009).

Next, it was discussed that the simultaneous use of articulators and the distinct modalities allow sign languages to incorporate elements of spoken languages, resulting in code-mixing that is undocumented in spoken languages.

Furthermore, the chapter focused on studies on mouthings and portrayed different approaches.

It is important to point out again that these studies differ considerably with regards to theoretical views and are often hardly comparable with each other in terms of research methods and the source of data they analyse.

The special semiotic model of Ebbinghaus and Heßmann (2001) argues that sign languages are based on the mutual contextualisation of mouthings and manual signs; it thus assumes a bilingual representation underlying sign language production. This view highlights the lexical functions of mouthings. This approach does not deal with the investigation of grammatical, prosodic or discourse contexts.

Hohenberger and Happ (2001) provide examples of different forms and functions of mouthings, but refuse to analyse them in the context of a sign language system (in her case DGS) and assign them exclusively to language performance.

Keller (2001) proposes a visual model for mouthings, stating that they should not be analysed in terms of phonemic-morphemic units of the spoken language, but rather together with mouth gestures as visual-kinematic units. He assigns spoken

influence to contact situations and does not address this question in a pure sign language context.

Most of the studies concerning a variety of sign languages address mouthings in a language contact framework and point to their functionality on different levels. They take the bilingual context of sign language users into consideration and more or less acknowledge the continuum of mouthings from instances of intensive code-mixing to more established borrowings (Boyes Braem 2001).

These studies provide a wide range of evidence that mouthing occurrences can be adapted to sign languages in terms of borrowing. They are often reduced in form and not regulated by the grammar of the respective spoken language; rather, they echo the structural characteristics of the host sign language to which they adapted.

As for linguistic functions, mouthings are mainly lexically bound to manual signs and, in some cases, with semantically relevant meaning specification. They contribute to the derivation of new lexical items, take part in phrasal constructions and syntactic binding and show discursive and stylistic functions. All these findings point to the fact that mouthings are an integral part of many sign languages (Mohr 2014).

On the other hand, however, the huge individual variation of mouthing forms (the lack of their consistent, predictable occurrence), together with some neurolinguistic data, suggest that that mouthings function as separate codes in sign languages.

From all the studies that focus on various aspects of mouthings and language contact, a basic working assumption can be derived for the present thesis. On the theoretical continuum of sign–spoken language contact, there are at least two types of mouthings: (1) the one with citation forms or frequent temporal reduction. This is associated with the sign language vernacular used in deaf communities. (2) The other type is a rather continuous mouthing, possibly with spoken morphsyntax and functional elements. This is associated with bilingual hearing–deaf interaction, late signers and hearing signers. Terms like code-mixing and code-blending are usually used in this case.

As Schermer summarises her results on NGT, deaf signers command different sign modes which come along with different mouthing patterns. It's not so much the frequency as it is the type of mouthing in a given stretch of discourse that can reveal switches between a sign language-ruled and a more spoken-language-influenced signing. (1990:137).

In this thesis, I investigate mouthings in MJNY in a language contact framework. I adopt a holistic, bilingual perspective (Grosjean 2008) and aim to understand mouthings with inflections as specific patterns of cross-modal language contact. Therefore, following the empirical analysis, chapters 8 and 9 revisit the theoretical

questions discussed above. One important task here will be to re-examine the appropriate language contact terms for mouthings. Another core discussion is devoted to the 2-type mouthing assumption, or, in other words, a fine-cut analysis of sign language mouthings vs. bilingual code-mixings in the context of a holistic, bilingual view of language contact.

Part II. Methodology

5 Data collection and annotation

5.1 Introduction

This chapter leads the reader through the steps of the construction of a small-scale corpus which was used to establish a data set for linguistic analysis. First, the rationale for the use of a corpus-based approach is given. Afterwards, the general methodological issues of corpus linguistics and some specific features of sign language corpora are discussed.

Then, I turn to data collection, which explains the choice of the language material and describes the informants' background and the video recording settings, as well as the process of obtaining the video data, for the doctoral research.

Particular emphasis is placed on the annotation procedure. After discussing reasons for a bottom-up approach and the usage of the annotation tool iLex, I focus on tier construction and annotation conventions for utterance segmentation, MJNY signs and mouthing.

5.2 A corpus-based approach

The primary aim of this research project was to provide empirical evidence for Hungarian inflections in MJNY mouthings, as previously observed. Such an investigation has never before been carried out for MJNY and it has not been the focus of research in other sign languages either.

In order to examine the patterns of surface forms in bilingual utterances involving a sign and a spoken language, it made sense to choose a corpus-based approach. Biber, Conrad & Reppen (1998:4) define four basic characteristics of a corpus-based study: (1) "it is empirical, analysing the actual patterns of use in natural texts"; (2) "it utilizes a large and principled collection of natural texts known as a "corpus" as the basis for analysis"; (3)"it makes extensive use of computers for analysis[…]"; and (4) "it depends on both quantitative and qualitative analytical techniques". Let us briefly discuss how these attributes of corpus-based research suit and can be advantageous for the present study.

The first issue is the empirical nature and the authenticity of that piece of the language which was recorded and used for linguistic analysis. This aspect was highly important for my study. In the bilingual deaf community, MJNY co-exists with spoken Hungarian. This situation results in various ways of mixing the two

languages. My intention was to collect data from sign language-dominated discourses with possibly less spoken language influence. It seemed to be the only way to find evidence for the interaction between Hungarian and MJNY on a grammatical level which cannot adhere to the phenomenon of contact signing (see the chapter on literature review). This attempt, of course, does not intend to treat MJNY as a totally independent linguistic system in a social vacuum without any influence from Hungarian. The goal was rather to base this research on linguistic data that comes from a type of sign language use that can be labelled as typical MJNY among deaf signers, even if it is not possible at this point to define the degree to which Hungarian features are acceptable in this linguistic system.

Also, mouthing use is known to be a very subtle, dynamic phenomenon which seems to react sensitively to changes in language activation; that is, more spoken language dominance leads to more spoken language-like mouthings (cp. Lucas & Valli 1992). It makes it difficult to study mouthings with any intuition-based linguistic approach: currently, there is no clear evidence for usual or acceptable mouthing patterns in grammatical MJNY utterances.

McEnery, Xiao & Tono (2010) highlight the use of natural language material as a great advantage of the corpus-based approach. It provides evidence of utterances which users believed to be acceptable in their language. In that sense, such a language production is free of overt judgement (2010:6). The section on data collection explains how the project sought to meet this authenticity criterion.

The second characteristic is the large size and principled collection of texts. This aspect is strongly linked to the question of representativeness. As McEnery Xiao & Tono (2010) describe, corpus-based studies differ in that respect. Large-scale corpora, like the British National Corpus, are called general or balanced corpora. They seek documentation of a given language without specific research questions and are representative of the whole language. In order to meet the criterion of representativeness, they have to follow very strict sampling mechanisms which, in turn, provide a balanced data set. More specialised corpora are only representative of a variety, or a given domain, of the languages under study (2010: 15).

Finally, there are a great number of studies which use a corpus as a repository of examples. They do not go for total accountability as much as they perform different data selections. Those lead to texts which are linked to their specific research questions and can be candidates for in-depth qualitative analyses combined with some basic frequency analyses. Any significant pattern found is only representative of that given corpus and is very limited in generalisations about the phenomenon for the language as a whole. However, through qualitative analyses of a great number of examples, the evidence can contribute to an already present understanding of the subject matter as used, for example, in discourse

analysis (McEnery & Hardie 2012:18). Also, such corpus-based studies serve as the first step towards more comprehensive research. This thesis positions itself in the third group. I use a small-scale corpus and mainly qualitative analyses in order to gain a first insight into mouthing patterns in MJNY using specific research questions. The influence of such research on data collection and annotation, as well as on the analysis, is discussed in the respective sections.

Another aspect of principled data selection concerns the relation of corpus data to linguistic theories. Tognini-Bonelli (2001) distinguishes between corpus-based and corpus-driven research. The former uses already existing theoretical models and other linguistic resources as well and tests them on the corpus. It allows a partially top-down approach. In fact, such an approach can influence the selection of analysed data from the corpus on which conclusions will eventually be made. An idealistic corpus-driven study uses merely the balanced corpus-data to derive any theoretical implications; it follows a bottom-up approach in terms of theory construction. However, as McEnery Xiao & Tono (2010) point out, both approaches have their own filtering mechanisms and a full exclusion of any preconceived knowledge is virtually impossible to achieve (2010:9).

This doctoral research is also based on observational data, as well as previous studies, and stands much closer to a corpus-based account in the sense of Tognini-Bonelli. Nevertheless, it aims to use the corpus data as an empirical foundation for possible theoretical implications and the further testing of linguistic features.

The third characteristic of a corpus-based study, the extensive use of computers, is inevitable in modern linguistics today. A machine-readable corpus makes it easy to look for possible association patterns. Biber, Conrad & Reppen (1998) mention two kinds of research question that can be examined in this way: (1) the use of linguistic features and (2) the characteristics of texts and varieties. Linguistic features can be lexical associations and grammatical associations. In the second case, an investigation on "how the linguistic feature is systematically associated with grammatical features in the immediate context" is carried out (1998: 6).

This thesis follows this second kind of research by investigating the grammatical features of mouthings. The annotation tool iLex, which was developed at the University of Hamburg, supports this endeavour a great deal.

Finally, the fourth characteristic, according to Biber Conrad & Reppen (1998), is the use of both quantitative and qualitative analyses. A quantitative analysis is basically classificatory, and it assigns frequency to linguistic features or constructs more complex statistics in order to prove significance (McEnery & Wilson 1996). The present research also uses basic quantitative analyses to identify some frequent patterns. However, they are meant in the first place to provide a ground for the detailed qualitative examination of those common

examples. As McEnery & Wilson put it, qualitative linguistic analysis uses the data "as a basis for identifying and describing aspects of usage in the language and to provide "real-life" examples of particular phenomena" (1996: 76). This kind of analysis lies at the core of my doctoral research.

As this has section showed, a corpus-based approach, as a form of methodology, is followed in this research project, using its main advantages. To sum up, the characteristics of the corpus on which this thesis is based include the following: this is a small-scale machine-readable corpus; I used this corpus to collect and analyse empirical data from MJNY utterances with mouthings. Video-taped data of the original communication events were selected with specific research questions in mind that focus on inflectional features of the language production. The corpus is not representative of mouthing in MJNY. Data is used as a bank of examples. Any descriptive statistic is used for identifying some patterns that can be the subject of further qualitative analyses. Taking advantage of the qualitative method, I will also look at some rare but relevant examples in more detail. Empirical findings will be discussed with respect to the initial assumptions on mouthing and the existing theories of sign–spoken language contact.

5.3   Specific issues of sign language corpora

Over the last 15 years, there has been a growing interest of sign language researchers in the development of modern linguistic corpora. Prior to that time, there had been numerous collections of sign language material for scientific and educational aims, especially for ASL and BSL or DGS. Many projects in acquisition, sociolinguistic variation or language teaching worked with their own corpora. However, these collections vary in size and design and generally lack standardisation. Konrad (2011) investigated many of these corpora and reported that most of them did not meet the general criteria as defined, for example, by Johnston & Schembri (2005): a corpus is a machine-readable, representative collection of naturalistic written, spoken or signed texts that also provides access to the raw video data.

Today, there are some relevant modern annotated sign language corpora, most of them in development, that also benefit from the serious efforts of the standardisation of sign language corpora over the last decade (cp. Sign Language Corpora Network[7]). Among these are the Auslan corpus[8], the DGS corpus[9], the

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[7] http://www.ru.nl/slcn/
[8] http://www.auslan.org.au/about/corpus/
[9] http://www.sign-lang.uni-hamburg.de/dgs-korpus/

NGT corpus[10] and the BSL corpus[11]. More recently, corpora can be found in development, e.g. in Europe for LIS (Geraci et al. 2011) and Polish SL[12].

Johnston (2008) provides some important reasons for sign language researchers to build a corpus for their respective languages. First, sign languages lack written form, in contrast to many spoken languages. Documentation of the naturalistic language use is essential in order to get a more broadened picture of sign languages for any further investigation. Second, sign language research still counts as being a very young discipline compared to spoken linguistics; there is still much uncertainty regarding the lexical and grammatical features of sign languages. Third, an investigation that takes into account the variation among the linguistically very heterogeneous deaf populations can be best carried out by large-scale corpus based research (2008: 82).

Another aspect of this issue has to do with the various language contact phenomena that take place in bilingual sign communities. The impact of spoken languages, may it be on mouthing or sign word order, can be attested for a sign language only by studying a great number of authentic, representative texts. Finally, sign languages are minority languages that usually have a small amount of users. As for spoken linguistic minorities, language documentation is not only important for linguistic reasons, but for the education and maintenance of cultural heritage as well (Johnston 2008; Blanck et al. 2010).

A corpus for MJNY is still not available. This doctoral research, because of its restricted dimension and specific questions, can of course be only one contribution to the knowledge about MJNY. The phenomenon of mouthing could then be tested on a large-scale as soon as such data is available. Nevertheless, this project, like any research on the still underdocumented MJNY, has its linguistic and also cultural importance. The corpus documentation should therefore be transparent and accessible for the community of MJNY users.

5.4   Data collection

The principal goal was the collection of authentic MJNY production data. A full-fledged sign language that has its own lexicon and grammar exists in Hungary. However, as Chapter 2 pointed out, the idealistic monolingual concept of a pure sign language in a bilingual community does not really match the linguistic reality. Language contact between MJNY and Hungarian is assumed to be an

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[10] http://www.ru.nl/corpusngten/
[11] http://www.bslcorpusproject.org/data/
[12] http://www.plm.uw.edu.pl/en/node/241

omnipresent, natural phenomenon in the sociolinguistically diverse bilingual population. Studies on spoken languages showed that psycholinguistic and sociolinguistic factors can all influence the type of language use and the number of contact phenomena in bilinguals (Grosjean 2008; Dijkstra & van Hell 2003). It is reasonable to assume that mouthing changes depending on its relation to the text type or the hearing status of the audience (e.g. storytelling or free narration in MJNY in deaf clubs vs. formal lecture in MJNY in front of a mixed hearing and deaf audience or translation from written text to MJNY). For papers studying such effects, see Davis (1989), Lucas and Valli (1992) and Sofinski (2002) for ASL and Napier (2006) for Auslan.

Therefore, the guideline here was to gather language material which is expected to show relatively little spoken language influence. This aim is similar to the preferences presented by Mohr (2012) who, in her data selection, went for a sign monolingual mode in which contact phenomena where expected to be less prevalent (for this topic, see Grosjean 2008). However, I encountered difficulties collecting elicited data for this purpose. Firstly, I am a hearing non-native signer who was only partially embedded in the signing community. Pilot investigations have shown that, as I was known to be a student in linguistics, I could not have avoided the influence of the observer's paradox (Labov 1972) on participants. This was the case even when I was not physically present in the interview sessions led by a deaf signer and the purpose of the session was disguised prior to the elicitation. For this reason, I decided to use a collection of video data that was recorded parallel to my observational investigations in 2009, but independently from my research project.

The sign language videos in question were recorded in a project by the Foundation for Equal Opportunities of Persons with Disabilities in Hungary[13]. The project aimed at establishing teaching materials on the subject of deaf culture for training deaf school teachers. The materials are still not publicly available. I obtained the right to use this collection for my PhD research at the University of Hamburg. This material had more advantages for this project and turned out to be a good candidate for MJNY use, which shows less spoken language influence.

The collection contains sessions with 30 deaf individuals with a length between 12 and 77 minutes that were recorded by deaf sign language users in different regions of Hungary. The interviewers were prominent personalities from the deaf community, involved in language teaching and research, as well as politics. The interview sessions took place at either the signers' home or in the local deaf

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[13] The data colleciton was part of the *Deaf Community and Culture* teaching material and was financed by the TAMOP Social Renewal Operational Program 5.4.5, carried out within the framework of the working group *Deaf Community and Deaf Individual*. For further information about the Foundation, see: http://fszk.hu/english-introduction/

community. A high degree of familiarity was often present; the interviewers and the interviewees had often known each other for a long time. Participants were all asked the same questions; however, the sessions were constructed loosely in the sense that, between the short questions, participants narrated freely. The interviewees told about their personal lives involving family, school and work. The text type or discourse mode can thus be defined as narrative (Smith 2003). The participants (both male and female) varied in age, education and linguistic background, as revealed from their self-report on some of these issues in the recordings.

This data collection was considered to be closer to a desired monolingual setting. Although the recording situation cannot avoid some degree of formality, members of the project stated that the situations were constructed to be as calm and natural as possible. These language production samples were definitely free of the observer's paradox in the sense that it was independent of any intention of judgment for a linguistic analysis.

When it comes to analysing sign language data, especially mouthings, it is important to ensure that the quality of the videos enables one to access relevant linguistic information.

 As mentioned previously, this data collection was carried out independently from the present linguistic research. Thus, it was not possible to control the recording setup. The recordings always used a single camera which was facing the informants and captured their signing space globally. Technical details (like lightening techniques, resolution used etc.) of the original recordings were not known. However, for the sake of this first analysis, I got a good quality video material which, as it turned out later in the verification, enabled my deaf assistants to perceive and annotate mouthings just as they naturally do. Cases, in which it came to perception problems, were documented and discussed with the assistants (see next chapter).

All participants were fluent signers, but as mentioned, linguistic backgrounds in both sign and spoken language varied. The collection still contained a great number of native signers. As the analysis of the whole collection would have been way beyond a short-term doctoral project, it was necessary to select some participants for the corpus anyway. Hence, I did it in a way so as to make sure that the analysis is based on signers with a high level sign language competency.

Since the data was already provided, it was not possible to test their accuracy as signers. Nevertheless, I attempted to ensure that they meet the criteria as proposed by Mathur & Rathmann (2001): (1) exposure to a signed language by the age of three, (2) capability to judge with ease whether or not a sentence is grammatical and (3) daily contact with a signed language in the deaf community for more than

10 years (2001:7). Among those who satisfied the above criteria, 3 male and 3 female persons were chosen for the corpus. As they reported, 5 of the 6 informants came from deaf families and acquired MJNY frombirth (early L1 signers). One person was exposed to MJNY from the time he went to kindergarten (approx. 3 years old), thus capable of being labelled as a late L1 signer. As Boudreault and Mayberry (2006) suggested, signers who were exposed to a sign language by this age show high sign language proficiency. Although the late L1 signer was on the border at this stage, given the fact that he is known in the community as an acclaimed signer and former teacher of MJNY, there was no reason to assume that a high level of MJNY competency would not be provided in his case.

All the participants have been engaged in the deaf community since early childhood through family, education, deaf club activities etc. In terms of grammar intuition, no sentence test was directly taken. However, given the background of the participants, it can be strongly assumed that they owned this kind of intuition as L1 signers. Moreover, three of them were involved in sign language teaching and one of them was a part-time teacher in a deaf school.

5 persons lived in Budapest and 1 person lived in Eger, in a region where another dialect is used, mostly involving lexical differences (Vándorffyné Lancz 2009). At the time of recording, their ages fell between 20 and 45 years. All background information was gained by self-report on the recordings and the metadata sheet of the video collection. In addition, I had the opportunity to informally confirm this by knowing all signers personally and/or through common friends as well. Table 5.1 on the next page provides an overview on relevant metadata. Note, that, although each signer went to local deaf school at their early age, the environment of their further education may vary. Also note that, in terms of their age and language proficiency, no specific information can be provided. The information given in the table is based on self-report and informal direct communication with the signers during my involvement in the deaf community.

Tab. 5.1: *Metadata on informants chosen for the dissertation*

Signers	Sex	Age	Time and Place of MJNY aquisition	Schooling	Dialect (area in Hungary)	Command of MJNY	Command of Hungarian
S1	male	30-40	sarting at 3 years, deaf kindergarten and school	deaf school	Budapest	native late L1 signer	good to very good written skills
S2	female	20-30	from birth at home	deaf school	Budapest	native L1 signer	good to very good written skills
S3	female	20-30	from birth at home	deaf school	Eger	native L1 signer	good to very good written skills
S4	female	40-45	from birth at home	deaf school	Budapest	native L1 signer	good to very good written skills
S5	male	30-40	from birth at home	deaf school	Budapest	native L1 signer	good to very good written skills
S6	male	40-45	from birth at home	deaf school	Budapest	native L1 signer	good to very good written skills

This type of language material was consciously picked for an initial mouthing study. The videos contained language production, which participants intuitively believed to be acceptable in MJNY. Based on the literature, one would assume far fewer mouthings with inflections than in other settings and text types, e.g. a formal presentation in front of a mixed (hearing and deaf) audience or signing written Hungarian texts. I took this limitation into account. Finding probably fewer mouthings in texts that can be seen as examples of MJNY leaves me with more confidence with respect to the patterns of mouthings and also the grammaticality of MJNY utterances. Any further evidence on how a text-type sensitive phenomenon like mouthing changes in different settings can only be investigated using extensive sociolinguistic studies in which factors are more strictly controlled than was possible in this case.

When these videos were selected, I also preferred surroundings which decreased the probability of Hungarian influence. In four cases, only the deaf interviewer was present without any other person in the room. In one case, there were two

other persons in the room: a deaf technician and an interpreter. The interpreter's task was to make an audio recording of the session in the background. She was not interacting with the participant. To be sure that this effect was not a relevant factor on language production, I asked two MJNY signers with strong metalinguistic skills (involved in teaching and research), independent of one another, both of whom had known that respective participant for a long time, to watch the video. They confirmed that her signing appeared to be the same as when she usually signs in deaf surroundings. No unusual spoken Hungarian influence was noticed in her signing that could have been caused by the presence of a hearing person (who, as I was informed, was also familiar with the participant).

5.5   Annotation

The next step in the research was the construction of an annotated data corpus. Leech (2005) defines annotation as "the practice of adding interpretative linguistic information to a corpus" (2005:1). In corpus linguistics, it usually means any information that refers to the linguistic analyses of already transcribed texts, e.g. lemmatisation, part of speech tagging or syntactic parsing (McEnery Xiao & Tono 2010). I use annotation here in a more general sense: it means any information added to time-aligned raw video data. It aims to represent the different aspects of a communication event (Schultze-Berndt 2006: 213).

There are different software tools in use for the annotation of sign language data, such as Signstream[14], ELAN[15] or iLex[16]. All of them work with the principle of time-aligned annotation: any kind of information can be tagged as aligned with raw video data. For corpus construction and annotation in this doctoral project, iLex was chosen. iLex (integrated lexicon) was developed at the University of Hamburg for the primary purpose of sign language lexicographic research (Hanke & Storz 2010). It is currently used in the development of a corpus-based dictionary for DGS–German (Konrad et al. 2012).

There are two main advantages which iLex offers to an individual doctoral research. (1) The annotation tool, which is available at every working station to facilitate parallel work, is linked to a central data base. Data is saved on a central server, which provides a much safer way of data storage than individual computers. After annotating or editing an entry in the corpus, further saving is not

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[14] http://www.bu.edu/asllrp/SignStream/

[15] https://tla.mpi.nl/tools/tla-tools/elan/

[16] http://www.sign-lang.uni-hamburg.de/ilex/lrec2008_hanke.pdf (accessed on 01.04.2015)

necessary. With the help of SQL statements, data can be retrieved (e.g. co-occurrence patterns) and used for further analysis.

(2) The other important advantage of this integrated system is the way in which it deals with occurring sign tokens in a corpus. It uses a lemmatisation procedure in which individual sign tokens are matched to respective lexical items (lemmas), also called types (McEnery, Xiao & Tono 2010: 35). Although my research did not focus on lexical questions, I took advantage of the type–token matching. Instead of annotating each sign separately, I stored a sign once in the database and used that entry or type to annotate each subsequent occurrence of the same sign. The process is not just very time-effective; it also enables the researcher to annotate every sign occurrence consequently with the same gloss and analyse them later as a specific group (Hanke & Storz 2010).

A further attribute of iLex is the changeable view: in a horizontal view, tags are aligned with the length of the respective video segments. In a vertical view, tags take up one row, irrespectively of the linked video segments. It has the advantage of a better optical presentation of even small intervals (Hanke & Storz 2010: 65).

5.5.1 Tier construction with iLex

iLex utilises different tiers in which annotation can be made. The token tier is used for sign glosses. All tokens here are based on the type-token matching. Text tiers can be used for any tags, e.g. mouthings, non-manual markers or comments. They can be added freely or with the help of built-in pre-defined vocabularies which allow one to choose among a set of possible values. Tags in phrase structure tier consist of tokens that make up a constituent or multi-sign expression (Hanke & Storz 2010: 65).

In this dissertation, a token tier was used for sign entries, while a text tier was used for other annotation. It includes a tier of numerated sign utterances or discourse chunks, a mouthings tier, a tier for the Hungarian morphological categories and a comment tier. In iLex, these tiers can be structured in a hierarchy of subordinate (child) and superordinate (parent) tiers which constrain the alignment between tags. Changes in parent tiers have influence on every child tier (ibid. 2010:65).

5.5.2 Annotation process: a bottom-up approach

As discussed earlier in this chapter, the corpus was constructed based on specific research questions. The annotation procedure was therefore specifically defined. McEnery, Xiao & Tono (2010) call this approach problem-oriented annotation (2010: 43). The goal here is not to annotate the entire contents of the corpus, but rather to narrow down to those phenomena that are directly relevant for the

specific research questions. It also means that the annotation schemes are typically idiosyncratic and less usable for other research questions (ibid. 43). This strategy can also be denoted as a bottom-up or inductive approach (Biber, Connor & Upton 2007).

The annotation procedure in the project was constructed as follows: first, I took an initial look at the 110 minutes-long raw video data to find possible clues of mouthings with Hungarian inflections. I carried out this first step mainly based on intuition grounded in the proficiency in Hungarian as my first language. I collected and marked each slot in the raw data that appeared to contain a mouthing with Hungarian inflection. This process resulted in the tagging of over 800 instances. Following a problem-oriented annotation, the focus was put on the annotation of those utterances where this specific type of mouthing occurred. In a subsequent research phase, a detailed analysis was needed to find out more about the characteristic patterns of these mouthing instances and their grammatical relation to the respective sign utterances.

Such a bottom-up approach seemed to better suit the exploration of the specific research questions regarding Hungarian inflections in mouthings. It helped to collect a wide range of examples for the phenomenon under consideration and to do it in a much more focused manner, without having to deal with the annotation of utterances with mouthings not relevant to this topic.

Another obvious reason for the choice of this bottom-up approach lies in the extremely time-consuming nature of annotating sign language data. In view of the limited nature of a one-man short-term project, during the raw annotation phase (approx. 1-1,5-year out of the 3-year), it was necessary to annotate as much relevant mouthing data as possible within this short period of time. Nevertheless, more comprehensive research, which uses a broader data set and looks at Hungarian inflections in relation to other mouthing forms, will definitely be needed. Such a top-down approach will require the annotation of every mouthing in a given corpus. In my case, general mouthing-related questions cannot be answered; only questions relating to this specific group of mouthings that was investigated can be answered.

After having confirmed the principles of the annotation procedure, I went on to identify the steps of annotation that were needed to establish a data set suitable for answering my research questions. I adopted the practice of Zwitserlood, Özylek & Perniss (2008), who distinguished between a descriptive level and an analytic level of annotation. The authors' motivation for such an approach has to do with the fact that, according to them, sign language annotation involves implicit interpretations on too early of a stage, while the respective linguistic phenomena may not have even been attested in that sign language (2008: 186). As laid down

in previous chapters, the lack of knowledge is definitely an issue for the grammar of MJNY and the behaviour of mouthings.

In the descriptive part of the annotation, I deal with sign tokens and mouthing tags. Any other kinds of annotation, like Hungarian morphological features, belong to a further analytical part. In the remainder of this chapter, I elaborate on descriptive annotation. Questions of linguistic analysis are discussed in later chapters.

I identified four steps that had to be carried out to annotate the selected parts of the video data. The first step was the identification of sign utterances or discourse chunks (5.5.3); that is, the first segmentation of the continuous flow of signing. The second step dealt with the gloss annotation of each sign in the given utterances (5.5.4). It was followed by the orthographic annotations of mouthings with Hungarian inflections that were identifiable in these stretches of discourse (5.5.5). The following sections describe each step in more detail, showing the guidelines for decisions.

5.5.3 Step 1: discourse chunks

The first step concerned the segmentation of sign utterances. As the literature reveals, there prevails uncertainty about the determination of sentence boundaries in sign linguistics (cp. Crasborn et al. 2007). I took two main approaches into consideration: a semantic and a prosodic segmentation. Examining DGS sentences, Hansen & Heßmann (2008) define sentences based on a topic-predicate-adjunct-conjunct (TPAC) structure. However, they found no clearly consistent markers that would have indicated such a structure. In my annotation, I used semantic intuition, considering the basic idea of the TPAC proposal. However, I needed a more reliable clue for the segmentation of utterances.

I used various prosodic markers that were found to have connections with sentence boundaries. Nespor & Sandler (1999), Sandler & Lillo-Martin (2006) and Fenlon (2010) showed that the Intonational Phrase (IP) is a prosodic unit which is strongly linked to the propositional sentence.

As Ormel and Crasborn (2012) point out, the studies which investigated the prosodic boundaries of sign language sentences in terms of such IPs focused on different markers and used different methodologies. Nevertheless, they sum up some main markers. Among (1) non-manual elements, eye blink, eyebrow movement, head tilt and body lean can take up boundary marker functions. (2) Manual elements are signs that indicate prominence, e.g. hold or palm-up gesture. However, none of these markers appeared to be obligatory (cp. Hansen & Heßmann 2008: 169). Fenlon et al. (2007) found hand drop and pause as other important indicators. Moreover, their study also suggests that the IP segmentation

is not dependent on knowledge of the sign language. Non-signers could identify these markers and intuitively segment the IPs in BSL and SSL.

Fenlon (2010) found raised eyebrow in BSL to be linked to sentence boundaries, while narrowed eyebrow played other syntactic roles, e.g. WH questions. In Fenlon's detailed analysis, another candidate turned out to be eye blink (in 56% of his data). Note, however, eye blinks can have other functions than sentence marking. For example, Sze (2008) identified blinks in HKSL which mark syntactic domains and lexical boundaries (cp. Wilbur 1999: 231); in some cases, there was no linguistic relation, and blinks occurred merely for physiological reasons. Also, those which functioned as IP markers, occur much less consistently than one could reliably use them for that purpose alone. Hermann (2010), alongside Fenlon (2010), points out this issue of inconsistency. Blinks often happen on final positions; however, they are far from being obligatory. Hermann concludes from her DGS-analysis that there is a need to integrate other markers as well to ensure boundary identification.

Another marker, head tilt, was found in Wilbur (2009) and Fenlon (2010). As Wilbur reports for ASL, the most frequent is the single head tilt. In Fenlon's BSL data, single and double head tilt occurred frequently, and head nod was also observed in a respective number (20% of the data). Furthermore, he found that upper torso activity, in some cases, also mark sentence-final position, in addition to other functions like involvement in constructed action.

To sum up, this brief overview indicates that there is no one and only consistent prosodic marker that would play a role in sentence determination. As Hermann (2009) and Ormel & Crasborn (2012) argue, one should consider different manual and non-manual clues.

In my corpus annotation, I observed that IPs are almost exclusively marked by more than one element. Eye blink, together with palm-up and hand drop, were predominantly present at the end of utterances and most of the time aligned with propositional segments. A pause between utterances also pointed to possible IPs. Nevertheless, this segmentation procedure was only designed for the purpose of this doctoral project at a time when information about the syntactic, semantic and prosodic features of MJNY is quite limited and the understanding and determination of sentence boundaries is still ahead of us. To avoid confusion, I prefer to use the more neutral words *discourse chunk* or *utterance* to refer to these units of sign texts.

5.5.4 Step 2: Tokenisation and lemmatisation of signs

The next step in the procedure was the annotation of each sign within the segmented utterances. The focus of the present work is not the manual channel;

however, its annotation provided a helpful background to be aware of the natural signing context in which mouthings appear.

Here, I had to deal with the issue of tokenisation and lemmatisation. The former means the segmentation of text words in the continuous signing flow (Konrad 2011: 83). It goes hand-in-hand with lemmatisation, which is the identification of text words with abstract units of the lexicon called lemmata or types. Tokens are the actual realisations of the abstract lexical entries. This token–type matching is the basis for all other kinds of annotation in this corpus (Konrad 2011: 91).

Spoken languages are usually transcribed with the help of the IPA or SAMPA systems, or with orthographic symbols. The tokens can be segmented in terms of the word boundaries and identified as lemmas. Also, the spoken tokens can be reproduced quite exactly through transcription in the written modality. Sign languages, however, lack any written symbol system. For the transcription of the exact phonologic form of a sign symbol, systems like HamNoSys (Hanke 2004) or SignWriting[17] have been developed. Also, for the aim of sign segmentation and lemmatisation, a wide-spread practice in sign linguistics is the use of glosses. A gloss is a written word which has the task of distinctively identifying a sign (Konrad 2011: 92). With the help of a gloss, either the exact form or the meaning of a lexical sign can be reproduced. It is merely a label for that sign. Labelling the sign with a given gloss name indirectly hints at the citation form, as well as the meaning; therefore, the primary function of a gloss is to serve as a mnemonic unit of the sign for the sign language competent annotator (ibid. 2011: 95).

Glosses in a semantic annotation refer to the context-related meaning of a sign. However, in the case of a machine-readable corpus, it is essential to consequently label each occurrence of a type with the same gloss, regardless of actual meaning or form differences. In the Auslan corpus, Johnston (2010) works with the concept of "ID-gloss". Lemmata are stored in the sign data bank and function as IDs for the tokens of the corpus. Sign tokens with the same form (and usually related meaning) are matched with the lemma sign in the corpus and subsequently annotated using that lemma sign as an ID for every further token with the same form. According to Johnston (2008), only this consequent labelling assures machine-readable counting and sorting and can thus be useful for corpus work.

As revealed by this description, by choosing the glosses for signs in a corpus, one accomplishes tokenisation and lemmatisation together. In the case of iLex, the consequent annotation is supported by the data bank. Types are assigned to an exact ID code number. As tokens are matched to types, they all get that same ID code. In the DGS corpus project, sign tokens are not only matched with types, they are also transcribed with HamNoSys to indicate the exact phonological form.

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[17] http://www.signwriting.org/

In addition, the phonological variations and morphological modifications of signs in texts are also annotated with an extended glossing system.

But even if one dispenses with exact form description and utilises only the types for the notation of individual signs, information is not lost. This is due to the fact that, in the case of modern corpora, glosses are time-aligned with raw video data. In this way, the connection to the video always enables the annotator to access the exact form. Both Johnston (2008) and Konrad (2011) point to the fact that the work with glosses does not have to be an incomplete transcription; it can be seen as a type of annotation. In this doctoral project, I made good use of the time-aligned and consistent annotation provided by the iLex system. The basic guidelines of the DGS corpus project served as a general framework for my annotation conventions (Konrad 2010). However, I modified and often simplified the conventions to support time-effective, research question-based annotation.

There are different approaches in sign language lexicography for the description of signs in terms of degree of lexicalisation (Johnston & Schemri 1999; Johnston & Ferrara 2012; Konrad 2011). A basic distinction can be made between lexicalised signs and productive signs. Signs, which are fully conventionalised, are lexicalised items that gain established meaning (usually together with mouthings) beyond their more general, iconic meaning. Productive signs, however, are driven primarily on iconically motivated, context-dependent meaning, although they can also be described as partially conventionalised items (Johnston & Schemri 1999; Johnston 2010). Classifier signs usually fall in this category.

In the DGS corpus project, fully conventionalised signs are annotated and stored in the data bank on two levels: a type captures a general, iconic value together with the form in HamNoSys. A subtype refers to that sign in terms of a lexicalised meaning beyond the general, iconic denotation. The gloss name of a subtype is generally determined by the established co-occurring mouthing. A type often features more subtypes (Konrad et al. 2012).

For example, the type SAM-FLACHES-OBJEKT ("flat object") captures a sign that refers to a flat object. The gloss only indicates a general iconic value of the sign. It can possibly refer to a group of specific lexemes. It is expressed by the prefix SAM, which denotes that the sign is an umbrella term ("*Sam*melbegriff"). On a second, subtype level, lexemes, which are connected to this umbrella term in the corpus, are stored. It could be, for example, the lexeme BODEN ("ground") or TISCH ("table").

During the doctoral research, I only used one level of lemmatisation; an abstract sign gloss for each token of the same form. MJNY signs that were identified in the corpus as having an existing, fully conventionalised meaning-form relationship

were at first appearance stored in the data bank as types. All subsequent tokens with the same form were then labelled with the same type, similar to the ID-gloss concept. It means that, due to the lack of a predefined lexicon reference, the data bank was constructed and updated as new tokens were identified, stored as types and finally annotated in the sign texts.

Signs were first glossed based on my knowledge of MJNY and double-checked with existing dictionaries and teaching materials. However, the references were limited and, in some cases, the issue of determining whether a sign is conventionalised or rather idiosyncratic was not satisfying. Note, therefore, that signs which were categorised as conventional do not always aspire for lexeme status. The determination of lexical status for signs in terms of a type-subtype relation is due to lacking comprehensive lexical reference beyond the scope of this annotation scheme. Glosses have to be understood as signs in a broader sense. Nevertheless, when the fully conventionalised status was able to be ensured, it made gloss naming much easier.

Also, the gloss name was not necessarily derived from the meaning of the co-produced Hungarian mouthing in a given context, although a gloss name was often the translational equivalent of one of the possible mouthings co-occurring with a sign. For example, if a well-known sign with the mouthing 'iskola' ("school") occurred in the corpus, it was glossed as ISKOLA ("school"). If the same sign was used later on, it was consequently matched to the previously stored type, hence, the token was again given the gloss ISKOLA, even if the signer referred to another meaning and used other mouthings like 'egyetem' ("university") or 'osztály' ("class"). The glosses were in this way not context-dependent, but rather based on existing types stored in the data bank.

In cases of lexical variation, glosses were distinguished by adding the handshape parameter to the gloss in order to facilitate remembering of the signs (regardless of whether the change involved only handshape or other parameters too). For example, BUSZ-C ("bus") refers to one sign for which the handshape C is used; BUSZ-Y refers to another with a distinctive Y handshape. Merely phonological variations were not noted; morphological changes in signs at the stage of descriptive annotation were not taken into account.

Another important group included the productive signs. They generally cover different types of classifier constructions and glossed with the prefix "CL-". Although they are partially conventionalised, they have a more general and complex meaning in contrast to the more exact, established meaning of lexicalised signs. As for the gloss names of productive signs, two strategies were used in this doctoral project: (1) the gloss refers to the type and form of the classifier sign; for example, CL-ENTITÁS_INDEX (ENTITY_INDEX) shows that this is an entity

classifier (usually used for humans) signed with the index finger. (2) The gloss can also be a description of a common usage of the classifier sign; for example, CL-IDŐINTERVALLUM_B (TIME-INTERVALL) refers to a sign with a B handshape which usually stands for time intervals after noun signs. HÁROM ÉVES CL-IDŐINTERVALLUM_B (THREE YEAR-OLD TIME-INTERVALL: "close to the age of three") is used, for instance, when a signer talks about an event that happened some time before he turned three. The two strategies were picked based on practical usability; that which facilitated recalling the sign with the help of the gloss was chosen for annotation.

Among additional sorts of signs, pointing signs were glossed as INDEX, INDEX-REF, INDEX-DUAL, depending on the given type of pointing. Some signs, like simple and incorporated number signs, were only annotated with categorical names, e.g. NUM-HÓNAP (NUM-MONTH). GEST and GEST-PALM-UP refer to gestural signs that do not have specific linguistic meaning. Some conventions for prefixes and suffixes were used according to the DGS corpus project (Konrad 2010); for example, in the sign SP-KOPASZ (SP-BOLD), the prefix SP means SPECIAL and stands for idiomatic signs with complex meanings. The MJNY sign usually denotes the lack of something, not necessarily of hair.

This overview did not cover every convention in detail, but it did focus on the main guidelines followed in the annotation procedure. The table on page 111 summarises some usual gloss types and their possible meanings, as well as co-produced mouthings.

Tab. 5.2:   Glossing conventions in the corpus

	MJNY type entries used for glossing tokens	Context-dependent meaning of tokens of the same type	Typical mouthings of sign tokens
Conventionalised signs	ISKOLA (school)	university, school, class, high school	'egytem' (university) 'iskola'(school) 'osztály' (class) 'gimnázium' (high school)
	MÚLT (past)	past, back then, been	'volt' (been) 'múlt' (past) 'régen' (back then)
	VOLT (been) OSZTÁLY-TÁRS (classmate) LAKIK (live)	been classmate bentlakó, lakik	'volt' (been) 'osztálytárs' (classmate) 'bentlakó'(residential student) 'lakik' (live)
Productive signs	CL-ENTITY_THUMB	human standing or moving	'leül' (sit down) 'feláll' (stand up)
Pointing signs	INDEX INDEX-REF INDEX-POSS	me myself mine, belongs to me	'én' (me) 'magma' (myself) 'enyém'/'nekem' (belongs to me/mine/for me)
Number signs	NUM-HAT NUM-HÓNAP	six one/two/three… month(s)	'hat' (six) 'egy/két/három… hónap' (one/two/three month(s))
Gesture	GEST GEST-PALM-UP	n/a	n/a (no established mouthing)

5.5.5 Step 3: mouthing annotation

Studies show various attempts at the annotation of mouthings. The widely applied approach is the annotation with the orthography of the related spoken language. Studies differ as to how they include formal characteristics of the mouthed words like syllable reduction. Some of them use fully written words, regardless of the partial or full production of mouthings (e.g. Sutton-Spence & Day 2001; Boyes Braem 2001). This approach is suggestive of mouthings being always clearly associated with the corresponding spoken words and does not really take into account that various reduced and modified visual forms may lose that kind of

connection to speech. Many others simply annotate the given inferable forms of the occurrences, be it that they are reduced or full and with or without additional syllables, e.g. due to inflection. This approach would be more beneficial for research which tries to show both lexical relationships between mouthings and signs and the types of formal characteristics of mouthings. Hohenberger & Happ (2001), and more recently Mohr (2014), demonstrate this approach.

Yet another attempt tries to include both the perceivable forms and the intended lexical mouthings. For instance, Vogt-Svendsen (1983, 2001) demonstrates a mixed method in which she combines orthography (full spoken words) with additional visual markers, indicating the inferred visual form. More recently, Bank et al. (2011) worked with two annotation slots, one of which captured the visible part of the identified spoken word with orthographic symbols, and the other of which captured the non-reduced, uninflected citation form. The authors claim that, for the purpose of their lexical research, this turned out to be a good way to show the connection between mouthings and their intended meaning.

Despite the wide-spread practice of orthographic annotation, it could not avoid any criticism, as is most clearly articulated by Keller (2001). He points out that the orthographic annotation creates the illusion of mouthings being phonemic-morphemic in nature. He holds the view that mouthings are visual-kinematic units and that phonological rules can not be operated on them (2001:203). The danger of orthographic symbols is that they can easily lead to artifacts. Subsequent analyses work with additional information not contained in the raw data, but that originated in the annotation procedure itself (ibid. 2001:204).

The various approaches shed light on the fact that assumptions differ as to what kind of linguistic signs one has to deal with. When it came to planning the annotation of mouthings in the corpus for this dissertation, it was important to clarify my current assumption and make their influence on annotation explicit.

According to my working assumption, mouthings are discrete visual units of sign languages that may or may not have connections to their spoken counterparts. Their actual visual forms indeed contain important information on their own. At the same time, when the connection to spoken language can be clearly evidenced through recognition, it is safe to say that a kind of bilingual knowledge operates on mouthing production in the context of sign language use, which includes parts of the lexicon and/or grammar of the spoken language up to the competency of sign–spoken bilingual persons. From that perspective, referring to the intended spoken words through mouthings can also prove to be a valid approach as long as such an approach reflects on the indirectness of this connection in the annotation. This issue is further discussed in Chapter 6.

After having begun with this working assumption, the next step was to align my own annotation with the research questions. As the focus was on the inferable spoken inflections on mouthings, it indicated that the project certainly has to contain one type of annotation; the orthographic one. However, it was important to consider how a visual annotation would be beneficial for further analysis. An assumption was made that visual patterns could recover regularities in mouthings which an orthographic annotation could not. Keller (2001) suggests that the use of visual description systems could lead to a fully appropriate data set. Motivated by this statement, I considered and tested some possible alternative descriptions, such as IPA, FACS and an individual system based on Bergmann & Wallin (2001).

Keller used the symbols of the International Phonetic Alphabet (IPA) and annotated only visible chunks of the mouthings. However, as Keller himself claimed, using IPA symbols cannot really lead one through the problem because, similar to the orthographic symbols, they preserve the indirectness to the visual mouth patterns by maintaining the connection to the spoken language for whose transcription they were developed in the first place. I was unable to imagine that the use of IPA would suit my purpose of visual annotation and, therefore, other systems were considered.

The next step was to orient towards description systems which are independent of symbols of spoken or written language. One such system, whose application Keller suggested, is the Facial Action Coding System (FACS) by Ekman & Friesen (1978). FACS was developed for the kinematic description of facial expressions and offers a precise notation of different muscle movements. The basic element of FACS is called an Action Unit (AU), which covers specific definable units of facial expressions. A FACS description shows different combinations of AUs that can be perceived as certain facial activity. The system also provides a set of AUs on and around the mouth. After some initial trials in the first year of the project, it became obvious that a fluent application of the system would require a considerable amount of time. The gain of such a practice in FACS would have definitely extended the time scheduled for mouthing annotation in this project. For this reason, I decided against its application as the visual annotation system.

Another candidate that was tested in a pilot study of this project was a more directly sign language-related visual annotation akin to the preliminary analysis of Bergman & Wallin (2001) for mouth actions in SSL. The researchers categorised visible movements of the mouth into some parameters like movements (and if applicable, visibility) of the lips, tongue, jaw and air during inhalation and exhalation. They identified some successive open and closed segments of mouth movements and tried to describe them with the defined parameters (2001: 58). I

constructed a simplified inventory of parameters and segments, combining the method of Bergman & Wallin (2001) with some visual symbols of Vogd-Svendsen (2001), and applied it on a piece of raw data from the corpus. According to the overall conclusion of this pilot investigation, such visually oriented annotation was a laborious effort with little to no gain for the research questions. The time-consuming characteristic is grounded in the usually fully produced, inflected word forms. Their visual descriptions were found to be long and complicated. More importantly, during initial attempts, no directly usable patterns for the inflected forms were recognised that would bring the analysis of mouthings in this project towards additional understanding. This experience was enough to question the usefulness of such systems in this three-year research. The conclusion left me with an orthographic annotation and the need for discussing its possible advantages and disadvantages in terms of collecting valid, reliable data versus producing artifacts.

The first relevant issue is the alignment of the assumption or theoretical concept about the nature of mouthings with the chosen annotation. For example, Ebbinghaus & Hessmann (2001) argue that mouthings in general, although they can be considered unique semiotic signs, are strongly connected to spoken words. Hence, the use of orthographic annotation in their research is consistent with their view .

Bergman & Wallin (2001) looked at mouthings as visual-kinematic units on their own with virtually no connection to spoken language. The visual annotation in their study is an attempt to provide evidence for this view. Note, however, that the visual structures of mouthings alone do not deny the connection to spoken language. Nevertheless, it is a good attempt to capture reduced mouthings, as well as mouthing production, in signers with no considerable spoken language competence, e.g. deaf children.

According to the working assumption on mouthings I described above, they may or may not have a connection to spoken language. Such an open phrasing acknowledges the fact that mouthings are indeed extremely variable, ranging from reduced to full, inflected forms. Although it is very hard to verify the spoken language connection, one can make a statement of what is more likely at an initial stage, like this dissertation attempts.

Following this line of reasoning, I argue that MJNY mouthings, which are identifiable because of their spoken inflections, still carry the connection to Hungarian. This statement is strengthened by the fact that my informants are all bilingual and use both sign and spoken language in everyday life. Thus, understanding and annotating their inflected mouthings with Hungarian

orthography can be seen as consistent with the working assumption about the mouthings in this present research.

The last and equally important issue is the question of identification. As Bank et al. (2011) point out, only certain parts of the articulated information is visible to an interlocutor or annotator. While certain vowels and usually labial and dentolabial consonants are easier to see, others can hardly be identified. Therefore, in the process of the identification of mouthings as spoken words, perceptual addition often plays a crucial role. It is assumed that it not only does so in the more conscious interpretation during annotation, but also in the spontaneous sign language perception. I understand this issue as a natural part of the mouthing phenomenon; not as an artifact as far as connection to spoken language is concerned. At the same time, it also means that annotation is perception-dependent and, therefore, cannot be perfectly accurate. This leads to an additional step in the process: a verification of mouthing annotation by deaf sign language users. This subject is covered exhaustively in the next chapter.

5.6 Summary: further issues in defining the final data set

This chapter summarised the first part of the methodological procedure applied in my research project. I showed that a corpus-based approach fit the goal to collect and annotate sign language data from the less documented MJNY. The way in which data was obtained for the corpus was also discussed. Here, the main aim was the collection of language material that could be seen as a good example for MJNY.

I went on demonstrating the steps of the descriptive data annotation. First, utterances were segmented in the signing texts based on semantic content and prosodic markers. For the annotation of signs, I made good use of the iLex tool and data base, as I could carry out a consequent labelling of signs following the token-type matching.

The most challenging step turned out to be the annotation of mouthings. The rationale for an orthographic annotation was discussed by explicitly laying down my assumption that the mouthings with inflections under investigation are linked to spoken words. The next chapter will continue showing an overview of the annotated corpus data. It also discusses further steps in the methodology that were necessary to carry out in order to define the final data set, which can be used for the empirical analysis.

6 Defining the final data set

6.1 Introduction

This chapter bridges the descriptive annotation procedure and the linguistic analysis. It examines the challenges encountered in mouthing annotation and discusses how mouthing occurrences had to be constrained in order to get to the final set of analysable data. This process was a prerequisite for further empirical investigations.

To begin with, an overview of the corpus data is presented in order to give the reader an idea about the amount of data chosen from the raw videos for the actual analysis. The number and ratio of video clips, sign glosses, as well as mouthings, are provided in this section.

Then, I turn to the basic question of the chapter: what kind of Hungarian inflectional markers in mouthings can be annotated and analysed? Two main difficulties that arose during the annotation and planning of the linguistic analysis are reported.

The first has to do with the overt vs. covert marking of Hungarian word forms in mouthings. Inflections are not always marked overtly in each entire paradigm. Also, there are word forms which overlap in realisation. The principal rule applied was the limitation of mouthings to those which contain overtly distinctive markers.

The second difficulty concerns the perceptual identification of visual mouthing patterns. I point out that lip-reading, which is the basic mechanism in mouthing identification, is necessarily an interpretative process. It is especially true for some Hungarian suffixes that lack clear visible forms. The uncertainty of the recognition of usually one-syllable inflectional markers is discussed.

Finally, these challenges lead us to a further, necessary step: the annotation of mouthings by independent MJNY signers. This procedure constrained the mouthing data that could eventually be involved in the linguistic analysis. Consequences of such limitations are discussed at the end of the chapter.

6.2 Overview of the annotated corpus data

As laid out in the previous chapter, a problem-oriented annotation or bottom-up approach was followed by annotating only those parts of the video recordings

which I identified as containing mouthings with Hungarian inflections. The decisions involved in this process are discussed in this section. To set the stage, the following table provides an overview of the lengths of raw video data and the annotated subset of these videos.

Tab. 6.1:   *Video length of raw and annotated clips*

Informants	Length of original interviews	Length of raw video data in the corpus	Number of annotated clips (utterances)	Length of annotated clips
S1	33:22 min	19:08 min	41	03:05 min
S2	54:53 min	19:46 min	155	09:52 min
S3	26:54 min	21:23 min	54	03:15 min
S4	14:07 min	14:04 min	16	00:59 min
S5	25:20 min	20:45 min	31	01:49 min
S6	14:21 min	14:20 min	42	02:26 min
Sum	**168:57 min**	**109:26 min**	**339**	**21:26 min**

As mentioned, there were six informants (referred to as signers or S for short) who were picked based on criteria that could provide more evidence for their MJNY proficiency. Five of the six informants were native signers, having acquired MJNY since birth, and S1 was a near-native signer exposed to MJNY from about 3 years onwards.

The time duration of the original interviews was not strictly scheduled. Their lengths (between 14 to 55 minutes) depended on how much information the signers shared. After taking a first look at the recordings, I noticed that the first half of the longer tapes contained an extended period of mostly continuous, free narration, while other parts or the ends of the sessions were characterised by frequent pauses (e.g. waiting for the interviewer's question or because of a short break) and quicker question–answer periods. As I looked for a free, continuous MJNY production, I preferred the first part of the recordings because it provided me with such language production. At this point, no additional information about the data was known in terms of potential mouthings.

In the case of S1, I ended up with 19 minutes of video length. As it seemed to be a practical choice, I continued to look for such continuous signing parts in the other interviews as well. In that way, video data of approximately 20 minutes was picked in three cases; in the cases of the two shorter interviews, there was no need to perform such a choice, as they did not show longer interruptions.

As a result, the actual raw video data for the corpus took up 109:26 minutes. This selection had two benefits for the project. Firstly, as pointed out, it offered an account of nearly continuous signing production that was in line with my basic

purpose of free narration. Secondly, it still offered a fair amount of data that could be used for a preliminary investigation, while fitting better to the time schedule of the project.

This approx. 110 minutes of video data was used for annotation purposes. The first step was the selection of discourse chunks in which mouthings with Hungarian inflections were identified. I segmented the discourse chunks around these mouthings based on intonational phrase boundaries. It resulted in 339 utterances (IPs) that had an overall length of 21:26 minutes. The number of IPs was signer-dependent. As there was no intention in this research to compare signers, e.g. upon psycho or sociolinguistic variables, the uneven amount of data was not considered to be relevant. However, it was already seen at this stage that Signer 2 produced considerably more utterances with mouthings with Hungarian inflections (155), thus, her part made up nearly 10 minutes in contrast to other signers with approx. 1 to 3 minutes of material to annotate.

The IP segmentation was followed by the full annotation of these chunks for manual MJNY signs and all the mouthings with Hungarian inflections. It was of interest to find out how frequent these mouthing occurrences actually are in my annotated corpus in order to get an idea about the relevance of the phenomenon under investigation. Sutton-Spence & Day (2001) showed that BSL signers use significantly fewer mouthings in narrative texts than in information-giving registers. Also, the study of Nadolske & Rosenstock (2007) on ASL mouthings indicated that mouthings are more dominant in formal registers like lecturing, rather than in storytelling and conversation. In the beginning of a conversation, mouthings can still be as dominant as in a formal presentation; but as soon as informants make their connection to the conversational partner and adapt to his/her more informal style, mouthings occur considerably less often (Nadolske & Rosenstock 2007).

In light of these findings, the video material was estimated to have relatively few mouthings with Hungarian inflections. This could be due to various factors like, the more informal situation, the familiarity between informants and interviewers and the storytelling style which dominated the discourses.

The full annotation of mouthings was carried out by two independent signers who worked through all the 339 clips. Their involvement is throughly discussed later in this chapter. They had access to the raw videos, tagged every mouthing with or without inflection separately from iLex and provided me with the results. In some clips, no mouthings with spoken inflections were found; in other cases, there was no agreement between annotators about which form they saw, thus, the final number of clips decreased to 320 clips. After an additional verification process discussed in Section 6.5, the subset of mouthings with inflectional suffixes was

listed and finally tagged in iLex. Since mouthings, which did not show spoken inflections, were not subject of further investigation, they were not listed in the final annotation for the sake of time. The following table shows the number of signs, mouthings and the subset of mouthings with inflections.

Tab. 6.2:   *Number of sign tokens and mouthing occurrences in the annotated corpus*

Number of sign tokens	Full number of mouthings	Number of mouthings with Hungarian inflections in the final corpus
2,922	2,114(A1)/2,111(A2)	697

Overall, 2,922 signs were glossed. The full number of produced mouthings reported by the first annotator (A1) adds up to 2,114. The second annotator (A2) recognised 2,111 occurrences. This minor difference is likely a consequence of signer-dependent perception, as well as variation in the annotation of Hungarian word forms. The data shows that 72 % of the signs are accompanied by mouthings in these utterances. Mouthings, in general, seem to be omnipresent in these sign utterances. This result resembles the NGT findings by Bank et al. (2011) and the Auslan data in Johnston et al. (2015). Whether this ratio is influenced by the fact that the utterances contain at least one mouthing with spoken inflection is beyond the scope of this research, as it was not possible to match this data to the unannotated parts of the raw videos.

Eventually, the final annotated corpus contained 697 mouthings with Hungarian inflections. It means that 33 % of the produced mouthings in these utterances were found to be inflected in terms of Hungarian. This ratio suggests that, at least in the annotated part of the corpus, spoken inflection can by no means be considered an exceptional phenomenon and definitely deserves further investigation.

6.3   Distinctive word forms in Hungarian

Prior to the verification of mouthing instances, some criteria had to be established to define empirically investigable cases. The basic restriction came due to the morphological system of Hungarian itself.   Here two main criteria were formulated: mouthings have to show (1) overtly distinguishable inflections and (2) segmentable inflectional suffixes in contemporary Hungarian.

The overt phonological realisation of abstract morphemes was a prerequisite for the mouthing analysis. Only overtly marked inflections have visually present mouthing correlates. Consequently, zero morphemes in a paradigm could generally not be considered as part of the analysis. Therefore, Number inflection on nouns, for example, could only be attested to plural marking and not to the

unmarked, singular form: *tanár* "teacher" [-pl] vs. *tanárok* [+pl] "teachers". Verbal categories, e.g. Tense, Mood or Definiteness, cannot be considered in the case of the present indicative of the indefinite conjugation for the same reason: *látok* "I see" is an unmarked instance in terms of Tense or Mood.

The exclusion of unmarked forms had an influence on the set of mouthings that could be investigated. The one example is the third person singular of the present indicative, which is formally identical with the citation form: e.g. ad "give" vs. ad *ø* "he/she gives". Each time an informant produced the citation form, it was possible that they intended to mouth the third person. However, there remains no overt clue for such an argumentation.

As the literature reveals, the most frequent type of mouthing in various sign languages is the citation form of the equivalent spoken word that is semantically related to the sign (Boyes Braem 2001; Bank et al. 2011; Mohr 2014). The overview of the corpus data also indicates that signers tend to use uninflected mouthing forms. This is in line with my assumption that, despite their competence in Hungarian morphology, MJNY signers do not use paradigms consistently; the insertion of suffixes is not obligatory. Even if semantic and syntactic features in the sign utterance would imply that the verb form refers to third person instead of the frozen lexical form, it is at least uncertain, if not unlikely, that signers intend to use third person in mouthings. Therefore, I generally did not postulate Hungarian zero morphemes in MJNY mouthings in this research.

Sometimes, an overt inflection clearly reveals an additional zero morpheme. According to Kiefer (2000), the possessive Person-Number marking contains zero Possession, except for the third person, in which case the Possession is realised overtly. In third person singular, the Person-Number marking is zero (Table 6.3).

Tab. 6.3:   *Paradigm of Possession morphs vs. the Possessive Person-Number marker*

	Possession morphs	Person-Number morphs (without connecting vowels)	Examples of overt forms
1 sg	Ø	-m	*anyám* "my mother", *gyerekem* "my child"
2 sg	Ø	-d	*anyád* "your mother" *gyereked* "your child"
3 sg	-(j)a/-(j)e	Ø	*anyja* "his/her mother" *gyereke* "his/her child"
1 pl	Ø	-(u)nk/-(ü)nk	*anyánk* "our mother" *gyerekünk* "our child"
2 pl	Ø	-tVk	*anyátok* "your mother" *gyereketek* "your child"
3 pl	-j	-(u)k/-(ü)k	*anyjuk* (their mother) *gyerekük* (their child)

Although only the Person-Number morphs have an overt form in most cases, this Possession marking makes up a distinctive paradigm. Therefore, the discussion of the Possession morpheme in this context is valid, even if there is only an indirect realisation that reveals the intention of marking the possessor. Conversely, the third person singular form *anyja* "his/her mother" with the Possession marker *-ja* is distinguishable from the citation form *anya* "mother", thus, it is reasonable to list this form among other Person-Number markings, even if it has only a zero value in Kiefer's analysis. As mentioned in Chapter 4, Keszler (2000) refers to third person forms *-(j)a/-(j)e* and *-(j)uk/-(j)ük* as Person-Number markers. This shows that its place in Hungarian grammar is approach-dependent.

The last case that has to be covered here concerns grammatical homonymy. A good example is provided by the overlapping forms of indefinite and definite paradigms in first person of past indicative: ott *vártam* "I waited there" vs. *vártam* őt "I waited for him". It is different from the present indicative, in which the two forms are distinguishable from one another: ott *várok* "I wait there" vs. *várom* őt "I wait for him". Since the text type is narrative and the signers report about their life experience, a respective number of occurrences for first person past indicative were found in the corpus. In this case, there was no usable clue for the use of the definite Person-Number paradigm, which expresses Definiteness in Hungarian; in line with the above argumentation, the unmarked indefinite conjugation was assumed to be present in such cases.

Another important criterion that was consciously introduced to define the set of analysable mouthings was the synchronically segmentable inflection. In other words, the corresponding Hungarian word had to feature segmentable inflection in

terms of contemporary grammar. The reason for this decision is similar to the aforementioned zero marking; if a frozen form that became a lexical unit is reminiscent of former inflection, it could not be argued that signers would make use of synchronic inflectional morphology during MJNY production. According to the basic assumption of the present work, elements of the contemporary spoken morphological system are represented in non-manual units of a sign language.

There are some examples that deserved closer attention in this respect in order to decide for or against their inclusion. The first example is the reflexive pronoun *maga* (see Chapter 3). As mentioned in the morphological description in Chapter 4, instead of a synchronic segmentation into the stem *mag* and person-number markers, the pronoun can be seen as operating on lexicalised word forms which still carry inflectional characteristics (Korchmáros 2009:127). Thus, it did not fit into the desired set of examinable mouthings.

Another, more problematic example was provided by the accusative case of the personal pronoun (table below).

Tab. 6.4:   *Hungarian personal pronoun paradigm in Accusative*

1 sg	2 sg	3 sg	1 pl	2 pl	3 pl
engem	téged	őt	minket	titeket	őket

It uses a paradigm that consists of different suppletive forms, some of which are no longer segmentable. It neither fully shows the *-t/-at/-et/-öt* forms of the accusative case, nor do the stems *mink* or *titek* exist in standard Hungarian. In that sense, only the third person forms would fit the synchronic segmentation criterion: *ő+t* "him/her"; *ők+et* "them", where -(e)t stands for the accusative case.

This indicates that the personal pronoun in the accusative case functions rather as a set of frozen forms, similar to the reflexive pronoun. Korchmáros (2009:125) also explains that, in contemporary Hungarian, this paradigm does not fully display the accusative case marker as nouns do, although it does have the role of accusative marking, as the reflexive pronoun expresses reflexivity. Because of the problematic nature of this phenomenon, I decided to not to include this paradigm since some of the values cannot be segmented clearly as inflections. Clearly analysable third person forms (őt, őket) which could have given a reason to include, did not occur in the corpus.

The copula verbs *van*, *volt* and *lesz* were also seen to be restricted in morphological analysability. As it was discussed in their descriptions, these verbs make up the whole paradigm of the "be" verb through suppletivism. All three can show Person-Number morphs: *vagyok* "I am", *voltam* "I was", *leszek* "I will be/become". Although *volt* is assigned Person-Number suffixes typical of the

past, Tense marking itself cannot be interpreted synchronically. Today, *volt* is a lexical item used only for expressing existence in the past; *lesz* functions the same way related to future. Only *lett* shows a change in word form standing for the past of *lesz*, to which an active Tense marking can be attested. *Lett volna* "would have been" is counted in the sense of Kiefer (2000) as one morphological word. Although, the status of *volna* can be seen as transitional, from an analytic expression to inflection, it also operates based on the same abstract inflectional system. I counted this form as part of the inflectional paradigm and included it into the possible mouthing forms.

The analysis of Tense marking on other auxiliary verbs was also inhibited. The auxiliary *szokott* "used to" exists in today's standard Hungarian only in its past form similar to *volt*. It can be seen as a lexicalised item which serves as a new paradigmatic stem for the attached Person-Number inflection. For this reason, Person-Number morph in third person singular was not included here because it is identical with the contemporary citation form.

The auxiliary *fog* in the future analytic construction (e.g. *enni fog* "will eat") is morphologically a present form. It can be considered in more comprehensive research which also examines a broader set of morphological forms and semantic alignments. However, this study is limited to synthetic word forms of Hungarian. In the case of *fog*, therefore, only Person-Number morphs can be examined.

Kell in the function of an auxiliary verb only indicates past morphology: kell "have to/must" – kellett "had to". The Person-Number marking is carried optionally by the infinitive, e.g. *csinálnom kellett* "I had to do".

Finally, person-marked adverbs cannot always be segmented into synchronic stem and inflection. However, in the three types (neki, vele and hozzá) that occurred in the corpus, I found that the role of the stem is played by the inflectional case marking (-nek/-vel/-hoz respectively). These are formally and semantically the same as the synchronic case markers on nouns as discussed in the grammar description. For this reason, I included both Case and Person-Number as morphological categories to be investigated in person-marked adverbs.

To sum up, in the final data set, the only instances that were allowed were those which met two criteria: (1) they are overtly realised morphemes (that is, morphs) or covert, but appear in distinctive spots in paradigms so that we can assume that signers mean those morphemes when mouthing the respective words; (2) they are clearly definable as synchronic inflections in standard Hungarian. The targeted items in mouthing annotation were the inferable visual segments. These correspond to overt morphs. Their relationship to abstract morphological categories will be discussed in the next chapter.

The decisions I made act in accordance with standard Hungarian grammar and were predefined. The influence of this procedure is relevant to the data corpus. It necessarily led to restrictions in the analysable paradigms. Person-Number marking was the least affected by them. However, Tense, Mood and Definiteness turned out to be morphological categories that, due to a lack of segmentable, overt inflection, are more limited in analysability in some cases. It had a considerable effect on data loss, too. For instance, the 51 VOLT signs in the corpus are usually accompanied by the mouthing 'volt'. As the item is counted as a lexical element, similar to a third person present indicative form of a verb, neither Tense nor Person and Number could be considered for the final data set in these 50 occurrences. Such data loss was often the consequence of the imposed constraints. However, limiting this analysis to clear cases was one way of raising the internal validity of the possible results.

6.4   Limitations in perceptual identification of visual mouth patterns

As repeatedly pointed out thus far, the basis for the analysis of Hungarian inflections in MJNY mouthings is the following assumption: there is a connection that reaches from visual mouth segments via spoken inflectional markers to abstract spoken morphological categories. Arguments for an orthographic annotation, which lies on such a basis, were provided in the previous chapter. This section expands the issue by discussing the perception mechanism that is involved while an annotator recognises an inflected word form in mouthings. What makes it necessary to address this question from a methodological point of view is the indirectness in matching visual segments with spoken inflections. The goal is not the assessment of the psychological reality of those inflections; it is simply important to clarify the influence of perception as a limitation in the set of mouthing items that could be accepted for the corpus.

The psycholinguistic study of spoken language recognition in hearing persons provides us with some general guidelines. In word form recognition, different processing levels are involved: syllable, lexical, grammatical and the discourse level. These levels mutually facilitate the recognition process. It is generally acclaimed that there is a competition between possible words in recognition, which depends on multiple decisions (Cutler 1998). An impressive competency of native speakers concerns the syllable level: the categorical matching or recognition of different acoustical and visual signals constrains the activation of word forms. As Cutler (2008) emphasises, it points to an abstract knowledge in

operation that involves information, e.g. about the distribution of sounds in the phonemic inventory of a language. The language competency includes the knowledge of frequency patterns and the probability of appearance of syllable orders in word forms. This categorical recognition makes the accommodation to various differences in signals much easier when listening to different speakers (Cutler 2008: 1616).

More importantly, syllable recognition goes hand-in-hand with the activation of word forms on both the lexical and grammatical level. It includes knowledge from the episodic memory that provides information about the possibilities in a given discourse and long-term memory in form of accessing entries in the mental lexicon and matching them with applicable syntactical and morphological rules in sentences. While syllable recognition continues, there is always an instantaneous reference to possible meaningful units (Cutler 2008). In fact, common elements that are established in long-term memory can facilitate word activation (Kassai 2006: 806). As Clifton et al. (1999) showed, for example, words with high-frequency, regular inflection can be recognised easier than those which are irregular or less frequent.

Cutler (1998) explains that the process of spontaneous speech perception usually requires dealing with indistinct, partially unspecified signals. Phonological effects such as assimilation, deletion or vowel insertion (epenthesis), however, do not usually disturb recognition, unless phonological variation leads to an unintended alternative word form such as the overlap of inflected forms with monosyllabic words, e.g. won vs. one (Cutler 1998:90).

A related issue concerns the illusions in speech perception. As the research of Massaro and colleagues demonstrates, visual input affects auditory experience (Massaro 1998). The basic mechanism that was subject to extensive psycholinguistic study is the McGurk effect. The classical example is the mistake of the auditory signal /ba/ paired with the visual /ga/ for the perceived /da/ (Massaro 1998: 21). The information comes from both modalities, although one tends to believe to perceive only the acoustical signal. The perceptual judgements are at most influenced by the least ambiguous source of information (Massaro 1998: 22).

Another phenomenon is called the phonemic restoration effect. It denotes the phenomenon of identifying phonemes for which there was no signal in the stimulus. For example, a consonant in a word is replaced by a noise. Similar to the restoration effect, written words facilitate the perception of the auditory input. This effect was also found for lip-reading: if a syllable is provided visually, it is easier to detect it (ibid. 1998: 25).

The other branch of research that offers useful insight for the present discussion is the study of visual word recognition through the lip-reading of deaf persons. It was an important field of inquiry, especially prior to the increasing focus on the technical development of hearing aids.

Campbell (1987) investigated patients with different disorders and found dissociation between lip-reading and speech disorder. On the one hand, a patient's case showed that the capability to lip-read can be impaired without the latter; on the other hand, correct lip-reading is possible despite language impairment. She concludes that lip-reading may be a component set of functions that is part of left-brain language processing; however, some components are better processed in the right hemisphere (ibid. 1987).

Dodd (1987) found evidence that visual lip movements can be matched to abstract phonological categories. She emphasises that the phonological code is a non-modality-specific code and necessary for the recognition of speech. It is not linked only to discrete acoustic units; phonemes can also be perceived through visual information provided by lip-reading (1987:188). There is, of course, limitation on the effectiveness of processing purely visual clues of spoken input. It is important to note, however, that there seems to exist a mechanism which is responsible for the successful visual recognition of speech.

The aforementioned literature provides some hints on how mouthing recognition may function in sign language production. However, it should be treated as a unique perception mechanism and not fully comparable to word recognition in hearing subjects or the lip-reading of speech. Keller (2001:208) compared the similarities and differences in perception in his model reprinted below (Figure 6.1):
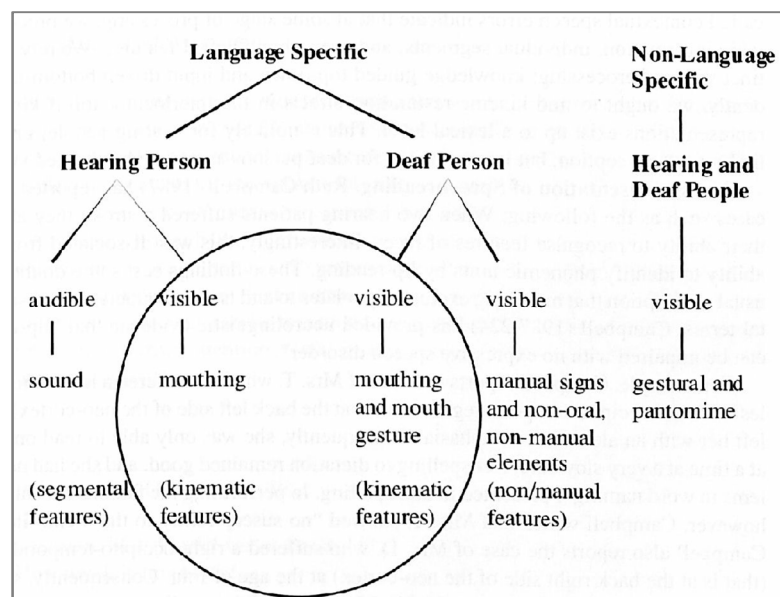
Figure 6.1: Perception mechanisms: SL and SpL compared (Keller 2001)

Evidently, hearing and deaf persons share the visual component of word recognition, as both rely on visual information called kinemes, as established by Keller, which they infer from the lips (also known as visemes cp. Massaro 1998). However, hearing subjects also process the audible signal as part of a bimodal (visual-auditory) perception mechanism. The bimodal signals contribute to both pre-lexical bottom-up recognition and knowledge-based top-down lexical identification.

On the other hand, if we compare mouthing perception with speech, although the input is restricted to visual features, it is enriched by manual input and non-manual input other than the mouth. Mouthings appear in a context of other visual linguistic and even non-linguistic elements, enhancing recognition of the intended meaning of mouthed occurrences similarly, as proposed by Ebbinghaus & Heßmann (2001). Keller (2001) claimed that, analogous to the phonemic restoration effect, it is reasonable to assume a kinematic restoration effect as well, which is responsible for the identification of mouthings despite the unspecified visual signal. A knowledge-based top-down process is always part of the recognition and helps to fill in the gaps (Keller 2001: 208).

The perception of mouthings has been a very under-researched territory until now. Maybe the most intriguing question is whether mouthings are matched to phonological units of the respective spoken language or they're processed purely as visual segments on their own. As pointed out in Chapter 5, very little evidence exists on this subject. On the one hand, the study by Udoff and Nip (2013) suggests that mouthings, especially formally restricted ones, are perceived visually similar to mouth gestures, as proposed by Keller (2001). On the other hand, Vinston et al. (2010) found, in their lexical recognition test, that mouthings are processed by the brain akin to spoken words (at least in isolation under experimental conditions).

As the present research postulates, mouthings with spoken inflections rather belong to the set of mouthings which are more connected to spoken language. Based on this statement and the previously discussed evidence on word recognition and lip-reading, the following two paragraphs summarise a proposed mechanism that an interlocutor or a competent annotator is exposed to during the perception and recognition of mouthings with Hungarian inflections.

Mouthings are perceived as visual segments; therefore, we deal here with unimodal signals. Processing this input and dissociating between visible categories are characteristics that belong to the competency of signers. Analogous to syllable recognition, this involves a unique, language-specific repertoire of abstract categorical kinemes. Their frequency and typical combination patterns provide usable information in this interpretation.

Based on the knowledge in spoken Hungarian, the interlocutor is able to match the visible units to the phonological code of Hungarian, crossing over to spoken syllable recognition. In other words, the unimodal signals eventually lead to a cross-linguistic or bimodal recognition. The visually accessible vowel and consonant inventory of Hungarian is limited. However, it is not necessary to get fully specified signals to activate word forms. The position of inflections may be also an advantage. At the end of word forms, there may even be a more limited set of possible inserted syllables to choose from. In addition, the input-driven bottom-up recognition is enriched by a knowledge-based top-down process: in this case, the sign language competent person draws on the lexical and grammatical information produced by other articulators, as well as on the knowledge of frequently-used spoken word forms, occurring or re-occurring with a high probability in a given discourse. This hypothesis needs further empirical testing for validation.

Mouthing recognition is a language-specific phenomenon. Hence, it is expected that typical patterns of assimilation, deletion or vowel insertion that are present in casual spoken Hungarian influence the probability of recognition. I considered in advance the kinds of phenomena that are regularly present in Hungarian that could be expected to facilitate or hinder the annotation of inflected mouthings.

Bank et al. (2011), for example, found in NGT that the Dutch lexical mouthings often show temporal reduction. The stressed syllable (the first or second) are the most frequently produced parts of mouthings. Temporal reduction happens usually in the form of deleting word-final consonants. They provide two reasons for why final consonants are deleted: schwa and inflection. They report that the majority of mouthings in their corpus contain a schwa, which is a neutral vowel (between back and front, closed and open) without any lip-rounding or widening (Bank et al. 2011: 264). As this consonant is often invisible to the annotator, the annotation ends on the last syllable before the schwa.

The other reason for temporal reduction is sometimes an inflected form, e.g. third person singular *zegt* "he/she says" instead of *zeg* "say" or the singular *kan* "I/you/he/she can" instead of the citation form *kunnen* or formal second person *kunt* "can" (ibid. 2011:264). An interesting speculation the authors make is whether the replacement of the citation form by inflected forms can be due to the requirement of, for example, second or third person in the grammatical context (ibid.). Such investigations will be put forward in the present thesis.

In Hungarian, vowels strongly influence the phonological structure of the stem, as well as the selection of suffixes. A basic distinction can be drawn between front vowels (i, í, ü, ű, e, é, ö, ő) and back vowels (u, ú, o, ó, a, á). Tongue position is also distinguished in each group by height (low, mid and high). Mid and high

vowels can involve a rounding or widening of the lips called labial (i, í, e, é) vs. non-labial (ü, ű, ö, ő) vowels (Korchmáros 2009: 16). An overview of the vowel system is depicted in Table 6.5.

Tab. 6.5: The Hungarian vowel system

	Front				Back	
	Non-Labial		Labial			
	Short	Long	Short	Long	Short	Long
High	i	í	ü	ű	u	ú
Upper mid	(ë)	é	ö	ő	o	ó
Lower mid	e				a	
Low						á

As mentioned in Chapter 4, Hungarian makes extensive use of vowel harmony. Words are disposed to have rather back or front vowels. More importantly for this research context, these rules affect the choice between back and front suffix variants and connecting vowels are inserted to avoid consonant cluster at the stem–suffix boundary. In addition, suffixes with front vowels are also attached depending on labial or non-labial features. The following table exemplifies inflected word forms according to some vowel harmony rules (Korchmáros 2009: 16f).

Tab. 6.6: Examples of inflected word forms

Lexical stem	Possible suffixes and connecting vowels	inflected word forms
kert "garden"	-ban/-ben	*kert**ben***
ajtó "door"	"in"	*ajtó**ban***
tanár "teacher"	-(o)k/-(e)k/-(ö)k	*tanár**ok***
rendőr "policeman"	general plural	*rendőr**ök***
vendég "guest"		*vendég**ek***
üzlet "shop"	-tól/-től	*üzlet**től***
barát "friend"	"from"	*barát**tól***
tanul "learn"	-(e)tek/-(a)tok/ -(ö)tök	*tanul**tok***
néz "look"	2 pl. present indicative indefinite conjugation	*néz**tek***
ül "sit"		*ül**tök***

As for consonants, Hungarian has a tendency to use epenthesis, that is, the insertion of vowels between consonants. By doing so, it avoids consonant clusters. This phenomenon in spontaneous speech is often advantageous for the listener in word recognition (Cutler 1998). Connecting vowels are likely to contribute to the

recognition of spoken inflections in mouthings since they are more easily visible and restrict the set of possible consonants in words that can co-occur with them. Consonant clusters are, in various cases, simplified in speech, hence in mouthings. For example, three consonants are often reduced to the first and last: *fogd meg* "hold/catch" uttered as *fog meg*, *mondtam* "I said" as *montam* (Korchmáros 2008: 18). Also, there are a number of assimilation rules on morpheme boundaries. These are marked in orthography as well. Typical assimilation patterns, some of which the readers will find repeatedly in the corpus, are shown in Table 6.7.

Tab. 6.7:   *Assimilation patterns in inflected word forms*

Lexical stem	Possible suffixes and connecting vowels	inflected word forms
olvas "read"	-j imperative + -unk 1pl. indef.	*olvas**sunk***
vesz "buy"	-j imperative + -ük 1pl. def.	*ves**szük***
pont "point"	-val/-vel	*pont**tal***
tolmács "interpreter"	"with"	*tolmá**ccsal***
ez "this"	-ból/-ből "from"	*eb**ből***
ugyanaz "the same"	-ba/-be "into"	*ugyana**bba***

This short compilation aimed at demonstrating some typical features of Hungarian word forms that annotators had to deal with in the recognition process. It cannot be clearly stated which inflected words should be easily identified, although general tendencies can be predicted, e.g. vowels and consonants, especially those with clear labial movements are more likely to recognise with less effort. The next section goes into detail about the annotation validation during which deaf MJNY signers made their guesses for mouthing instances of the corpus.

6.5   Final mouthing annotation

The three main steps of the descriptive annotation were discussed earlier: (1) the segmentation of utterances through the identification of IP boundaries, (2) the full annotation of those utterances for manual signs and (3) for mouthings with spoken inflections. A tentative tagging of mouthings in iLex was done in this raw annotation phase. But the involvement of MJNY signers in the annotation procedure seemed to be vital to ensure a type of verification for the exact form of these occurrences. As previously mentioned, the recognition of the usually one or two syllable-long inflections can be person-dependent and influenced by many

factors. Therefore, I was in need of reliable judgments which confirm that the occurrences, which have to be analysed, are in fact perceivable for signers.

Three deaf MJNY users were asked for their assistance in the annotation. Annotator 1 and 2 were signers who have been involved in the Hungarian community for decades. One of them has deaf parents and can be regarded as an experienced teacher of MJNY as a second language. The other person comes from a hearing family and was exposed to sign language since pre-school; today they work in sign language research. Although annotator 1 has residual hearing, both of them rely on lip-reading in relation to non-signers in their everyday life.

A third Hungarian-born deaf signer (annotator 3), who was part of the community for a long time and now works in a sign language research context outside of Hungary, was partially involved in the verification procedure. She was also available to discuss the linguistic material and made valuable comments on different stages of the annotation procedure.

Annotator 1 and 3 assisted me in identifying unclear manual signs that were left blank in the raw annotation. One reason for this was the use of less frequent expressions that were not found in any lexicon or teaching material. The other issue was the speed of sign or unclear transition between signs that hindered recognition. I discussed about 160 glosses, independently of the signers, and added or modified them based on their comments.

The main contribution of all three signers was related to the independent mouthing annotation of discourse chunks. I provided the two signers from Hungary (annotator 1 and 2) with the video material. Since they did not have access to iLex and were not trained to use this tool, I made the material available on a private internet portal to which they received access. They could stream the videos and type in the mouthings.

I took all the signed utterances segmented in advance in the form of 339 clips and asked the signers to annotate the mouthings they recognised. The task was not specified for inflected forms in order to avoid focusing on the purpose of the project and consciously looking for the often subtle inflections. As both of them were familiar with the process of analysing sign language, the task seemed to be relatively easy to grasp. They were instructed to click through the clips, one after the other, write down what they saw in terms of mouthing and proceed from there. In cases of unclear occurrences, they were asked to mark them and leave those instances open. It was allowed to look at clips more than once if they found it necessary, however, I indicated that they did not have to make a decision if they were unsure about what they saw.

The annotators could not rely on all the paralinguistic information that was available in the original situation. But by taking the relative familiarity into

account (the annotators knew the informants more or less) and the possibility that they could look at the utterances more than once if they felt it necessary, it is safe to say that the perception mechanism resembles that of the actual interlocutors. The annotators were also encouraged to report any other kind of problems, such as the quality of the material or technical difficulties. Such comments never arose. After the completion of the annotation, all the data was saved and deleted from the website to prevent any private videos from being unwillingly accessed.

The next stage contained the evaluation process. First, all the mouthings per annotator were counted to find out about the ratio of inflected mouthings to the total number of mouthings in the corpus, as shown at the beginning of the chapter. Subsequently, I focused on the inflected instances. Every mouthing was taken out from the two annotations respectively, for which the criteria of showing overtly distinctive, synchronically segmentable Hungarian inflectional markers applied. The two lists of mouthings were compared and divided into the following groups.

1. Identical mouthings were annotated

2. Identical or different mouthings were annotated, but one of the annotators marked the occurrence as unclear (e.g. with brackets or a question mark)

3. Only one of the two annotators recognised inflection at the end of mouthings

In order to qualify the occurrences for the corpus, a couple of decisions had to be made on their admission. The first group of mouthings were accepted for the corpus, as the independent recognition was provided.

Groups 2 and 3 deserved closer attention. For the one annotator, the inflections were clearly visible; for the other, they were not or the annotator was unsure about what he/she saw. On the one hand, it can be argued that, due to the lack of agreement, these instances should be discarded from the data set altogether. On the other hand, it still remained an open question as to whether an inflection is perceivable or not. The reason for different annotation cannot be precisely identified. As previously discussed, a lot of cognitive decisions take part in mouthing recognition and; also, they can affected by technical issues like the visibility of mouthing forms in the video clips. In addition, the inflection reported by one of the annotators was, most of the time, identical to my original tag in the raw annotation. Although I did not use the raw annotation as an additional list with which to compare, this fact also suggested that an independent confirmation would be reasonable.

Therefore, I asked annotator 3 to look at those clips that contained the problematic instances and tag them similarly to the other two annotators. In this way, I had an

independent reference for the inflected occurrences. A decision was made regarding whether or not the third annotator gave an identical form to those that were already reported. In the case of any marked uncertainty or lack of inflection, these occurrences could not be included into the corpus. 113 of the 204 revisited mouthings were eventually added to the final annotation. Because the exact forms were recognised independently by two signers (and usually matched my original guesses as well), I considered these occurrences as satisfying for proving that inflections are present in the mouthings and therefore enable further analysis. At the same time, the procedure demonstrated that the annotation of inflected mouthing forms is not always without uncertainty. For this doctoral research, it was beneficial to use a larger number of mouthings. But the psychological reality of these occurrences has yet to be investigated more closely by future studies.

 Note that follow-up studies could also benefit from other statistical reliability tests to sort out instances for analysis. The rationale for this individually constructed verification procedure was to find a simple way to collect mouthing data. In so doing, the thesis followed similar ideas like the data collection methodologies of previous studies in this field of research (Boyes Braem & Sutton-Spence 2001, Bank et al. 2011, 2013, Mohr 2014). Based on intuitive scholarly decision making, these ideas were extended and changed to fit the individual research question. The following table wraps up the verification procedure in numbers.

Tab. 6.8:   Overview of the steps of mouthing verification

Verification steps	Number of mouthings
Group 1: Identical mouthings given by annotator 1 and 2	**584**
Groups 2 and 3: Mouthings retained for independent confirmation	204
Tags of annotator 3 identical to one of the previous forms	**113**
Excluded: No independently annotated identical forms	91
Final mouthings: identical forms were given by two independent annotators	**697**

There turned out to be 697 mouthing occurrences in 320 clips. I took these mouthings and tagged them in the final version of the iLex annotations. 19 clips, in which no inflected mouthings were recognised or no identical inflections were found, were eventually removed from the final corpus. It was revealed that 91 occurrences could not be considered for the analysis. However, it still seemed to be interesting to find out the kind of word structure these instances exhibited that

may hint at the reason for why one annotator recognised them while the other two did not, or why they gave different answers.

65 of the 91 cases were seen only by one signer. Interestingly, only 14 occurrences contained a word-final consonant inflection. The one example was the *-t* functioning as an accusative case marker (e.g. 'semmi**t**' "nothing", 'záróoktatás**t**' "class teaching exam") and also as past tense marker ('kér**t**' "he/she asked"). The other example was the collective plural marker *-k* ('nagyonhalló**k**' "hard of hearing", 'aki**k**' "who"). Such final consonants can be seen as more difficult for perception. However, in other cases, such instances were annotated successfully by the independent signers.

In turn, 44 mouthings that were reported by only one annotator, but not the other two, contained suffixes with connecting vowels involving one additional syllable or vowel change in the stem. The rest of the instances covered differences between inflected forms and formally related monomorphic words ('mi**t**' [acc] "what" – 'miért' "why") or, in one case, mouthing and mouth gesture mismatch.

In short, phonological differences due to the presence or absence of vowels in inflectional suffixation did not show any clear impact on this data. There was no indication either for the advantage of labial front vowels over back vowels or bilabial consonants. On the contrary, a usual disagreement among these 65 items concerned suffixes with additional vowel and bilabial or dental consonants, e.g. 'kipróbál' "try out" vs. 'kipróbál**nám**' "I would try it out". This comparison points to the direction that visually perceivable syllable-recognition is by far not the only factor that may influence this recognition process. In accordance with the model of Keller (2001), other linguistic and non-linguistic signals and other cognitive processes do seem to play a role in recognition and have an impact on these annotation differences.

19 of 91 mouthings were annotated by the first two annotators as containing a certain inflectional marker; however, they gave different values. The third annotator did not recognise the inflection or gave yet another value. 5 of these mouthings showed case markings, e.g. 'nyelvvizsgá**t**'[accusative] "language exam" vs. 'nyelvvizsgá**ra**'[sublative] "to language exam"; 'jelnyelv**en**'[superessive] "in sign language" vs. 'jelnyelv**vel**'[instrumental] "with sign language".

The other 14 of 19 occurrences were examples of alternating Person-Number inflections from different paradigms involving present–past, indicative–imperative oppositions and definite–indefinite paradigms (e.g. 'fogad**tak** el' "They accepted me" – 'fogad**jál** el' "accept me", 'hagy**jam** abba' "I should stop it" –'hagy**jak** abba' "I should stop sg.").

Although I did not investigate the grammatical context, I assume that some of these forms can both relate to the grammatical meaning of the signed utterances, while others may not at all. Differences, especially in Person-Number morphs, can also suggest that occasionally inflected mouthings are not strictly perceived by signers in terms of grammatical meaning, but rather based on their lexical value. In these cases, the additional inflectional marker may not be of special importance. Nevertheless, the aforementioned occurrences were the exceptions.

A similar explanation applies for the rest of the 6 instances, in which the difference between the annotated forms showed inflectional suffixes of different categories and monomorphemic words, e.g. 'késett' "He/she was late" vs. 'késő' "late", 'tanár**ok**' "teachers" vs. 'tanár**om**' "my teacher", 'társaság**om**' "my company" vs. 'társaság**ban**' "in company".

This short summary demonstrated that such occurrences could not be involved in any further analysis because the intended mouthing could not be clearly identified. Reasons for different forms to perceive cannot be uncovered any deeper within the scope of this thesis. However, this subject can lead to research on its own that finds out more about the factors that affect the recognition of mouthing forms, especially those containing grammatical meaning.

After defining the final data set, the last question to be answered was to what extent abstract morphological categories can be investigated based on the visible inflectional markers. Person-Number markers, Case and nominal Number markers in the final corpus always have an overt, realised form. The abstract categories are realised. However, in cases of other abstract categories, e.g. Possession, Tense, Mood or Definiteness, whose realisation is indirect or visually intertwined with Person-Number markers, I had to decide on how to approach them. As described in this chapter, Possession is marked through a distinct Person-Number paradigm, with the exception of the third person. Definiteness has no overt realisation on its own; it is expressed through the distinction between two Person-Number paradigms. Tense is only marked morphologically in past verb forms, and sometimes only with a consonant *-t* or *-tt*, similar to Mood, where sometimes only a consonant *-j* or *-n(n)* is the overt morphological indication.

As a working hypothesis, I presume that, for the operation of Hungarian morphological categories that are realised through or together with Person-Number markers, these Person-Number markers at the end of the words are the clearest indication. That is why I decided to focus on the directly and clearly realised abstract morphological categories: Case and Number on nominals and pronouns; Person and Number as they occur on verbs and nouns in possessive constructions.

Possession, Tense, Mood and Definiteness will be discussed by distinguishing between the different Person-Number paradigms. In this detailed qualitative analysis, I focus on the categories Person, Number and Case.

6.6 Summary

In this chapter, I dealt with determining the set of mouthings for the final annotated corpus. On the one side, the language system of Hungarian constrained the data;it was emphasised that only overtly distinctive, synchronically segmentable inflections could be considered in this research. On the other side, perceptional uncertainty needed a cautious inspection of mouthings produced by deaf MJNY signers.

The mechanism of mouthing recognition was discussed in order to conceptualise the issues that may affect the annotation. The essence of what was concluded is as follows: this recognition can be conceived of as the process in which kinematic gestalts of spoken words (produced partly or fully) can be inferred and understood in a sign language environment within a given context. I assumed that the psycholinguistic process is based on the knowledge of spoken language words and the completion of kinematic units in terms of words, despite their unspecified signals. The competency of sign language mouthing recognition is unique to sign–spoken bilinguals.

The main criterion for the final mouthing set was the independent identification of the same form. In about ¼ of the occurrences, ambiguous mouthings were decided on by involving the guess of a third, independent annotator. The final data set contained 697 occurrences. The 91 mouthings that were reported by at least one annotator, but were not seen by others or the forms were different, were finally investigated. A first look at the forms did not reveal any clear patterns in terms of vowel and consonant structure. It hinted at the different linguistic and other cognitive processes that may have played a role in these divergent annotations. The analysis discussed in the following chapter is carried out on the categories Person, Number and Case.

Part III. Findings

7 Hungarian morphological categories in mouthings

7.1 Introduction

This chapter presents the corpus-based findings. According to the observation data of this research project, MJNY signers might produce mouthings in which inflectional markers of spoken Hungarian replace the citation form. It was previously discussed that the bilingual deaf community lives with the spoken Hungarian in everyday interaction and signers are aware of mouthings as being part of this interaction. Anecdotes and observations showed that there seems to be different ways of mouthing usage: one that rather involves the lexical citation form and reduced forms, and a more spoken language-oriented usage that also exhibits inflections.

The influence of spoken language on mouthings in different sign languages was also discussed. Inflection on mouthings was never the focus of previous studies, although some of them reported finding such instances and mentioned them in their typologies. For more insight into this phenomenon in MJNY, a systematic, empirical examination was required.

During the annotation of the raw video data, it was necessary to limit the present investigation to those inflections which were overtly distinctive and analysable in terms of synchronic Hungarian and were also recognised independently by two MJNY signers. In line with the arguments presented in the previous chapter, I firstly narrowed down the empirical investigation to the morphological categories Person, Number and Case. They appear as the following morphological markers: (1) Person-Number marker, (2) Case and (3) nominal Number marker. This chapter begins by introducing the refined research questions and goes on with the demonstration of mouthing patterns in the corpus.

Refined research questions and related tasks:

1. Which Hungarian morphological categories can be attested in overtly distinctive inflectional markers in mouthings?
   a. Ranking of mouthings which co-occur with Hungarian Person-Number, Case and nominal Number markers based on frequencies and dispersions in the corpus
   b. Discussing systematic vs. idiosyncratic patterns of mouthings
   c. Matching overt inflectional markers to abstract morphological categories

Statistical description, which was applied in the quantitative parts of the findings, was centred on frequencies of occurrences and co-occurrences as usual in corpus-based studies. However, the analysis had to take the heterogeneous features of the corpus into consideration. At the beginning of Chapter 5, the signer-dependent nature of mouthings and its influence on the uneven lengths of the video data was already discussed. Signer 2 expecially produced a lot more mouthings with inflections than the others; thus, the full annotated part of her utterances made up 9 minutes and 52 seconds compared to the 1 to 3 minutes of the other signers. After the refinement of the data set, the distribution of mouthings in the remaining 320 discourse chunks still reflected this situation. S2 produced 441 mouthings, that is, 63 % of the overall instances. The other 5 signers were more homogenous in this respect. The number of occurrences falls between 18 and 81.

Tab. 7.1:   Frequencies of mouthings produced in the informants

Informants (corpus parts)	Frequencies of mouthings
Signer 1	63 (9 %)
Signer 2	441 (63 %)
Signer 3	81 (12 %)
Signer 4	18 (3 %)
Signer 5	36 (5 %)
Signer 6	58 (8 %)

In sum, S2 produced way more mouthings than the others in the 110 minutes' long raw video corpus. The bottom-up approach that was pursued in this project focused on the collection of each mouthing occurrence with inflection. Thus, the more data from S2 was thought to be beneficial for this research. It is not the intention to compare signers in terms of their backgrounds in the first place, although some explanations will be offered to account for apparent signer-dependent mouthing behaviour. However, comparisons will be made between the frequency differences of different mouthing patterns. For this reason, some strategies had to be considered which help to handle the heterogeneous nature of the corpus.

One way of coping with quantitative differences in corpus-based studies is the normalisation of the frequencies of (co-)occurrences (McEnery, Xiao & Tono 2010). This basically means that the frequencies of corpus parts are compared by taking the differences of their sizes into consideration. As Gries (2008) puts it: "*[...] one can only compare frequencies or use them to make statements about what is more frequent when the frequencies have been normalized*" (2008:271).

Since, in my case, the absolute frequencies of mouthings in signers considerably differ, it is obvious that an element *a* is expected to occur in a way that shows these overall differences, e.g. 20 times more frequent in S2 than in S4. That is why it makes more sense to focus on the actual ratio of the frequencies in the different signers or corpus parts, e.g. the ratio of element *a* in S2's and S4's mouthings respectively.

Another related issue that is highly important to mention is the dispersion of elements or constructions over the corpus. Gries (2008) clearly explains that reporting the relative frequencies of linguistic elements (e.g. a mouthing occurs in 28 % of the data set), especially if it is a more unbalanced corpus, is in fact nothing more than giving an overall mean which does not reflect the parts of that corpus. Statements or further statistics derived from such overall relative frequencies are suspicious, since it is easily possible that certain findings are entirely under-representative of the corpus as a whole. For instance, Stefanowitsch and Gries (2003) examined the imperative of the British part of the International Corpus of English (ICE-GB) and found that some verbs, like *fold* or *process*, are among the highly-ranked items. However, they all came from a single file (ibid. 2003), hence, these high frequencies are not representative of the whole corpus.

In a small-scale corpus study like the present one, such problems based on uneven distributions can undermine later analytical steps even more extremely. Therefore, I decided to give the absolute observed frequencies as raw indices for the appearance of an item together with a measure for the degree of dispersion. It reveals to which extent the corpus frequency of a mouthing or a mouthing–sign collocation mirrors the overall distribution of that item in the corpus.

For this reason, I adopted the Dispersion of Proportions (DP) measure proposed by Gries (2008). It is a conceptually simple measure that assigns a value between 0 and 1 to an item. The more the value approaches zero, the better the item's relative frequencies are proportional to the sizes of the corpus divisions, meaning the better the item is distributed evenly in the data set. DP is a parts-based measure which has some considerable advantages for the study. As Gries (2008) summarises, (1) it can also be applied to differently-sized corpus parts and (2) it utilises a basic principle: differences between observed percentages and percentages of the corpus parts. Moreover, (3) it handles the occurrences and co-occurrences of elements and (4) is sensitive towards minor differences, thus bearing enough discriminatory power. A simple ranking of items based on DP value shows the relation of representativeness between their observed frequencies in the corpus (2008:425).

In the following section, I present and discuss mouthing patterns using the above description. First, the exact application of DP is demonstrated. Subsequent tables will only list the values.

7.2 Overall findings

The final mouthing data set of 697 items was taken for investigation for the co-occurrence frequencies of those items with inflectional markers. The word *colligation* will also be used in the sense of Hoey and Sinclair (1995): colligation is a significant co-occurrence of a word with grammatical classes or categories. Three main colligation groups are distinguished, as shown in the table below:

Tab. 7.2:   *Colligation groups in the corpus*

Inflectional markers	Mouthings
Person-Number markers	N = 475
Case markers	N = 227
Nominal Number markers (plurality)	N = 41

There are 4 additional occurrences in the corpus of the mouthing 'kellett volna' "should have", all from Signer 5, that are not included in these groups, as they only contain markings for Tense ('kell**ett'**) and Mood ('volna'). They were, however, not eliminated from the data set as such.

Some person-marked adverbs co-occur with both Person-Number and Case marking and are thus involved in both colligation groups. Also, some mouthings with nominal Number markers bear another Person-Number suffix. This explains why the sum of the groups exceeds that of the corresponding mouthings (743 vs. 693).

7.3 Person-Number marker

The first colligation concerns mouthings with Person-Number morphs. 475 occurrences were found for this colligation, which makes up 68% of the 697 mouthings. It suggests that Person-Number is a fairly frequent inflectional marker in the corpus.

Table 7.3 shows the absolute frequencies of each corpus part and the normalised relative frequencies compared to the signers' overall mouthings.

Tab. 7.3:   *Overall frequencies of the Person-Number colligation*

Informants	Mouthings	Colligation (Person-Number marking)	Rel. freq. ratio
S1	63	53	84%
S2	441	288	65%
S3	81	60	74%
S4	18	14	78%
S5	36	21	58%
S6	58	39	67%
Sum	697	475	68%

The frequencies of this colligation range between 58% (S5) and 84 % (S1). It can be said that a large part of each signer's mouthings is occupied by this inflectional marker, especially in S1, S3 and S4. It also applies to S2, although her 65 % and S5's 58% suggest that they produce somewhat more mouthings with other markers.

In sum, the overall frequency of 68% is well-reflected among the informants. The co-occurrence shows high frequency and a rather even distribution and can thus be regarded as a strong colligation in the corpus.

The DP measure is used for the ranking of individual items. For example, the most frequent mouthing which shows Person-Number inflection is 'emlékszem' "I remember", appearing 21 times in the corpus (3 % of 697). 5 of the 6 signers produce this mouthing and 4 of them produce it more than once. The representativeness of this overall 3% for the different signers can then be attested through the DP dispersion value. Its computation is demonstrated here in accordance with Gries (2008).

Tab. 7.4:   *Computation of the DP value (in accordance with Gries 2008)*

Informants	Expected freq. (%)	Observed freq. (%)	Absolute difference	Sum	Div. by 2	**DP**
S1	0.090	0.333	0.243			
S2	0.633	0.000	0.633			
S3	0.116	0.238	0.122	1.274	0.637	**0.637**
S4	0.026	0.143	0.117			
S5	0.052	0.048	0.004			
S6	0.083	0.238	0.155			

The DP value is provided using three main steps. In Step 1, the expected frequencies of 'emlékszem' are calculated. For example, one would expect this mouthing to be distributed in S1 the same way as the overall ratio of S1 in the

corpus. For the sake of demonstration, let us say that the corpus contained 1,000 occurrences and S1 produced 90 mouthings, that is, 9% of the total amount. If I suppose that the item 'emlékszem' in S1's data subset will follow his overall mouthing ratio in the corpus (9%), I would expect that 9% of 'emlékszem' can be found in S1's data. This can be seen as ranked between 0–1: 0.090 (leftmost column). Step 2 provides the actual, observed frequency of 'emlékszem' for each signer (second column from left). S1 actually produced only 3% of the overall occurrences of 'emlékszem', thus less than expected. Step 3 results in a simple computation: the absolute differences of the expected and observed frequencies are calculated row-wise, summed up (1.274) and divided by 2. The DP value of 'emlékszem' reaches 0.637, falling in the middle range between 0 and 1. The most frequent mouthing shows an intermediate distribution, given the proportion of the different parts. It can intuitively be inspected by looking at the frequencies. S3 uses 'emlékszem' 3 out of 18 times (17%). S1 produces it 7 times out of 63 mouthings (11%), which is the highest absolute number followed by 5 times in S6 (5 of 58, i.e. 9%) and S3 (5 of 81, i.e. 6%). S5 produces only 1 occurrence (1 of 36, i.e. 3%) and S2 does not mouth 'emlékszem' at all, which is not expected given the high number of her data (0 of 441, i.e. 0%). The percentages here are relative to proportions and also indicate the element's intermediate distribution in the corpus. For S1 and S4, the mouthing is more frequent in their data set, while it becomes less frequent in others.

The mouthing 'emlékszem' usually co-occurs with the translational equivalent sign EMLÉKSZIK "remember" (21 times out of 51 sign occurrences). The frequency and distribution characteristics can be explained by the fact that we deal with a frequent sentence-initial discourse marker that occurs in various utterances in all signers and usually introduces a story they told.

The non-occurrence in S2 is, as mentioned, rather unexpected. She in fact uses the sign only 2 times and she mouths one time the inflected form 'emlékem' "my memory", which is a noun not a verb, thus it was counted separately.

7.3.1 The 20 most frequently used mouthings

The DP value on its own has little to say. But it has more discriminatory power when provided in comparison and presented together with the frequency rates. Table 7.5 lists the 20 most frequently used mouthings with Person-Number marking ranked by their proportional dispersion value.

Tab. 7.5:   *The 20 most frequently used mouthings with Person-Number marking*

Mouthing	Freq	DP	Mouthing	Freq	DP
1. voltam "I was"	7	0.161	11. nekem "to me"	8	0.367
2. tudom "I know"	12	0.166	12. akarok "I want"	6	0.367
3. mondta "(s)he said"	8	0.251	13. vártam "I waited"	5	0.367
4. mondtam "I said"	9	0.251	14. vele "with him/her"	5	0.517
5. mondom "I say"	9	0.251	15. emlékszem "I remember"	21	0.637
6. akarom "I want"	7	0.251	16. értem "I understand"	5	0.658
7. dolgoztam "I worked"	5	0.251	17. szüleim "my parents"	10	0.675
8. vagyok "I am"	12	0.284	18. anyukám "my mom"	5	0.768
9. láttam "I saw"	5	0.317	19. nagymamám "my grandmother"	7	0.827
10. voltunk "we were"	5	0.367	20. anyám "my mother"	5	0.948

The first 8 mouthings reach between 0.161 and 0.284; these are frequent forms and reflect the whole corpus quite evenly and, thus, they can be regarded as the most typical mouthings with Person-Number marking in the corpus. Those which rank the highest are frequent lexical items in many spoken and sign languages. Their translational equivalent signs also belong to the most common signs in the corpus. What is quite clear from this list is the dominance of 1 sg. Forms, with 17 out of 20. The second most frequent, 3 sg., appears only 2 times ('mond**ta**' "(s)he said", 'vel**e**' "with him/her"), and there is one 1 pl., 'volt**unk**' "we were". This finding is in line with the expectation of over-represented 1 sg. markers due to the text type. This phenomenon will be examined in more detail later.

In some cases, there is more than one typical form for a lexical item; they belong to different paradigms. For example: (1) 'mond' "say": 'mond**ta**', 'mond**tam**', 'mond**om**'; (2) 'akar' "want": 'akar**om**', 'akar**ok**'; (3) 'van'/'volt' "be": 'volt**am**', 'va**gyok**', 'volt**unk**'. Finally, at the end of the list, there are 4 frequent mouthings which also express Possession ('szülei**m**' "my parents", 'anyuká**m**' "my mom", 'nagymam**ám**' "my grandmother", 'anyá**m**' "my mother"). All of them are kinship terms. It can also be expected in narratives about one's own life. Their dispersion is uneven; however, they already indicate that this paradigm of possessive Person-Number marking also deserves closer inspection.

The 20 most frequently used mouthings already behave differently in terms of how they appear overall and in individual signers' production. The first two are

the occurrences 'volt**am**' "I was" and 'tud**om**' "I know". Three signers produce them, with S2 expectedly more. The next five mouthings with an equal DP of 0.251 and 'vagy**ok**' "I am" with 0.284 are those which are produced by S2 and S3, the two largest parts. They still reflect the whole corpus quite evenly. Mouthings with a DP of 0.367 come from S2 only ('volt**unk**' "we were", 'nek**em**' "for me", 'akar**ok**' "I want", 'vár**tam**' "I waited").

The middle range (0.250-0.750) goes down with mouthings, which S2 produces one or two times or not at all. They are distributed among the other signers. Here, you can find the most frequent 'emléksz**em**' "I remember", which all the other 5 signers use, and the other very frequent 'süle**im**' "my parents", with 10 occurrences. Its low middle value of 0.675 shows that the item is somewhat uneven in the corpus, indicating that it may be more typical for one of the informants. In fact, the half of 'süle**im**' comes from S5; 5 examples are a relatively high number for one of his overall 36 mouthings. A similar indication shows 'any**ám**' "my mother" with the lowest value of 0.948 produced 5 of 36 times by S5 alone. The alternative informal form 'anyuk**ám**' also occurs 5 times, although it is preferred by 3 other signers.

A general characteristic of the corpus is already obvious when looking at mouthings with Person-Number marking. Even the most frequent items have only small number of occurrences and a certain mouthing does not appear in most cases in all of the signers' production. It is certainly a consequence of the small size of the corpus, too. However, there would still be a possibility that only some mouthings exhibit markings for Person and Number, and these make up the large part of the corpus, while the rest are in the minority. However, items like 'emléksz**em**', with 21 occurrences, are the exceptions. This situation points out that Person-Number marking has no clear preference for some mouthings, which can be thought of as frozen forms. On the contrary, what is indicated here is the use of different paradigms and values of the Person-Number marking over a large number of mouthings. Most of these occur only 1 or 2 times. Hence, using inflections regardless of the specific mouthings is, at first sight, a general characteristic of the corpus.

To attest this question further, I dig deeper into paradigms and their patterns. I tagged the mouthings in the corpus for word class. It seemed to be reasonable to group them based on these categories in order to separate specific inflection paradigms.

Tab. 7.6:   *Frequencies of Person-Number markers in different inflectional paradigms*

Word class	S1	S2	S3	S4	S5	S6	Total
Verb	32	236	51	8	5	20	**352**
Noun	21	30	8	5	16	14	**94**
Adverb	0	20	1	1	0	5	**28**
Infinitive	0	1	0	0	0	0	**1**
Sum							**475**

As the table shows, verbs are in the vast majority in accordance with considerably more paradigms and possible mouthings with Person-Number markers. Nouns define the Possession marker paradigm, expressing Person and Number of the possessor. There is a little group of person-marked adverbs and one occurrence for the infinitive ('dolgozn**om**' "I [e.g. want] to work"). In the following sections, I take a closer look at the first three groups.

7.3.2 Person-Number marking on verbs

Verbs make up the largest part of the mouthings with Person-Number markings. The first question concerns whether they exhaust all 6 possible Person and 2 possible Number values or they are more restricted. The second point of investigation goes on to distinguish various paradigms based on the Person-Number marker in different Tense, Mood and Definiteness.

Tab. 7.7:   *Frequencies of Person-Number markers on verbs*

Paradigm	S1	S2	S3	S4	S5	S6	Total	DP
1 Sg	26	152	46	7	3	16	**250**	**0.084**
3 Sg	4	44	4	1	1	1	**55**	**0.167**
3 Pl	2	15	0	0	0	1	**18**	**0.221**
2 Sg	0	3	1	0	1	0	**5**	**0.232**
1 Pl	0	21	0	0	0	2	**23**	**0.284**
2 Pl	0	1	0	0	0	0	**1**	**0.367**

The table shows that 1Sg is by far the most frequently used conjugation form. The 250 of 352 mouthings are proportionally distributed among signers. It is also true for 3Sg, the second most frequently used form, with 55 occurrences. These two are produced by all 6 signers. The 3Pl, 1Pl and 2Sg values are still quite proportional, but notice that they are used only by half of the signers and more dominated by S2. She produces 18 3Pl and 23 1Pl, somewhat more than expected from the data size. 2Pl, produced by S2, is only a one time occurrence.

Overall, we can see that signers make use of the different Person-Number conjugation forms, however, 1Sg is highly dominant, which is again in line with

the expectation of text type effect. Nevertheless, especially the 55 3Sg suggest some sort of differentiation, meaning that the signers do not only use one conjugation. This attribute can be best attested in S2, who uses all 6 possible forms. Exhausting more forms is a signer-dependent characteristic and indicates a language production with more Hungarian influence in mouthings. It is important to note again that the markings spread over the 352 mouthings and are not just confined to some mouthing forms. It points in the direction that grammatical marking is used not as part of frozen mouthing forms, but is a pervasive pattern in many mouthings, most of which is not re-occurring. A text type comparison can shed more light on the preference of the Person-Number marking. As a cautious prediction, I would expect more occurrences of other conjugation forms in other text types, especially 3Sg and 1Pl.

The next tables demonstrate which Person-Number values are used on certain frequently used mouthings in the corpus.

Tab. 7.8:   Inflectional values found on the mouthing 'mond' ("say")

MOND "say" mond+infl (N=32)		
Mouthing	Person-Number value	Frequency
(el)mond**tam**	1Sg.	10
mond**om**	1 Sg.	9
mond**ta**	3 Sg.	8
mond**ják**	3 Pl.	1
mond**ja** (el)	3 Sg.	2
mond**anám**	1 Sg.	1
mondt**ák**	3 Pl.	1

The sign MOND "say" occurs 32 times in the corpus together with an inflected form of the Hungarian translational equivalent 'mond'. In terms of Person and Number, the 1Sg comes in three forms: 10 '(el)mond**tam**' "I said", 9 'mond**om**' "I say" and 1 'mond**anám**' "I would say". After these 20 1Sg inflections, the next is 3Sg, with 10 examples: 8 'mond**ta**' "(s)he said" and 2 'mond**ja** (el)' "(s)he says". The prefix 'el' that appears in 2 cases with this lexeme plays a perfective aspect role. Finally, there are 2 3Pl forms, 'mond**ják**' "they say" and 'mondt**ák** "they said".

Tab. 7.9:   *Inflectional values found on the mouthing 'tud' ("know")*

Mouthing	Person-Number value	Frequency
TUD "know" **tud+infl (N=25)**		
tud**om**	1Sg.	12
(meg)tud**tam**	1 Sg.	5
tud**ok**	1 Sg.	3
tud**od**	2 Sg.	2
tud**ja**	3 Sg.	1
tud**nak**	3 Pl.	1
tud**ák**	3 Pl.	1

The sign TUD "know", with the mouthings 'tud'+ infelction, shows similar patterns. 19 1Sg markers are spread over 3 forms: 12 'tud**om**' "I know", referring to the definite object, 5 '(meg)tud**tam**' "I got to know" ('meg' in one case being the perfective aspect marker) and 3 'tud**ok**' "I know", referring to the indefinite object. There are 2 3Pl occurrences: 'tud**nak**' "they know" and 'tud**ták**' "they knew". 'tud**od**' "you know" is a single occurrence of the definite 2Sg conjugation.

Tab. 7.10:   *Inflectional values found on the mouthing 'dolgozik' ("say")/'csinál' ("do")*

Mouthing	P-N value	Freq.	Mouthing	P-N value	Freq.
CSINÁL "do/work" **dolgozik+infl (N=10) /csinál+infl (N=7)**					
dolgozt**am**	1Sg.	5	(meg)csinált**am**	1 Sg.	4
dolgoz**nak**	3 Pl.	2	csinálj**am**	1 Sg.	1
dolgoz**om**	1 Sg.	2	csinál**om**	1 Sg.	1
dolgozhass**ak**	1 Sg.	1	csinált**uk**	1 Pl.	1

The sign CSINÁL has the verbal meaning "do" and "work" and appears together with variations of both 'csinál' "do" (N=10) and 'dolgozik' "work" (N=7). For 'dolgozik', 8 inflected mouthings refer to 1Sg: 5 'dolgoztam' "I worked", 2 'dolgozom' "I work" and 1 'dolgozhassak' "[e.g. so that] I can work". The 3Pl 'dolgoznak' "they work" occurs two times. With 'csinál', the sign is produced in 6 1Sg forms: 4 '(meg)csináltam' "I did [it]", 1 'csináljam' "[he insisted that] I do [it]", 1 'csinálom' "I do [it]" and 1 'csináltuk' "we did [it]".

Tab. 7.11:   Inflectional values found on existential copulas ("be")

VAN "is" van+INFL (N=18)			VOLT "was" volt+INFL (N=14)			LESZ "will be" lesz+INFL (N=6)		
P-N value	Mouthing	Freq	P-N value	Mouthig	Freq	P-N value	Mouthing	Freq
1Sg.	va(gy)**ok**	13	1Sg.	volt**am**	7	1 Pl.	lesz**ünk**	1
1 Pl.	vagy**unk**	3	1 Pl.	volt**unk**	5	3 Sg.	lett volna	1
2 Sg.	vagy	1	3 Pl.	volt**ak**	2	3 Sg.	legy**en**	1
3 Pl.	van**nak**	1				1 Sg.	lehet**ek**	1
						1 Sg.	len**nék**	1
						3 Sg.	len**ne**	1

The existential signs VAN "is", VOLT "was" and LESZ "will be" (morphologically present form!) are used with the corresponding mouthings depending on the Tense. VAN co-occurs 13 times with 'va(gy)**ok**' "I am", 3 times with 'vagy**unk**' "we are" and 1 time with 'vagy "you are" and 'van**nak**' "[they/sg.] are" respectively. VOLT comes with 7 'volt**am**' "I was", 5 'volt**unk**' "we were" and 2 'volt**ak**' "they/sg. were". LESZ has 6 different one-time instances: 'len**nék**' "I would be" and 'lehet**ek**' "I can be" for 1Sg; 'len**ne**' "(s)he/it would be", 'legy**en**' "it should be" and 'lett volna' "(s)he/it would have been" for 3Sg; 'lesz**ünk**' "we will be" is the only 1Pl form.

These examples demonstrated the typical inflections that were previously discussed. 1Sg and 3Sg are the most dominant, while 1Pl and 3Pl come way down after them together, with some exception of 2Sg. The examples also clearly showed that, while the Person and Number patterns are present in the whole verb subset of the data, they fall into different Tense, Mood and Definiteness paradigms. The next logical step, therefore, is to look at their different conjugations.

The table below summarises the occurrences and their dispersion value in different Tense and Mood.

Tab. 7.12:   Person-Number markers in different Tense and Mood values

Tense and Mood value	S1	S2	S3	S4	S5	S6	Total	DP
Present Indicative	13	97	25	8	3	14	**160**	**0.069**
Past Indicative	19	120	24	0	1	6	**170**	**0.120**
Present Conditional	0	3	1	0	0	0	**4**	**0.251**
Present Imperative	0	15	0	0	1	0	**16**	**0.315**
Past Conditional	0	1	1	0	0	0	**2**	**0.384**

The two most frequent and quite equally distributed Tense values are Present Indicative (160) and Past Indicative (170). They make up 330 of the 352 verbs. Some of the examples have already been presented among the mouthings above. The dominance of the present form is in fact not surprising. Beyond the Person-Number marker there are no other morphological indications. This is basically in line with expectations that signers prefer unmarked forms and, if inflection occurs, it rather expresses Person-Number markers only. In that sense, the overwhelming amount of Past forms was not previously thought to be the case. Nevertheless it indicates that the signers are comfortable using the Present-Past differentiation.

The other three Tense and Mood value pairs occur in very small numbers, almost as exceptions compared to the other two. We see 15 of 16 examples of the Imperative in S2, which is even more than proportionally expected in relation to what the other signers produce or don't produce. At least the Conditional, both Present and Past, and the Imperative are possible forms (see examples above) that can be used in mouthings, even if they are mainly confined to one signer's data in this corpus.

The other question concerned the Indefinite–Definite conjugations. The latter is used in the case of a definite third person object. As Table 7.13 shows, 116 of 352 occurrences could be identified to refer to third person definite objects, which is 33% of the verbs. They show up in half of the Present Indicative forms (84 of 160) and are produced by every signer.

Tab. 7.13: *Indication for Hungarian 3rd Person definite object on mouthed verbs*

Tense and Mood value	Freq.	3. person Definite object
Present Indicative	160	84
Past Indicative	170	24
Present Conditional	4	2
Present Imperative	16	6
Past Conditional	2	0
Total verbs	**352**	**116**

The 24 of 170 past forms should not be interpreted as having less effect in the past Tense. As mentioned before, the 1Sg past forms are identical in definite and indefinite conjugations, thus no overt distinction was possible. Overall, the data suggests that marking the Definiteness of the third person object is in addition to the past value of the Tense, a general strategy of the signers that is yet another

inflectional category beyond Person and Number which deserves further investigation when it comes to the co-occurrence of mouthings and signs.

The final table shows some examples of Indefinite–Definite oppositions. The 1Sg forms are only opposed in Definiteness. The other examples have differences in Tense value as well.

Tab. 7.14:   Examples of inflections indicating indefinite and definite conjugations

Tense and Mood value	Indefinite 3 person object	Definite 3 person object
Present Indicative	tud**ok** "I know"	tud**om** "I know"
Past Indicative	akar**ok** "I want"	akar**om** "I want"
Present Conditional	tud**nak** "they know (sg.)"	tud**ták** "they knew"
Present Imperative	kér**ek** "I ask"	kér**em** "I ask"
Past Conditional	kap**ok** "I get"	kap**om** "I get"
	kap**ott** "(s)he/it got"	megkap**ja** "(s)he/it gets"

7.3.3 Person-Number on nouns: Possession marker

Tab. 7.15:   Frequencies of Person-Number markers on nouns

Paradigm	S1	S2	S3	S4	S5	S6	Total	DP
3 Sg	0	5	2	0	3	2	**12**	**0.332**
1 Sg	21	24	6	5	13	12	**81**	**0.379**
1 Pl	0	1	0	0	0	0	**1**	**0.367**
2 Sg				n/a				
2 Pl				n/a				
3 Pl				n/a				

The other nominal paradigm of Person-Number marking contains mouthings referring to the possessed object. They display the Person and the Number values of the possessor. The mouthing forms mainly involve the singular, with an exception of the plural form. The biggest group here as well, the 1Sg with 81 occurrences, was produced by all of the signers. Interestingly, S1 uses 21 mouthings with this marker, which is close to 24 of S2, although she has a much larger subset. This means that S1 makes extended use of the possessive.

The 3Sg is another form that occurs, although only 12 times, but at least in 4 different signers. This indicates that it is more than just a coincidence but leaves the question open regarding whether it's more limited use is text-type and signer-specific or dependent on other factors. The 1Pl form occurs only 1 time and there is no other example for the other 2Sg, 2Pl and 3Pl.

From the 96 Person-Number markers, 50% (48) are one-time-occurrences. It also indicates that the marker is not confined to specific frozen mouthing forms; rather, it is used in many different mouthings, similarly to the verbs. However, there are some instances that are more frequent in the same form. For example, 'szüle**im**' "my parents" or 'ap**ám**' "my father" and 'any**ám**' "my mother" come in the same form in different signers. These examples can be imagined to be frequently used mouthings in the same form and are therefore somewhat closer to frozen mouthings than is the case in verbs.

One reason for specific forms can be found in some typical lexemes for possessive relations, e.g. body parts and kinship relations.

I indeed found some typical patterns in this respect, exemplified in the following tables. Most of the occurrences refer to animate entities. From that, more than 50% (51 occurrences) fall into the category of kinship relations.

Tab. 7.16:   Some inflected nouns referring to animate possessum

Animate possessum (N=87)		
Mouthing	Person-Number value	Frequency
szüle**im**	1Sg.	10
szüle**im**mel	1Sg.	1
szüle**i**	3Sg.	3
nagyszüle**i**	3Sg.	1
any**ám**	1Sg.	5
anyuk**ám**	1Sg.	5
pótanyuk**ám**	1Sg.	1
fi**am**	1Sg.	1
fi**a**	3Sg.	1
ap**ám**	1Sg.	6
nagypap**ám**	1Sg.	3
nagymam**ám**	1Sg.	7
feleség**em**	1Sg.	3
férj**em**	1Sg.	1
férj**em**mel	1Sg.	1
lány**om**	1Sg.	1
rokon**om**	1Sg.	1
főnök**öm**	1Sg.	4
osztálytárs**am**	1Sg.	4
barát**om**	1Sg.	2
barátnő**m**	1Sg.	1
osztályfőnök**öm**	1Sg.	2
gyerek**em**	1Sg.	1
tanár**om**	1Sg.	1

The most frequently used element is 'szüle**im**' "parents", with different possessive forms. But 'ap**ám**' "father", 'any**ám**' "mother", 'nagymam**ám**' "grandfather", 'nagypap**ám**' "grandmother" are also among those most frequently used. Another group of nouns relate to person in school and work situations and relationships like 'főnök**öm**' "my boss", 'osztálytárs**am** "my class mate" and 'tanár**om**' "my teacher". Most of the mouthings have to do with animate possessum. There is only a small group of mouthings with inanimate possesum, e.g. 'munkahely**em**' "my workplace".

Tab. 7.17:   Inflected nouns referring to inanimate possessum

Inanimate possessum (N=9)		
Mouthing	Person-Number value	Frequency
munkahely**em**	1 Sg.	3
munkahely**em**et	1 Sg.	1
kor**om**hoz (képest)	1 Sg.	1
értel**me**	3 Sg.	1
kivétel**é**vel	3 Sg.	1
munk**ám**	1 Sg.	2

Among these, there are also single cases in which the possessive marker occurs due to an established Hungarian expression like 'kivétel**é**vel' "with the exception of" or 'nincs 'értel**me**' "it [makes] no sense".

Overall, Person-Number markers in the possessive are also part of the pervasive morphological marking in mouthing here again, with a preference for 1Sg and 3Sg. It also has a bit stronger of a tendency to appear in some frequently used mouthing forms. The accuracy of this finding can of course be better attested on language material which is constrained in a way to evoke more potential variations in the possessive paradigm.

7.3.4 Person-Number on adverbs

The third group contains only 28 mouthings. These involve the heterogeneous paradigm of person-marked adverbs. They are, however much more constrained in usage than the verbs and nouns. First, only 4 signers produce them; second, they come in some specific forms only. However, the general tendency for 1Sg is true here as well (16 of 28). The 3Sg occurs only 9 times in 2 signers and the other forms (2Sg, 3Pl, 1 Pl) are produced as single occurrences by S2.

Tab. 7.18:   Person-Number markers found on Hungarian adverbs

Paradigm	S1	S2	S3	S4	S5	S6	Total
1 Sg	0	13	1	1	0	1	**16**
3 Sg	0	6	0	0	0	3	**9**
3 Pl	0	1	0	0	0	0	**1**
2 Sg	0	1	0	0	0	0	**1**
1 Pl	0	1	0	0	0	0	**1**
2 Pl				n/a			

There are only 6 different case or postposition stems to which Person-Number markers are added (see Table 7.19 below). Half of the adverbs (14) have the stem 'nek' "to" and form 4 different combinations: 8 'nek**em**' "to me", 4 'nek**i**' "to him/her/it", 1 'nek**ed**' "to you" and 1 'nek**ik**' "to them". The second most frequent stem is 'vel' "with", appearing in 'vel**e**' "with him/her/it" and 1 "'vel**em**' "with me". The third is 'hoz' "to" as 3 'hozz**ám**' "to me" and 1 'hozz**ánk**' "to us". For these three mouthings, there are corresponding signs that seem to act as indicator for Person and Number.

Tab. 7.19:   Examples of Person-Number marking on adverbs

Mouthing	Freq	Mouthing	Freq
bennem "in me"	1	neked "to you"	1
hozzám "to me"	3	nekem "to me"	8
hozzánk "to us"	1	neki "to him/her/it"	4
vele "with him/her/it"	5	nekik "to them"	1
velem "with me"	1		
helyettem "instead of me"	1		
szerintem "according to me"	2		

7.4   Case markers

The other large group of mouthings under investigation is that with Case marker at the end of the mouthings. I found 227 mouthings with Case inflection in the corpus, which makes up 33% of the 697 occurrences. Table 7.20 provides an overview of the colligation in signers.

Tab. 7.20:   Frequencies of Case colligation in each informant

Informants	Mouthings	Colligation (Case marking)	Rel. freq. ratio
S1	63	10	16%
S2	441	156	35%
S3	81	22	27%
S4	18	6	33%
S5	36	9	25%
S6	58	24	41%
Sum	697	227	29.5%

Each signer produces Case markers in 16% to 41% of their mouthings, the mean being 29.5%. S6 (41%), S2 (35%) and S4 (33%) use above 33%; the other half of

the signers, S3 (27%), S5 (25%) and S1 (16%) use somewhat less, i.e. under 30%. However, one can see overall that they all make use of the marker and don't exhibit extreme differences. This is also true for S2. Although the most examples (156) come from her data, which reminds us of her extended preference for mouthings, the proportion of Case among her mouthings is similar to the other informants. In sum, Case marker is much less present than the Person-Number marker (68% overall), but there is still a subset of about one third of the occurrences which is an amount that deserves closer examination.

I chose the 14 most frequently used mouthings with Case ranked by DP to demonstrate some main patterns in the corpus. Similar to Person-Number marking, most of the mouthings occur 1 or 2 times. The 14 most frequently used below occur 3 or more times, which was rather the exception.

Case Table 7.21:			*The 14 most frequently used mouthings with Case*		
Mouthing	**Freq**	**DP**	**Mouthing**	**Freq**	**DP**
1. az**t**	20	0.201	8. **nek**i	4	0.367
2. iskolá**ban**	6	0.284	9. ami**t**	7	0.372
3. év**ig**	3	0.367	10. iskolá**ba**	3	0.468
4. család**ból**	4	0.367	11. **vel**e	5	0.517
5. rádió**ból**	3	0.367	12. **hoz**zám	3	0.558
6. **nek**em	8	0.367	13. mi**t**	5	0.594
7. ez**t**	3	0.367	14. beszéd**ben**	3	0.917

There are noticeably many mouthings that fall in the middle range (0.250-0.750) of the DP value: 0.367–0.597. These instances usually come from 1, 2 or 3 signers. The most frequently used and best dispersed, 'az**t**' "that", with the accusative marker, is the really omnipresent element. There are other pronuns as well, all of which show accusative: 'ez**t**' "this", 'ami**t**' and the shorter form 'mi**t**' "which". It points to the dominance of accusative, at least in pronouns. There are groups of nouns that also indicate which endings are expected to occur in a larger amount. The mouthings 'iskolá**ban**' "at school" and 'beszéd**ben**' "in speech" exhibit the inessive case. The other value is ellative, 'család**ból**' "from family", 'rádió**ból**' "from radio". There is an illative instance 'iskolá**ba**' "to school" and a terminative inflection. 'év**ig**' "years long". The formerly discussed person-marked adverbs make up the third category. In this description, they are discussed in terms of their Case marking. Altogether, there are 8 mouthings which use the 'nek' "to/for" marker. The two forms include 'nek**em**' "to/for me" and 'nek**i**'

"to/for him/her/it". The 5 'vel**e**' with "him/her/it" and 3 'hozz**ám**' "to me" close this category.

These patterns will be examined further. Finally, it is important to point out that the same goes for Case as for Person-Number: case markings do not seem to be bound to certain mouthing forms, 'az**t**' being one exception. Specific endings occur in various mouthings in the whole corpus.

Next, the main paradigm of these markings and the occurrences in different values are presented. For further discussion, the instances were grouped according to the Hungarian word class: noun, pronoun and person-marked adverb.

Tab. 7.22:   Case markers on different word classes

Word class	Total
Noun	**150**
Pronoun	**52**
Person marked adverb	**25**

Nouns are the most typical candidates for Case, as they form the government of the head verbs. Pronouns represent the noun phrases or co-occur with the nouns in noun phrases. The following pronoun types were found among the 52 instances: Demonstratives (29), Interrogatives (7), Relatives (7), Indefinites (6), and General (3). The next table shows the inflectional values produced by the signers and ranked by their DP.

Tab. 7.23:   Frequencies and distributional values for mouthings with Case markers

Case value	S1	S2	S3	S4	S5	S6	Total	DP
Illative: -ba/-be "into"	2	11	1	0	1	2	**17**	**0.083**
Accusative: -t	4	51	9	1	0	6	**71**	**0.098**
Inessive: -ba(n)/-be(n) "in"	2	23	3	1	4	9	**42**	**0.175**
Ablative:-tól/-től "from"	0	7	2	0	2	0	**11**	**0.199**
Terminative:-ig "to"	0	6	1	0	2	0	**9**	**0.204**
Instrumental: -val/-vel "with"	0	9	2	2	0	4	**17**	**0.246**
Sublative:-ra/-re "onto"	0	8	1	0	0	0	**9**	**0.256**
Superessive:--n/on/en/-ön "on"	0	3	1	1	0	0	**5**	**0.258**
Allative:-hoz/-hez-/höz "to"	0	5	2	1	0	2	**10**	**0.275**
Ellative: -ból-/-ből "out from"	2	15	0	0	0	0	**17**	**0.277**
Dative:-nak/-nek "for"	0	16	0	0	0	1	**17**	**0.308**
Delative: -ról/-től "about"	0	1	0	0	0	0	**1**	**0.367**
Translative-Factive: -vá/-vé "to"	0	1	0	0	0	0	**1**	**0.367**

The most important characteristic of the findings catches the eye when looking at the table: 13 different Case values occur in mouthings out of 18 possible values in Hungarian (Kiefer 2000). This means that signers exhaust the larger part of possible Case markers. The first line between these values could be drawn in accordance with the high DP-value items, of which at least half of the signers make use: illative, accusative, inessive, ablative, terminative, instrumental and allative. There are other more frequent values like ellative (17) and delative (17) and sublative (9), however, it appears more dominantly in S2's production. The next tables contain exmples of the most frequent and mainly well-dispersed colligations. They exemplify that one certain marking is distributed over various mouthings. The common feature is the ending. The other important issue is the identification of these endings based on their phonologically alternate forms, depending on back and front vowels (-tól vs. -től, -val vs. -vel). It cannot be precisely determined whether the signers produce these nounaces in fact or it is a perceptual supplement, but at least it suggests that these differences are relevant in mouthings and perhaps form part of the signer's knowledge about different word-internal structures.

Finally, these endings represent semantic differences in terms of their combination with different functions as governments. For example, 'munká**val**' "with work" has an instrumental meaning regularly referring to inanimate objects, while '-val' 'in apu**val**' "with father" has a strong connection to animate objects. Also, they co-occur with different verbs indicating spatial ('rektor**hoz**' 'megy' "go to the principal"), temporal ('órá**hoz**' "to class") and other abstract references ('korom**hoz**' ['képest'] "for my age").

Tab. 7.24:   *Examples of Instrumental, Allative and Ellative cases*

Instrumental: -val/-vel "with"	Allative: -hoz/-hez-/höz "to"/"for"	Ellative: -ból/-ből "from"
munká**val** "with work"	csoport**hoz** "to group"	iskolá**ból** "from school"
pont**tal** "with point"	munká**hoz** "to work"	kor**ból** "from age"
apu**val** "with daddy"	tanszélvezető**höz** "to department leader"	játék**ból** "for fun"
siketek**kel** "with the deaf"	órá**hoz** "to class"	eb**ből** "from that"
szüleim**mel** "with my parents"	rektor**hoz** "to principal"	erőm**ből** "from my strength"
férjem**mel** "with my husband"	korom**hoz** "for my age"	könyv**ből** "from a book"

Tab. 7.25:   *Examples of Inessive, Accusative and Sublative cases*

Inessive: -ba(n)/-be(n) "in"	Accusative: -t	Sublative: -tól/-től "from"
iskolá**ban**	az**t**	óvodá**tól**
"at school"	"that"	"from kindergarten"
írás**ban**	minden**t**	sors**tól**
"in writing"	"all"	"from faith"
sarok**ban**	ötös**t**	védőoltás**tól**
"in corner"	"five"	"from vaccination"
sakk**ban**	szöveg**et**	erőltetés**től**
"in chess"	"text"	"from stress"
rossz**ban**	szakmá**t**	első**től**
"in bad"	"proffession"	"from first"
korom**ban**	nyugdíj**at**	hallókészülék**től**
in my age"	"pension"	"from hearing aid"

Most of the time, the mouthings with the case markers are not embedded in a morphologically marked set of mouthings, but occur as single inflected instances. However, 70 of the 227 mouthings (33%) appear together with an inflected verb or with other mouthings carrying the same marker. These are rather exceptional in signers (2 to 6 occurrences), with the exception of S2, who produces even proportionally more from these inflection clusters.

The following examples show some co-occurring verb-noun government.

Tab. 7.26:   *Case inflections in verb-noun government 1*

Inessive: -ba(n)/-be(n) "in"	Accusative: -t	Ablative: -ra/-re "onto"/"for"
sarokban ültem	azt mondom	szakra jelentkeztem
"I was sitting in the corner"	"I say"	"I applied for a major"
tudatosodott bennem	azt hiszem	órára bementem
"I realised"	"I think"	"I went to class"
korházban dolgoztam	amit láttam	levelezőre jártam
"I worked in a hospital"	"what I saw"	"I attended a part-time course"
	kaptam védőoltást	
	"I got a vaccination"	

Tab. 7.27:   *Case inflections in verb-noun government 2*

Instrumental: -val/-vel "with"	Allativus: -ba/-be "in"	Ellative: -ból/-ből "from"
munkával foglalkozom "I focus on the work"	szövetségbe járok "go to the association"	családból származom "I come from family"
szüleimmel élek "I live with my parents"	nyugdíjba menjek "I retire"	hasból mondtam "I made it up"
sikettel kapcsolatban "as for the deaf"	bemegyek óvodába "I go to kindergarten"	

In some cases, there are more than 2 markers present, as the examples from S2 exhibit: 'ami**t** írtam az**t** mondta' "he said that what I wrote down".

In this utterance, both the relative pronoun 'ami**t**' and the demonstrative 'az**t**' express the accusative. In 'az**t** mondták nek**em**', "they said it to me", we can observe two arguments: the direct object 'az**t**' "it" and the indirect object 'nek**em**' "to me". In 'fordítja nek**em** hang**ról** jelnyelv**re**' "translate to me from voice to sign", there is an indirect object 'nek**em**' "to me" co-occuring with two other arguments: 'hang**ról**' "from voice" and 'jelnyelv**re**' "to sign language". In 'átmentünk ugyanab**ba** az iskolá**ba**' "we went on to the same school", the pronoun 'ugyanab**ba**' "to the same" and the noun 'iskolá**ba**' "to school" are marked together overtly.

These examples show short chunks of discourse in which the spoken language is clearly more dominant. Notice again that the examples come from one signer and are exceptional in her data as well.

7.5   Number markers on nouns

The last overtly distinctive marker found in the data set stands for nominal Number inflection. This inflection can be attested only on a small group of 41 mouthings with plural markers, only 6% of 697.

Tab. 7.28:   Frequencies of Number marker on nouns produced by informants

Informants	Mouthings	Colligation (Number marking)	Rel. freq. ratio
S1	63	2	3%
S2	441	24	5%
S3	81	2	3%
S4	18	1	6%
S5	36	7	20%
S6	58	5	9%
Sum	697	41	8%

It is well-mirrored among 5 of the signers who produce 3-9 % of the plural markers in her data; the exception being S5 with 20%. In his 7 mouthings out of the total 36, the plural marker is represented to a larger extent. The next table shows the two kinds of plural marker occurring in mouthings: the multiple and the possessive allomorphs.

Tabelle 7.29: Frequencies of plural allomorphs

Plural allomorphs	S1	S2	S3	S4	S5	S6	Total
Multiple:-k (-k/-ok/-ek/-ök)	0	20	1	0	1	2	24
Possessive:-i	2	4	1	1	6	3	17

The possessive plural marker '-i' occurs in all signers appearing in the frame of the possessive markers, e.g. 'szüle**im**' "my parents", 'm' being the 1Sg that comes after the plural marker. 6 out of 7 plural markers in S5 fall into this category and reveal the reason for his 20%: he simply used more possessive markers that refer to entities like his parents or classmates. S2 makes much more use of the multiple plural marker (20 of 24). The examples below show some variations and typical mouthings on which the plural allomorphs have been recognised.

Tab. 7.30:   *Examples of plural realisation on different mouthings*

Multiple: -k	Freq	Possessive: -i	Freq
siket**ek** "deaf"	9	szüle**im** "my parents"	10
halló**k** "hearing"	3	szüle**i** "his/her parents"	3
barát**ok** "friends"	2	nagyszüle**i** "his/her grandparents"	1
rossz**ak** "bad"	2	baráta**ink** "our friends"	1
egyenrangú**ak** "equal"	1	baráta**im** "my friend"	1
képes**ek**	1		

Among the possessive plural markers, we can see that the mouthings are semantically and formally related. They refer to parents, grandparents or friends in different conjugations. So the reason, again, for possessive plural markers may be simply the use of the possessive in referring to words that involve the concept of plurality, e.g. kinship terms.

The multiple markers also appear on some mouthings repetadly, e.g. 'siket**ek**' "the deaf" or 'barát**ok**' "friends". Here, we see, in addition to the nouns, some adjectives as well, e.g. 'rossz**ak**' "bad" and 'egyenrangú**ak**' "equal".

As previously mentioned, S2 shows some parts of her signing production which are characterised by various Hungarian morphological markers. In terms of Number inflection, she also exhibits, for example, Subject-Verb agreement, indicating the plural. Such instances include 'baráta**im** siket**ek**' "my friends are deaf" or 'szüle**i** magyar**ok**' "her parents were Hungarian".

 The other phenomenon includes the agreement between the adjective of the NP and the verb. For example, 'egyenrangú**ak** vagy**unk**' "we are equal", 'rossz**ak** leszü**nk**' "we will be bad" and 'siketek képesek dolgoznak' "the deaf…able to work". All these examples are indications for more Hungarian-dominated utterances; at least this seems to be implied by the mouth.

7.6   Summary

This chapter focused on inflectional markings in mouthings. The main target of exploration was the morphological markers in mouthings and their systematic patterns which emerge from the data.

As demonstrated, among those inflections which correspond to overt, analysable markers, Person and Number were found to be omnipresent in the data set. Signers make extended use of indicating these two morphological categories in mouthings. The new and most important finding in this respect is that the indication of Person and Number is not confined to some established, or at least often used, mouthings, but appears across different paradigms of Person-Number markers involving verbs, nouns and adverbs. The morphological category Number is also realised through the plural marker on nouns and adjectives in two further paradigms, as discussed above.

This examination shows a clear evidence for Person and Number to be used in MJNY production with a tendency to 1Sg and 2Sg in the examined 'free narrative' text type. It is indicated by all the different identified suffixes in 3 Person and 2 Number values, in past, present, definite and indefinite form plus in some case imperative and conditional. Nominal plural ending is yet another indication. The relevance and extent of Person and Number markers in the mouthings of MJNY in general could of course only be explored on a much larger data set that involves a large number of signers.

As we see, Case marking is also produced by all the signers, exhausting the majority of possible values that are realised on nouns, pronouns and as stems of the person-marked adverbs. The extent to which Case is utilised is signer-dependent. The most variation was found in S2, but there were various examples for most of the instances in other signers as well. In short, the same goes for Case as for Person and Number in terms of its usage in this data set. Together with Person and Number, the data shows evidence for the inflectional category Case in MJNY.

The verbal categories Tense, Mood and Definiteness could be investigated in my approach only indirectly through the different Person-Number paradigms. The visibility problem of the past marker –t or –tt, in cases of no connecting vowel, or the Mood markers -j and -n holds an amount of uncertainty in itself. Therefore, only the distinctive Person-Number markers could hint at their presence. What emerges from this perspective is the clear presence of the only morphologically marked Tense value, the past. Signers seemed to incorporate both present and past forms in their mouthings.

The category Mood was found to be more restricted. The imperative was the only value that occurred more repeatedly, however, this was the case only in S2, thus indicating signer-dependent behaviour. Conditional was only an exception in the data set. It is also possible that MJNY users make more use of the imperative in some contexts, e.g. a discourse in which a storyteller evokes direct quotes of hearing people, for example. But overall, the findings suggest that Mood does not play an important role in MJNY. This statement also requires further testing.

The last category, Definiteness was found in one third of the verbs. In present forms, it went up to about half of the mouthings. Note that the distinction between definite and indefinite paradigms in past forms has strong limitations because of the identical 1Sg conjugation which dominated the data. Nevertheless, the definite forms occur in every paradigm, even among the few examples of marked Mood values. In sum, it also suggests that signers have both the definite and indefinite forms of verbs at their disposal when it comes to mouthing production. A clearer picture to the extent of using the marked definite forms can be revealed by studying other text types in which more variation in Person and Number forms can be investigated.

The next question concerns the systematic appearance of spoken inflectional marking. So far, examples of inflected mouthings were reported in different sign languages; however, the question of their possible patterns has not been addressed in detail. Keller (2001) emphases in his proposal that mouthings are not found to be systematic and predictable in sign languages. The studies of Boyes Braem (2001), Bank et al. (2011) and Mohr (2014) go a bit against this claim by showing categorisation in the structure and function of mouthings. The present work aimed to demonstrate whether systematic and, at least to some extent, predictable behaviour of the inflectional marking in mouthings can be confirmed.

Some clear patterns arise from the data beyond individual variations. Signers do not use all the possible inflections, but instead utilise some of the possibilities involving 1 or 2 time occurrences most of the time. The general characteristic is not to use certain mouthing forms, but rather to use some type of inflection in the whole data set.

For the 475 Person-Number markers, it was discussed that 1Sg and 3Sg are used by all signers in different Tense–Mood–Definiteness paradigms, in Possessive markers and in person-marked adverbs. In addition, there are a respectable number of other 1, 2 and 3 Pl forms. Past and Present, as well as indefinite and definite, inflections can be regarded as main characteristics of the data. Signers exhaust a respectable number of the possible 72 inflectional suffixes of the Hungarian Person-Number markers. Preference for 1Sg and the rarity of , for example, 2Sg and 2Pl can be explained by the free narrative text type.

Furthermore, 13 of the 18 Case values were used by signers on different word classes. Plural markers are an indicated part of the possessive marker. In sum, these findings point towards the use of a subset of the possible inflectional morphology of Hungarian in mouthings. The inflectional suffixes turned out not to be confined to certain usual mouthings instances, which is another important finding. Person-Number on verbs, nouns, and Case show more variation in the mouthing occurrences. Person-marked adverbs and Number marking rather show a small number of frequently used forms.

Especially in S2, one can observe a larger variety of inflections than in the other signers. This was produced in a similar amount of MJNY data, which indicates her more dominant spoken language influence. I expect that, in a larger data set involving different text types, more signers would produce some of the forms that were produced in this small-scale corpus only by S2. Also, S2 can be seen as a good example for a more Hungarian-dominated mouthing.

Another relevant question that will be addressed in Part IV focuses on whether we can distinguish between different mechanisms that are to be applied within the realm of MJNY mouthings. For example, a greater part of mouthings may in fact be produced by utilising a subset of the Hungarian morphology in bilingual signers, while others can include simple frozen forms that are learned and used by signers as alternating forms to an uninflected citation form. A possible model and a few suggestions for testing will be provided in the Discussion part.

Part IV. Discussion

8 Mouthings in a language contact framework

8.1 Introduction

This chapter deals with the general discussion of the dissertation. In doing so, the goal is to provide a better understanding of the inflections in mouthings in a language contact framework. It leads to an outline of the main characteristics of mouthings based on both the literature from other sign languages and the empirical results from MJNY. A proposal of a tentative bilingual model for mouthing in sign languages is provided at the end of the chapter.

In the present thesis, I followed a language contact framework for mouthings, as most researchers have done thus far. However, within this broader framework, there have been various typologies proposed and different terms used. The chapter begins with a short revision of some of these attempts.

Then, I turn to the central question regarding mouthings in general. Based on the theoretical and empirical knowledge gained by completing this dissertation, I address the problem of whether mouthing can be seen as part of a sign language. Here, I compare my results with others in order to get a clear picture about the possible patterns of mouthings and to disambiguate different kinds of mouthings in a sign language in terms of modality and language attributes.

After discussing some of the main issues regarding this central question, e.g. diversity of mouthing patterns, consistency in the data corpus etc., I describe a possible way to look at mouthing in sign languages. This model is based on the ideas reflected in Grosjean (2008) and Romaine (1995) and emphasises the dynamic nature of bilingual language production that can lead to certain idiosyncratic linguistic phenomena like mouthing. This model goes beyond this chapter and opens up the other part of the discussion about the description of mouthing within the linguistic system of MJNY in the next chapter.

8.2 Classification of mouthing as a contact phenomenon

This dissertation investigated a specific type of mouthing; those with spoken inflection in MJNY. One of the main research questions concerned the occurrence and patterns of Hungarian morphological categories in mouthings. I firstly found

evidence for the presence of the categories Person, Number, Case and, to some extent, Tense and Definiteness (and Mood as an exception). Person and Number could be identified on different word classes (verbs, nouns, adverbs) and Case could be identified on nouns, pronouns and adverbs. These categories exhibited most of the possible values in Hungarian, with certain preferences, e.g. 1 sg, 3 sg or accusative and inessive. Mouthed verbs also showed present and past forms, as well as definite and indefinite distinctions, as they could be identified on the different Person-Number paradigms. Note that these two categories, as well as some distinct values of Mood, were only indirect inferences based on the Person-Number paradigms. Also, it was not possible to identify some distinctions, as there were grammatical-perceptional overlaps in production, e.g. the definite and indefinite conjugation of 1 sg past forms. Thus, more data obtained from different data sources would be needed to come to an elaborate conclusion about Tense, Mood and Definiteness.

Overall, this thesis presented the first empirical systematic investigation on mouthings with inflection and showed evidence that the signers make use them within the vernacular MJNY discourse. In terms of their systematic nature, the data showed that the insertion of the aforementioned inflectional categories was not confined to certain mouthings, but the patterns could be attested throughout the entire sample. Further, there was only a limited amount of inflectional patterns, e.g. certain values that were produced by most of the signers. Besides those, I also found huge individual differences or signer-dependent preferences in terms of the whole of each paradigm. This indicates that some aspects of the Hungarian inflection are more regularly used by these signers, while others are subject to spontaneous, individual differences assumedly influenced by various psycho and sociolinguistic factors. It has to be emphasised that the results are coloured by text type (free narrative sequences within an interview situation) and make no general statement possible regarding the language without a further comparison to other text types. This is especially the case because the chosen text type is not a typical source for inflection compared to deaf–hearing interactions or text-to-sign translations. However, it is even more important to see that inflectional patterns were found in a considerable and structured amount in a text type in which I did not expect to find many of them.

Thus, the primary indication of the findings is that early and late L1 MJNY signers make use of mouthings with inflection. This finding is in line with pieces of data found in several other sign languages, like ISL (Mohr 2014), DGS (Ebbinghaus & Heßmann 2001), NGT (Bank et al. 2011) and IPSL (Zeshan 2001).

As laid out in Chapter 4, studies from different sign languages report about two, more or less distinct types of mouthings: the one is a more spoken language dominant, clear mouthing in which certain grammatical attributes, e.g. functional words and inflections, can occur. It is mostly associated with language production in deaf–hearing interactions or other bilingual situations and text types in which the spoken language is expected to be dominant. The other type of mouthing is found to be more established in different sign languages. It contains mouthings which show the full or reduced lexical citation form, adapted to the prosodic structure of signs. These mouthings have other sign morphological, stylistic functions, among others, as well. It is acknowledged that this type of mouthing appears in the vernacular deaf sign language discourses.

The most intriguing finding of this dissertation concerns the amount of inflected mouthings in a discourse with which they are not usually associated. It is rather associated with code-mixing and bilingual discourse; not with borrowings or loans in a sign language. The chapters on methodology described that the careful choice of data source and the feedback of deaf signers strongly indicate that we do indeed deal with deaf MJNY vernacular in this research.

Mohr (2014) and Zeshan (2001) found that a natural sign language can incorporate such elements in the mouthing without changing the structure of the sign to a more spoken language-dominated contact signing. This thesis provided similar preliminary evidence to back up the MJNY data. The integration of inflected mouthings into MJNY is possible despite the fact that they preserve spoken morphological features. I have no reason to assume that inflected mouthings appear only in strongly spoken language-dominated utterances, although there can be mouthings which are associated with such utterances. The findings question the fine-cut dualistic view of the two-type mouthing interpretation (for example: mouthings showing formal characteristics of the spoken language are part of bilingual discourses and contact situations, whereas mouthings which are formally and functionally more adapted to the sign language are part of the vernacular deaf discourses). Rather, the findings emphasise the possibility of using different mouthing forms in a sign language regardless of spoken characteristics such as inflection.

In the following, I investigate the application of a language contact framework for my data. Sign and spoken language can be in contact in various forms that are not known among spoken languages. I initially conceptualised mouthing as a cross-modal language contact phenomenon. This will be the central term that I apply to my MJNY data and generalise in regards to other kinds of mouthings. I specify what I exactly mean by using both "cross-modal" and "language contact" in the case of mouthing, and I revisit the terminological accuracy of other accounts. In

doing so, discussion will be carried out regarding how mouthings can be placed between spoken and sign language in terms of both modality and linguistic structure.

8.2.1 The aspect of language modality

In a linguistic event which involves both elements of spoken and sign language, the complexity and uniqueness of bilingual language use especially comes into light. The real challenge for defining and analysing the participating linguistic entities arises, to a great extent, through the two distinct modalities that are involved: the auditory–vocal and visual– gestural modalities (Berent 2006).

To clarify the modality aspect of mouthing, it makes sense to evoke once again the concept of the language contact continuum. This model aims to demonstrate different possible sign varieties that are produced within a sign language community. The basic assumption regarding mouthing in this model is that its formal and also functional properties change depending on the different grades of spoken language influence.

| Sign Language | Contact Signing | Signed Language | Sp. Language |

Figure 8.1: Cross-modal language contact continuum

In a narrow sense, the type of sign language use that can be regarded as cross-modal is that in which mouthings involve auditory-vocal signals (voicing or whispering). A clear example of this is code-blending in the language production of codas. Emmorey et al. (2008) call this phenomenon bimodal bilingualism. In this case, cross-modal as a synonym for bimodal refers exactly to modality difference in language production and perception.

In a bit of a broader sense, those mouthing instances can be labelled as cross-modal, which strongly preserves the spoken word character of the mouthing, e.g. full of inflected forms or functional words of the spoken language (Sutton-Spence 2007; Baker & Van den Bogaerde 2008). If we use cross-modal in that sense, it already places stress on the involvement of a spoken language in general, rather than on the modality of production or perception. This is the sense in which Baker

& Van den Bogaerde (2008) label their deaf–hearing interaction mouthing data as "code-blending". For them, the use of voice is not a prerequisite for this term.

So far, we have dealt with a sign language production that is at least associated with a bilingual discourse (often deaf–hearing interaction or L2 or Coda language use) with intensive code-mixing or code-blending activity with or without voice.

In an even broader sense, all mouthing instances can be seen as connecting elements to the spoken language. For example, Bank et al. (2011) use the term code-blending and "online code-mixing" for their NGT mouthing data. Here, mouthings are analysed in terms of their lexical meaning in the first place. The spoken-dominated formal characteristics (e.g. inflection) are not definitory in this usage. Especially due to the lack of consistent appearance and predictability of lexical mouthings, the authors conclude that mouthings, although omnipresent in their large corpus, rather preserve their connection to spoken Dutch within NGT production. By using the term 'code-blending', the authors emphasise the cross-modal connection to a spoken language regardless of the modality in which the linguistic information is conveyed or any other formal characteristic of mouthed occurrences.

In this thesis, I follow the general sense of "cross-modalism" and use the term in order to emphasise the connection to spoken Hungarian. At the same time, I make a clear distinction between the purely perceptional sense of modality and a broader metaphoric sense as reflected in the postulated mechanism of spoken and sign connection in Chapter 6.

Mouthings are perceived as visual segments, thus we deal here with unimodal signals. It may belong to the competency of signers to process this input and dissociate between visible categories. As discussed in syllable recognition, this involves a unique, language-specific repertoire of abstract categorical kinemes. Their frequency and typical combination patterns provide usable information in this interpretation.

At the same time, mouthings with spoken inflections rather belong to the set of mouthings which are more connected to spoken language. Based on the knowledge of spoken Hungarian, the interlocutor is able to match the visible units to the phonological code of Hungarian, crossing over to spoken syllable recognition. In other words, the unimodal signals eventually lead to a cross-linguistic or bimodal recognition. The visually accessible vowel and consonant inventory of Hungarian is limited. However, it is not necessary to get fully specified signals to activate mouthed word forms. The position of inflections may also be an advantage. At the end of word forms, there is a more closed set of possible inserted syllables. In addition, the input-driven bottom-up recognition is enriched by a knowledge-based top-down process. In this sense the sign language

competent person draws on the lexical and grammatical information produced by other articulators, as well as on the knowledge of frequently spoken word forms occurring or re-occurring with high probability in a given discourse.

If we compare mouthing perception with speech, on the one hand, the input is restricted to visual features, but on the other hand, enriched by manual and non-manual input other than the mouth. Mouthings appear in a context of other visual linguistic and even non-linguistic elements that enhance a recognition of the intended meaning of mouthed occurrences, as similarly proposed by Ebbinghaus & Heßmann (2001). Keller (2001) claims that, similar to the phonemic restoration effect, it is reasonable to assume a kinematic restoration effect as well, which is responsible for the identification of mouthings despite the unspecified visual signal. A knowledge-based top-down process is always part of the recognition and helps to fill the gaps (Keller 2001: 208).

Nevertheless, the involvement of a spoken language in the form of mouthing is still a highly disputed topic. It is not evidential that mouthings are always perceived and interpreted in terms of spoken words. Mouthings with inflection, as I have proposed, can still rather be seen as having the connection to spoken language. However, to clarify this issue, I now come to the question of language structure that is associated with different types of mouthings in the literature.

8.2.2 The aspect of language structure

The reason why the question regarding mouthings being integrated into a sign language is controversially disputed is due to the diverse and controversial findings. As mentioned several times already, studies report about mouthings that are often reduced in form and not regulated by spoken morphology and syntax. They are usually lexically bound to manual signs, contribute to lexical derivation, phrasal construction (Sutton-Spence 2007: 157-8), syntactic binding and adapted to the prosodic structure of the sign language. Other studies point to the high variation in mouthings forms, the lack of consistent, as well as the predictable appearance, all of which rather confirm the active spoken language presence. The bottom line is that there are different types of mouthings. If we want to address the question regarding which view the MJNY data supports, we have to first look at mouthing structure.

Based on the language contact continuum, mouthings which show more formal spoken language characteristics and follow a word order of spoken syntax are more strongly associated with Hungarian. Lexically bound, non-inflected or even reduced mouthings in the light of other studies are less connected to Hungarian. However, it can be strongly assumed that mouthings do not release all their

connections to spoken language. The inconsistent, even optional and diverse formal appearance, as pointed out by Bank et al. (2011), still suggest that most mouthings cannot be seen as borrowed elements, as is the case in spoken language contact situations. The only subset of mouthings that could be seen as borrowings or loan elements are those which consistently appear as part of the signs, are full or reduced (e.g. ASL FINISH with 'fish') and can absorb sign language morphological modifications, e.g. inflection ('eat-eat-eat' in iterative aspect) (cp. Lucas & Vali 1992; Boyes Braem 2001).

My corpus is based on linguistic data that was carefully chosen for this dissertation and was regarded as a good example of MJNY (cp. Part II). The important finding of the research is that there appears to be quite a number of inflected mouthings in the utterances of the corpus. This is a language material which is basically not associated with a bilingual deaf–hearing discourse, but rather with a sign language vernacular. The implications of the finding is that inflected mouthings in MJNY are not obliged to come along with signed Hungarian structure, but they can appear in MJNY. The acceptance of these utterances as MJNY is currently based on the choice of language material and the subjective assessment of MJNY consultants. A more precise evaluation should be given in a follow-up study.

The research led to another important finding as well: while most of the mouthings were one-time occurrences and had the common attribute of exhibiting inflections, there was a small number of instances that could be interpreted as frozen forms, used alternatively to citation forms. It was explained that verbs and case mouthings were mostly one time occurrences of exception. However, nouns and person-marked adverbs were more reduced to forms that could be explained by the frequency in usage, e.g. 'velem' "with me" or 'apám' "my father". Here, we may deal with a more advanced phase of the integration process of the specific instances into MJNY; however, the coding of these items as spoken words or visual kinemes, as suggested by Keller (2001) and Udoff & Nip (2013), remains a question for future studies to answer.

To sum up, it is not necessary that every inflection points to a spoken language-dominant language production. The formal characteristics alone do not always reveal its place on the language contact continuum, as shown by the frequency analysis. Moreover, even if inflected mouthings appear in MJNY utterances, which are one-time occurrences and can be assumed to be active code-mixing patterns, it can still co-occur with a regular MJNY structure in which other manual parts of the language can, for example, carry the same or related meaning with their own analogue inventory of Person or Number marking (e.g. agreement verb or verb and pointing sign).

The only clear case that inflected mouthings occur with spoken Hungarian morphology in the data is the set of sentences with signed Hungarian elements (manual expressions of inflections). But the general impression of the data suggests that signers can also apply, for example, a double marking strategy in which Person and Number can be conveyed by both mouthing and manual structure (e.g. pointing signs and specific eye gaze). This means two structurally and modally independent ways of expressing a certain linguistic meaning within a single MJNY utterance. This picture still has to be backed up by empirical findings. However, if this description is accurate, it may point to the possibility that bilingual utterances can be combined in many more complex ways than often described so far in mouthing research.

In the literature, studies to date resemble Schermer's (1990:37) observation of NGT, according to which not so much the frequency, but rather the type of mouthing in a given stretch of discourse can reveal switches between a sign language-ruled and a more spoken language-regulated signing. This research suggests that this statement can definitely be refined. Not even the type of mouthing reveals where signers are on a language contact continuum in a stretch of discourse. The formal characteristics and the frequency of single mouthing instances, plus the sign structure that comes with the mouthing, can all more clearly reveal the language dominance or the matrix language in a discourse. More importantly, as Schermer (1990) points out, signers command different sign modes and can switch between them rather quickly. The question should be further investigated, whether an inflected mouthing in MJNY can function and be be perceived in some utterances as borrowed and established instance that comes along with MJNY morphosyntax, whereas in others as fully spoken language-oriented element that is accompanied by signed Hungarian structure.

8.3   Application of language contact terminology

Let us now turn to the terminological question: if mouthing is a language contact phenomenon, with which term could we describe it properly? First, I look for a general term that can be consequently applied in follow-up studies and future research. Then, I go into some details about mouthing integration into a sign language. Here, examples are given for placing different terms within a two-language-two-modality overall framework.

8.3.1 Code-switching and code-mixing

Weinreich (1953) defined bilingualism as "The practice of alternately using two languages", which is mostly applied to the central issue of code-switching (CS). The term is possibly the most often used term in the literature in many different senses, thus, it is worth looking at its usage and the attempts of its application in mouthing literature.

According to a classical definition from a linguistic point of view, "Code-switching is the alternation of two languages within a single discourse, sentence or constituent" (Poplack 1980/2000: 208). Myers-Scotton defines classical code-switching (CS) par excellence for a clause arguing that two languages are actually in contact only within a clause (2006: 241). The alternating character seems to be valid on the level of a sentence or beyond. However, it is more problematic to find a switch if constituents of a single word or clause come from two languages in which the separation is not always evident (Romaine 1995).

From a conversation analytic perspective, Auer (1998) describes CS as a switch in one given point of a discourse where the juxtaposition of the two languages carries a local meaning for the discourse. In contrast, he uses the term code-mixing (CM) for an overall switching mode of bilinguals, that is, they alternate languages in a discourse very often and as a general characteristic of their language use. In contrast to CS, with its local meaning, CM rather conveys a global meaning.

Muysken (2000) uses code-mixing as an umbrella term to refer to lexical items and grammatical features from two languages within a sentence (2000: 1). He then differentiates types of CM: (1) Alternation is language mixing in terms of Poplack's code-switching; it concerns the change in language structure. (2) Insertion, in his terminology, is similar to borrowing in that it is the insertion of an alien lexical or phrasal category into a given structure (2000: 3). (3) Congruent lexicalization concerns language material from different lexical inventories added to shared grammatical structure (ibd.).

Now, let us turn to the use of these terms for mouthing. Schermer (1990) uses the term code-switching on different levels. In a narrower sense, she refers to cases when mouthing occurs without any signed item. The reason can be simply a lexical gap, that is, the signers don't know the sign or just don't want to use it (1990:123). Schermer also describes that such mouthing instances often reveal a spoken language-regulated syntactic structure, making sentences more similar to contact signing (ibd.123). This means that switching from signing with mouthing to a mouthing-only mode can modify the way one signs in the surrounding stretch of discourse and, as such, it generates a switch between sign language and a sign contact variety.

This case of a single mouthing applies to the alternation of language material, thus it can be seen as code-switching. It affects the grammatical context, and also refers to a conversational strategy. In my corpus, it was a very rare phenomenon (only one mouthing with Person-Number marking and one with Case).

The change of linguistic structure in sentences around such single mouthings, however, already concerns analytical challenges. The change occurs in Schermer's data in a contact variety; not in vocal spoken language with modality change. Thus, the term CS can only be used for rare instances with language and modality change (informant stops signing and begins to speak). All other usage of the term CS can only be understood in a general sense. Auer's code-mixing, in terms of an overall switching mode, would perhaps apply here better. In sum, the term CS here cannot be seen to be equivalent with its spoken language usage and, therefore, should be taken with a grain of salt.

Boyes Braem (2001) also expands the concept for code-switching. According to her criteria, a clear switch between language and modality (from sign to speech) is not obligatory. She rather emphasises that, in code-switching, signers can sign and mouth simultaneously but the mouthing works more like speech, that is, it shows grammatical properties of the spoken word, e.g. inflections. It is about a one-time, spontaneous, not obligatory occurrence which is, in some cases, indeed produced without any accompanying sign (2001: 127).

The disadvantage of this interpretation is also the general sense; the broadening of the classical usage of CS in terms of its sequential nature. Nevertheless, Boyes Braem's definition points out an important characteristic: mouthing can be more speech-like or more sign-like as discussed in this thesis.

The application of the term code-mixing is discussed by Bank et al. (2011). They come back to Mysken's terminology, which used CM as an umbrella term referring to different kinds of language contact. However, they find it problematic to use it as it is based on the idea of sequential contact, which is usually not the case with mouthings. Thus, they prefer the use of code-blending or bimodal code-mixing as a general term for their data (ibid. 2011).

Bank et al. (2011) also make suggestions about the applicability of Myusken's terminology to sign language mouthing. As already mentioned, he distinguishes alternation (equal to some code-switching definitions), lexical insertion (borrowing) and congruent lexicalisation. Bank et al. (ibid.) analyse mouthings in NGT on a lexical level; thus, for them, the term lexical insertion was crucial. But here, the authors decided to introduce a new expression instead of broadening the classical spoken language contact terms. They point out that, due to the simultaneity of sign languages, NGT can be produced without interruption and spoken elements are additionally inserted, rather than replacing the matrix

language element, as is the case in spoken languages. Thus, they favour the use of *lexical addition* to describe this phenomenon specific to sign–spoken bilingualism.

In sum, CS seems to be rather applicable only when one reduces its usage to one-time, spontaneous, non-obligatory alternation (e.g. one stops speaking and begins to sign). The alternation doesn't apply to the simultaneous use of sign and spoken language, which is the general subject here. Also, it seems to be quite problematic to apply the term to any kind of structural change from sign language to a contact variety. The influence of a CS item on the grammatical structure is still an under-researched territory. It would also be of interest to shed more light on the conversational strategies of MJNY signers regarding CS (when and how they change to speak during an MJNY discourse). The two examples from the corpus cannot reveal evidence for such change to contact signing. Future studies can definitely include such analysis in language contact investigations.

Cross-modal or bimodal CM, from the perspective of this thesis, can indeed be used in the general sense in terms of Myusken; it was recently used in Mohr (2012). I found no reason for abandoning this term as a reference for a general bilingual mixing mode, as the conversational strategy goes according to Auer (1998). It is by no means far from what I suggest in this thesis to be the case in my MJNY data.

8.3.2 Borrowings and loans

CS is a typical phenomenon in bilingual discourses and concerns morphological issues. Borrowing is generally understood as the insertion of lexical instances from one language into the other.

In spoken language research, there are lots of difficulties in distinguishing CS from borrowing. Poplack & Sankoff (1984) describe some rules to differentiate these two forms. CS shows the morphophonologic features of the borrowed language, whereas borrowing instances are already adapted to the host language. They also state that the use of words as synonyms for native lexemes is usually a sign for borrowing (1984: 128).

Myers-Scotton (1996) takes the frequency as criterion into account, saying that, in a corpus of at least twenty hours, a form which occurs three or more times can already be seen as borrowing.

The question of distinction also has to take time into consideration. CS can, after a while, become more established in a given variety so that borrowings and eventually loans can evolve from CS. Loans are usually considered to be a part of the monolingual vocabulary. In her overview, Gardner-Chloros (2009) emphasises

that CS, borrowing and loan are very much the same phenomenon but in different stages of language use. Structural and statistical criteria are not always capable to capture the change in quality (2009: 31).

In sign language literature, various studies mention mouthings as borrowing and loan. (Boyes Braem & Sutton-Spence 2001; Bank et al. 2011; Mohr 2012). Let us now look at how studies have dealt with this term.

Mouthing occurrences that are adapted to sign language structure are often discussed as borrowings or even loan words (Davis 1989; Lucas-Valli 1992; Schermer 1990; Woll 2001; Boyes Braem 2001). Opinions differ in some details. Schermer (1990: 152) argues for the term *loan* by saying that mouthing assumes a function in the lexical-syntactical realm and, as such, is integrated into sign language. Boyes Braem (2001), on the other hand, excludes the term, as it is used only if an item becomes part of a monolingual vocabulary. But there is no monolingual context in the Deaf community (2001: 122). She uses borrowing to refer to the structurally modified mouth occurrences, but she finds that, in many cases, mouthing forms are only one-time phenomena whose production cannot be predicted in a discourse so that the notion of nonce borrowing would be, according to her, more appropriate (ibd. 126).

Analysing the NGT corpus, Bank et al. (2011) come to the conclusion that a set of mouthings, which come along with frequent signs, are firmly established in the sign language. This is an indication that they are already borrowings in terms of frequency. Also, they found mouthings and mouth gestures to be replaceable by each other. This is another hint of the established nature of those mouthings in NGT. However, the authors also found that their formal attributes, as well as their unpredictable usage, goes against the classical notion of borrowings. Thus, they conclude that even these items should rather be understood as instances of code-blending (bimodal code-mixing). In other words, these findings suggest that the application of the use of the term borrowing remains problematic for sign languages.

In contrast, another recent article by Mohr (2012) provides an interpretation of mouthings as borrowings. The argumentation is the same as in previous studies. The different formal and functional changes and adaptation to the sign structure leads the author to the conclusion that mouthings are actually borrowings in ISL. Moreover, she writes about loan words by explaining that a lot of mouthings become more established over time in the community and become full parts of the linguistic system and may, in fact, not even be perceived as foreign elements coming from another modality (Mohr 2012). However, she does not give any detailed and critical analysis of the terminology. In this paper, she also opens up another scenario by saying that sign language use could, on the other hand, always

be seen as bilingual in nature. In a later work, Mohr (2014), she then argues for the first scenario; for mouthings to be established parts of ISL and not spoken elements.

The attempts, which concluded in using the notion of borrowing and loan word in any sense, can only be interpreted as a broadening of the original term. For example, for using borrowing, one should assume that the way mouthing adjusts to sign language structure should be an equivalent process to spoken words that are borrowed from other spoken languages and become established in the host language. Also, the study of Bank et al. (2011) showed that a closer look reveals the inconsistent formal appearance of the so-called borrowed mouthings. This also points towards the fact that the spoken language notions may not be fully applicable to sign language situations.

Ebbinghaus and Heßmann (2001) point out that mouthing is actually borrowed from spoken language, but not in the same sense that linguistic borrowings are. They argue that, in order to describe mouthing as borrowing in terms of spoken bilingualism, it should carry the phonological and morphological properties of the host language (2001:139). Signs of other sign languages can do it (e.g. loan signs), as well as auditory-vocal words in other auditory-vocal languages. In contrast, however, mouthing can never adjust to manual processes in this way.

There is evidence that mouthings can undergo structural and functional changes in a sign language structure and adapt to it in various ways. They can take aspectual inflection or contribute to syntactical binding (Mohr 2014; Crasborn et al. 2008). Thus, we can assume an analogue process for borrowing in spoken languages. However, I suggest coming up with different terminology to describe the phenomenon. One way to do so is to go away, to some extent, from a traditional language contact point of view. Ebbinghaus and Heßmann (2001) already proposed a unique semiotic system for sign languages that is based on a bilingual mental representation. From my perspective, it could also be possible to explain the structural adaptation of mouthings within a more usual language contact framework by specifying the processes and linguistic entities occurring in the sign language–spoken language interaction. It could also be possible by adding new terms to the classical ones similar to the way Bank et al. (2011) suggested lexical additions to mouthings.

I did not see any direct value in using borrowing and loan for my MJNY data. Nevertheless, I discuss the phenomena in Chapter 9, where I propose a bilingual model for mouthing use .

8.3.3 Code-blending

In contrast to the previous terminology, the term *code-blending* was developed to capture the specific simultaneous language production in sign–spoken bilingualism. The term was originally used by Emmorey et al. (2005) and it refers to the simultaneous language mixing in sign and speech.

In code-switching theory, the types of CS are based on morphosyntactic criteria (Myers-Scotton 2002). In contrast, code-blending (CB) was analysed first rather from a semantic viewpoint. Emmorey et al. (2005) examined how semantic information is conveyed through signs and words. To determine identical meaning in a CB, they used translation equivalents. Later on, Emmorey et al. (2008) reviewed questions of how a CS model could be applied to intra-sentential CB. They proved the Matrix Language Frame Model from Myers-Scotton (2002) on CB by trying to identify a base and an embedded language in morphosyntactical contribution. They found that, in some CB phrases, the sign or spoken language really offers more lexemes and determines the morphosyntactic frame. But in many cases, both languages serve such functions so that one can't determine one base and one embedded language (2008: 51). The application of the MLF model to CB is restricted.

Baker and Van den Bogaerde (2008) used a broader definition for code-blending: "An utterance that consists of signs and words (produced with or without voice) in whatever combination is classified as code-blended" (2008: 6). For them, the use of voice is not a necessary criterion to define code-blending. Baker and Van den Bogaerde (2008) categorise the different combinations of spoken and sign language in a CB.

Tab. 8.1:   *Types of Code-blending according to Baker & Van den Bogaerde (2008)*

Spoken Base Language	Sign Base Language	Full code-blending	Mixed code-blending
Fully expressed in words, signs without additional meaning	Fully expressed in signs, words without additional meaning	Expressed in both modalities	Mixed constituents in signs and words making up the proposition

If the spoken language is the base language, the proposition is expressed entirely in words; signs do not contribute additional meaning to the utterance. If the sign language is the base language, it is exactly the other way around. In a full CB, the proposition is expressed in both modalities, but the utterance does not have to be complete in either sign or in word. Finally, in mixed CB, both languages complement each other to make up the proposition (2008: 7–9).

Note that these studies have dealt with code-blending in a bilingual hearing–deaf context. Emmorey et al. (2008, 2011) investigated hearing native signers (codas) and Baker & Van den Bogaerde (2008) studied the interaction of deaf children and hearing parents. Thus, the mouthed instances (even without voice) were automatically associated with spoken words in these contexts. As Bishop and Hicks (2008) emphasised, speech and sign in CB production are in a co-expressive interaction similar to speech with co-speech gesture (2008: 88). Given this background of the term, it raises question about its direct applicability for mouthings.

Bank et al. (2011) chose to use CB for their NGT mouthing data. They also argue that the voice is irrelevant in their context, thus they did not see it as a criterion for CB. As they put it, CM still evokes sequentially, thus they favour CB for sign languages. Although they use this term in a general sense, with such a choice, they also take a starting position in terms of defining mouthings as spoken elements in a sign language, which is still disputed to date. This general CB usage has recently been adopted by Johnston et al. (2015) for Auslan.

If I look at the use of CB for mouthings, several questions arise. At first sight, it is useful to have a term which puts stress on simultaneity rather than sequential contact. In that sense, a general usage of CB similar to the usage of CM can be favoured. However, as pointed out, CB for mouthing, e.g. in this thesis, always indirectly indicates that we are dealing with spoken words. This connotation can lead to confusing theoretical positions.

In my case, I do not have any theoretical position that would require a conceptualisation of my mouthing data as spoken elements, even if they have a connection to Hungarian. Their nature is much more ambivalent than such a perspective would suggest. My feedback on the use of CB for my mouthings with inflections from various scholars also showed that this notion only creates confusions when applied to mouthings.

Moreover, CB basically implies continuous sign-speech utterances. This type of mouthing, however, is quite different from what was shown happening in sign language mouthing. There, the occurrences are more or less single instances; their distribution and forms are also much more uneven in different utterances than in deaf–hearing bilingual discourses. An analysis of language contact similar to different CB types, as proposed by Baker & Van den Bogaerde (2008), can, to some extent, be adapted for mouthings. All in all, however, the more broadened use of the term and the preconceived knowledge that comes with it in terms of mouthings being spoken elements suggest avoiding its use for this thesis. Cross-modal code-mixing still sounds more cautious and does not bear the connotation in the way that CB does.

8.4   Summary

In this chapter, the terms used for mouthings and their underlying theoretical connotations have been revisited. It was argued that cross-modal code-mixing seems to be a good general term to use for the present mouthing data. It was crucial to see that investigations which dealt with sign language mouthing phenomena could only define them if they broadened the terms of spoken language contact or suggested new ones, e.g. lexical addition. This situation shows that mouthing is indeed a specific case of language contact not documented in spoken languages. Their analysis can expand the common language contact framework to account for the processes that can be encountered in spoken–sign situations. As Mohr (2012) points out, it seems that visual–gestural languages can create and accommodate new linguistic entities which have still yet to be described in full (2012: 208).

The structural and modality traits of mouthings are still not fully understood. Also, it is important to emphasise again that mouthings can differ in behaviour and frequency patterns. Even that one subset with spoken inflections cannot always be described by the same process and cannot be conceived of having the same type of embeddedness into MJNY or the same connection to Hungarian. To sum up, it is important for future studies to be aware of the possibility that different mouthings could even be explained by different terms. It can indeed be an important task to distinguish them by different names in terms of a continuum of language contact.

9 A bilingual explanation for mouthing behaviour in sign languages

9.1 Introduction

This dissertation approached the phenomenon of mouthing from a bilingual point of view using a language contact framework. The signers are bilingual and are familiar with both MJNY and spoken Hungarian. This bilingual knowledge is reflected in utterances of my data corpus. I dealt with mouthings as language contact phenomena and aimed to gain more understanding about their specific forms as linguistic entities presented in this dissertation.

It inevitably brings us now back to the main question of mouthing literature: does mouthing (with inflection) belong to MJNY or not? Do we deal with one language or two produced at the same time? In other words, can mouthings be understood as part of sign language in my case or as spoken language instances co-occurring with MJNY production? Similar questions have been discussed by most of the researchers of various sign languages.

The core insights gained from the literature include the diversity of mouthing forms, the unpredictable nature of their appearance and the concept of two different types of mouthings: the one spoken language-dominated form, e.g. in contact signing, and the other which is adapted formally and functionally to sign languages.

The empirical results of the present research revealed such data that was not expected based on the literature. The results suggest that inflections on mouthings do not necessarily reveal spoken language-oriented signing, but rather MJNY. Further, in these MJNY utterances, the inflected mouthings are most often not frozen established instances that alternate with the citation form. Rather, most of them are one time occurrences; various mouthings on which Hungarian Person, Number or Case inflection is marked. This indicates that the abstract Hungarian category is actively present in MJNY utterances.

But most importantly, the conclusion I made in the previous subsection emphasised that mouthings with inflection can be assumed to be both active, spontaneous code-mixing phenomena, as well as more established, frequently used forms. It points to that fact that even this subset of MJNY mouthings appears to be diverse in nature. These findings demonstrated that much more can be possible in the interaction of sign and spoken languages through mouthing than discussed so far.

This is the point where my results connect to the main question about mouthing in sign languages. Although I only analysed a fraction of possible mouthing forms, my findings bring me back to the same issue discussed in other sign languages. As an opening, note that I found it quite problematic to find one suitable language contact term for mouthing, as this language contact differs quite a lot from those described in spoken languages and in hearing–deaf bilingual discourse. Sign language mouthing can be understood as a unique cross-modal language contact phenomenon. In the earlier parts of this thesis, I suggested that a dynamic, bilingual language use framework could be appropriate to explain the behaviour of mouthings in sign languages. Thus, I shortly re-introduced the main idea and discuss its application for mouthing.

9.2   A bilingual view of language contacts

The main theoretical background used in this dissertation relies on the holistic view of bilingualism. This was articulated very clearly by Grosjean's extensive work (e.g. Grosjean, 2008). According to this view, bilinguals should be treated as fully competent language users whose two languages serve the same functions as the one language in monolinguals. The core difference between them lies in that bilinguals use their two languages to meet their socio-cultural needs. It also means that their language competency as a whole is made up of both languages.

One theoretical and methodological mistake a linguist can make, according to Grosjean, is to compare each language of bilinguals separately to monolingual standards. The other issue, which is more important for the present work, has to do with the interpretation of the bilingual's language data in terms of one or the other language system (e.g. looking for English and French instances in a bilingual utterance). With such a perspective, one can miss the point that bilinguals often use a third system, which is a combination of the two languages to the extent that is required by the environment (2008:14). As Grosjean wrote,

"The bilingual is not the sum of two complete or incomplete monolinguals; rather, he or she has a unique and specific linguistic configuration. The co-existence and constant interaction of the two languages in the bilinguals has produced a different but complete language system." (2008: 13-14)

This is the principal idea that can be used for the interpretation of apparently disparate mouthing data. The importance of this third system idea comes to light if one considers the challenging attempts to describe language contact in bilinguals. It is well-known in the spoken language literature that the application of rules and models of grammaticality to the highly variable data of bilingual code-mixing is

limited (Clyne 1987: 744). A unique or third system can evolve from intensive language contact. According to the holistic view, it is misleading to force the outcome of language contact into the one or the other linguistic system, assuming that bilinguals use two distinct systems and mix their constituents. The whole linguistic repertoire makes up one dynamically changing bilingual system.

At this point, it has to be emphasised that bilingual language production, with its dynamic, changing language contact phenomena, challenged the view on human language in general. As Romaine (1995) pointed out, code-mixing discourses pose the question regarding where a linguistic system begins and ends. Thus, bilingualism challenges the picture of language as a structured, self-contained whole; an autonomous entity which is consistent within itself (Romaine 1995: 286).

Linguistic models, e.g. for Hungarian or MJNY, are being created based on the monolingual standards of theoretical linguistics. However, a sociolinguistically oriented, bilingual description of language use could capture the situation of the Hungarian deaf community more accurately. As Mackey wrote, "Bilingualism is not a model of language but a characteristic of its use." A third system, in my understanding, goes way beyond lexical and grammatical features. The understanding of language production in that sense means a complete and whole psycho and sociolinguistic system by which bilinguals meet their everyday sociocultural needs (Grosjean 2008). Individual variations in linguistic features should be treated here as part of this system. The search for linguistic patterns and for constraints on them can certainly be an important research aim, but for a general understanding, it is better to emphasise the episodic, dynamic changes in patterns, accepting all the mixed forms as characteristics of some patterns without seeking instances of two autonomous linguistic systems.

As for the dynamic nature of bilingual language use, Grosjean (2008) proposed the model of language mode which describes the activation of the bilinguals's languages at a given point in time. It can capture differences between monolingual and bilingual modes. In the first case, bilinguals communicate with monolinguals and rarely code-switch, while in bilingual mode, the utterances can be full of code-mixing patterns since both languages are active at the same time (2008). The model also implies that, at a given point of time, there is a language that governs processing. In bilingual mode, however, it can change often and rapidly.

The problem with determining one language as dominant has always been a hot potato in bilingual research. There are lots of examples in bilingual speech where it is not obvious to identify one language as being dominant for a conversation or even for a sentence (Romaine 1995: 322).

Auer (2000) also shows many cases for this problem, arguing that it is not always possible to identify a base language which would be dominant for a stretch of discourse. It is very often also a question of data collection. Moyer (1998) points out that any observation of language domination depends on the level of planning and the size of the corpus which one has to examine. Gardner-Chloros (2009) labels the base language as a hypothesis designed to explain a range of disparate findings from psycholinguistic experiments (2009: 137).

Last but not least, from a bilingual view, it is not necessary to seek out one language at a time that is more active than the other, because bilinguals use both of their languages as a whole. An one-language-at-a-time model and a dual activation model are two sides of the same coin (Gardner-Chloros 2009: 138). This issue also bears important implications for mouthing behaviour.

9.3   Applying the bilingual view to mouthings

Based on these ideas, it is time to have a final look at the understanding of mouthings gained by this doctoral research.

Virtually all studies aimed at understanding the behaviour of mouthings in sign languages by arguing that they are either part of the given sign language system or not. This is especially true for the extreme accounts.

Hohenberger & Happ (2001) argue that mouthings, although persistent in the sign language community, remain spoken language elements in nature as a part of contact signing. If they occur in DGS, they are performance phenomena and do not constitute the part of DGS as a language system.

Keller (2001) holds a similar position; however, in his view, mouthings occurring in DGS have become visual-kinematic instances and have thus lost connection to spoken language.

The other extreme is held by Ebbinghaus & Heßmann (2001) who claim that mouthings are an essential part of DGS because its system is built on the mutual contextualisation of words and signs. Note that despite the wording, they see mouthings not as spoken words but as ubiquitous semiotic symbols that appear in a sign language context.

Beyond these extremes, as discussed, most of the studies acknowledge more or less the idea of a continuum on which more spoken language-oriented, clearly produced mouthings stand at the one end. They were observed in bilingual deaf–hearing discourses and contact signing. They appear to be discrete and analytic forms, as they preserve more from the spoken origin. At the other end of the continuum, there are the formally and functionally adapted mouthings which take

part in the lexical, morphosyntactical and prosodic architecture of various sign languages. They lost their spoken analytic character and became global, synthetic forms. As the recent studies on NGT (Bank et al. 2011), LIS (Fontana 2008) and Auslan (Johnston et al. 2015) indicate, these mouthings function much more as oral gestures rather than spoken elements. Still, they are not obligatory and consistent in form; hence, they cannot apply for the status of classical borrowed elements in a sign language.

The crucial idea of the continuum, of course, is the dynamic nature of usage. That is, mouthings of different kinds can appear in a sign language and the adaptation proceeds on different levels (Boyes Braem 2001). However, there still seems to be a need for sign linguists to define a kind of dichotomy among the different types of mouthings as established elements vs. active spoken language-oriented elements mixed or blended in a sign discourse. This implicit agenda resembles the language dichotomy of the monolingual view. A mouthing with spoken word character is intuitively left out of a sign language system because it is easier to expect an adapted more gesture-like instance to be an established part of a sign language.

As the studies of recent years (Bank et al. 2011; Mohr 2014; Johnston et al. 2015) discussed the question of mouthings, they also positioned themselves in this regard. Mohr (2014) concludes for ISL that mouthings became established in the deaf community's sign language and cannot be seen as spoken elements, but as unique linguistic entities. Bank et al. (2011), as well as Johnston et al. (2015), also see mouthings as unique language contact features and acknowledge their omnipresence in NGT and Auslan. At the same time, for them, the mouthing forms are too diverse and the appearance is too optional to interpret them as borrowed elements as did Mohr (2014). Bank et al. (2011) see them as code-blendings, which means that they still resemble the spoken connection. Johnston et al. (2015) also identify mouthings as code-blendings, but they also emphasise that there are other mouthings that became gestural, meaning 'sign language internal', and were adapted to Auslan, as similarly argued by Fontana (2008) for LIS.

The basic problem hitherto concerns, in my view, the model of bilingualism, in which linguistic features adhere to one or the other separate, autonomous language system. As the fragmental view overflows to some extent into the argumentation, the authors place much less emphasis on the fact that bilinguals mix their languages in use and create a unique linguistic configuration. This, of course, is not to dismiss with a third autonomous language system, but a usage-based set of linguistic features that change as required by the interaction of the

signers and their environment. A bilingual view provides the advantage of a much more flexible perspective on mouthings.

The MJNY data showed that mouthings with inflection, a form that has been associated with deaf–hearing discourse and contact signing, can also appear in the sign language vernacular without necessarily causing spoken influence on the sign structure. Also, in these utterances, these mouthings are used to convey abstract grammatical information like in Hungarian, while at the same time, it is possible that the meaning of these markings can be expressed by other sign language articulators in the organisation of MJNY (pointing, inflected verbs, classifers). Moreover, while I interpret these mouthings as having preserved their spoken language connection, some can indeed be more established in MJNY, showing alternation between inflected form and citation form. An explanation for these results, which is in line with a bilingual view, can put more stress on the ubiquitous linguistic configuration of sign–spoken bilinguals and reveals the reason for the diverse patterns of cross-modal language contact.

As it looks, a fragmental view could never give a satisfactory answer for such diverse patterns as the disputed issue of code-switching in spoken linguistics also implies. The extreme views of mouthings being part of a sign language or not are certainly examples of oversimplification, especially because there can be more than one type of mouthing with different forms and functions. But even a dichotomy of sign language mouthings vs. mouthings in contact signing and deaf–hearing interactions does not reveal that both types of mouthings can possibly appear in all discourses. Even one subset of mouthings, with spoken inflection, can be associated with different formal structures. What I considered in this thesis to be MJNY, is, in fact, made up of stretches of discourse that show different degrees of spoken language influence at some points and, as such, is perhaps more complex than a purist monolingual language model would suggest.

Although linguists who investigated mouthings in other sign languages took their positions in the question of the integration of mouthings, some of them interestingly simultaneously acknowledged that deaf signers are usually bilinguals. In the application of the language mode model for sign languages, Grosjean (2008) pointed out that it is hard to find a monolingual sign language mode without spoken influence. Rather, if sign language is used, it opens up a type of language production in which both of the bilingual signer's languages are active to some extent. In that spirit, Mohr (2012) also mentions that the common mode of signers of ISL is assumed to be the bilingual mode, which is full of code-mixing patterns. Fontana (2008) claims that being bilingual for signers in the hearing world inevitably means using the linguistic resource from both languages. Johnston et al. (2015) also agree that monolingual users in the Australian deaf

community in fact do not exist. If we take these ideas and put forward Grosjean's language mode model (2008: 39-42), we can argue for the following scenario:

Hungarian signers are, most of the time, in a bilingual language mode in which both languages are activated. They also move dynamically along this theoretical scale, sometimes being more spoken language-oriented or sign language-oriented. It is possible that spoken language, in terms of a separate code, can be enabled and disabled depending on situational factors and the signer's capability of control.

If mouthing occurs with more spoken language influence (e.g. inflections), it is likely that both languages are active at the same time. Reduced forms that show sign language morphology coming along with signs (repeated mouth movements with sign iterative aspect) imply a more sign language-dominated situation, even if not a fully monolingual one. More importantly, all mouthing types may appear in morphosyntactical environments that are typical for the sign language vernacular.

Mouthing is a very dynamic phenomenon. The presence of spoken language in terms of a second code is not always obvious, as signers permanently move along the language continuum with different activation levels. But in terms of bilinguals, it is not the primary goal to draw a line when the other language is present and when not, just as it is not always possible to identify one base and one embedded language in bilingual discourses (Auer 2000). Rather, linguistic patterns of sign–spoken production should be identified in terms of a whole, unique kind of production, discussed above as a third system.

The question of representation in the mind is of course beyond the scope of this study, however, I generally assume that, in different stretches of discourse, both cases are possible: mouthings are perceived as spoken words or as special visual-kinematic units. Data on processing natural signed sentences would provide further evidence in favour of this bilingual scenario.

As a conclusion, it is worth characterising the patterns of the bilingual system of MJNY and other sign languages to apply this understanding to more empirical data. Note, again, that the studies on mouthings pose different questions and use different data sources (from dictionary entries to spontaneous signing) that are produced by signers with various linguistic backgrounds (e.g. Mohr 2012:193). Thus, the research on the bilingual repertoire of signers could definitely benefit from more comparable cross-linguistic work.

9.4   Mouthing in the Hungarian Deaf community from a bilingual point of view: a preliminary proposal

After the extensive discussion about the bilingual perspective on mouthings, it is finally worth taking a look at the case of mouthings in the MJNY–Hungarian situation. Due to the apparent lack of empirical data on different kinds of MJNY mouthings, the following description should be taken as a preliminary proposal which can help future studies to take the bilingual nature of MJNY users into account in data collection, methodology design and the interpretation of their findings.

In the following, the important question regarding the structure and function of mouthings will be answered in order to provide an understanding about the role played by mouthings in MJNY discourses. Fontana (2008) emphasised that, in order to deal with this issue, one has to come up with explanations concerning both the origin and the usage of mouthings. Next, both aspects will be covered.

The first part of the 'secret' of mouthings is the neural motoric-perceptual link between the oral activity and the execution of signs. This subject has been widely discussed in both sign language linguistics and gestural studies. Gestures are inextricably intertwined with speech both temporally and semantically. The main aim of this characteristic of human communication is strongly linked to the communicative economy. In spoken languages, gestures support lexical search and reduce the ambiguity of meaning (Kendon 2004). Regardless of the different theories surrounding one overall vs. a variety of separate planers, the synchronised and overlapping patterns of speech and gestures are well-acknowledged. The omnipresence of mouthings has to do, to some extent, with this basic motoric-perceptual phenomenon (Özyürek et al. 2005; Emmorey et al. 2008). Even in cases of limited or no spoken language input and knowledge, it was repeatedly observed in different sign languages across the world that even home signers make use of mouth actions in signing (Fontana 2008; Nyst 2007; Torigoe & Takei 2002).

One basic reason for mouthings in Hungary certainly includes this motoric-perceptual connection, which is in the service of the communicative economy. It is certainly an aspect of origin in human communication in general. In addition, as Fontana (2008) points out, it explains important aspects of the usage in sign languages, e.g. why signers feel that mouthings would be a part of sign language communication. More importantly, the co-production of oral and gestural elements appears in a semantically convergent form, as discussed by both gestural and sign language studies.

The other important reason is obviously the sociolinguistic one. The Hungarian deaf community has been in contact with spoken Hungarian since its origin. Oral education then led to a permanent re-enforcement of the dominance of the majority language over a 150-year period. The huge difference in prestige and codification between MJNY and Hungarian generated negative attitudes even within the signing community. The origin of mouthing as a type of language contact is another layer of the phenomenon that can be attested alongside its historical and sociolinguistic path. This layer, of course, is fused together with the reason for its use because of the common motoric basis. The use of the mouth in connection with Hungarian explains the different formal patterns in mouthing behaviour or usage as well, e.g. inflectional suffixes.

This sociolinguistic situation bears specific characteristics of mouthings which can be different from other sign languages if the sociolinguistic configuration differs as well. For example, in TID, as a result of the lack of the oral education, the Turkish impact on mouthings is known to be much less compared to MJNY (Okan Kubus, personal communication).

Beyond all these reasons, the rarity of mouthing behaviour in MJNY in terms of the involvement of a wide range of inflections also points to language specific reasons. For instance, morphology in other languages like English does not play an important role, thus it has much less of an effect on the related sign languages, e.g. ASL or BSL. However, inflections, usually being one-syllable mouth patterns which are very frequent in the spoken language, provide MJNY with a larger capacity for inserting these mouthing instances into a simultaneous language production. My prediction is that further investigations will find more evidence for inflected patterns in signed conversation in which participants are familiar with spoken Hungarian.

9.5   Summary

The present dissertation showed that, beyond the motoric and semantic connection, language contact on the morphologic level can also be a part of signing production. In sum, for this to occur, all of these aforementioned reasons must contribute their role and point to phenomenon which is rooted in a neural linkage and further shaped by language-specific patterns and the sociolinguistic situation.

Further, we discussed that there were different mouthings among the inflected instances in the corpus and this research does not fully support the idea that spoken-oriented mouthings should co-occur with Hungarian-dominant signed

utterances. Hungarian influence can be present in the mouthings, while at the same time absent in the manual structure. Bilingual users can supposedly activate both languages at the same time.

The inflection in MJNY discourse, the signs for dual activation and the huge diversity among the individual mouthing patterns that were found all bring us to the serious consideration regarding the bilingual communication of Hungarian deaf signers as a unique linguistic configuration. Instead of looking for contact signing mouthings with certain manual and oral morphological structures and sign language inherent mouthings with other characteristics, I put stress on the dynamicly and rapidly changing character of mouthings in an MJNY discourse, in which a sign linguistic system exploits communicative resources of another linguistic system (Fontana 2008). In this linguistic configuration, a third, bilingual system, morphological markers that originate from two distinct modalities, can merge in visual modality. This system does not have codified usage; however, certain patterns can and should be researched in the future as a part of the communicative strategies of MJNY users. I propose that mouthings will never turn out to be predictable in terms of when and how they appear in signing production. This phenomenon is highly dependent on individual differences and sociolinguistic situations. The following figure on page 193 outlines how mouthings with inflection can be conceptualised within the bilingual linguistic practice in Hungary. As the figure shows, mouthings are part of the language use of bilingual Deaf Signers in both Hungarian and MJNY. Mouthings are interpreted here as elements originating in System A (Hungarian) and appearing in System B (MJNY). Mouthings with inflection are only a specific subgroup of possible instances.
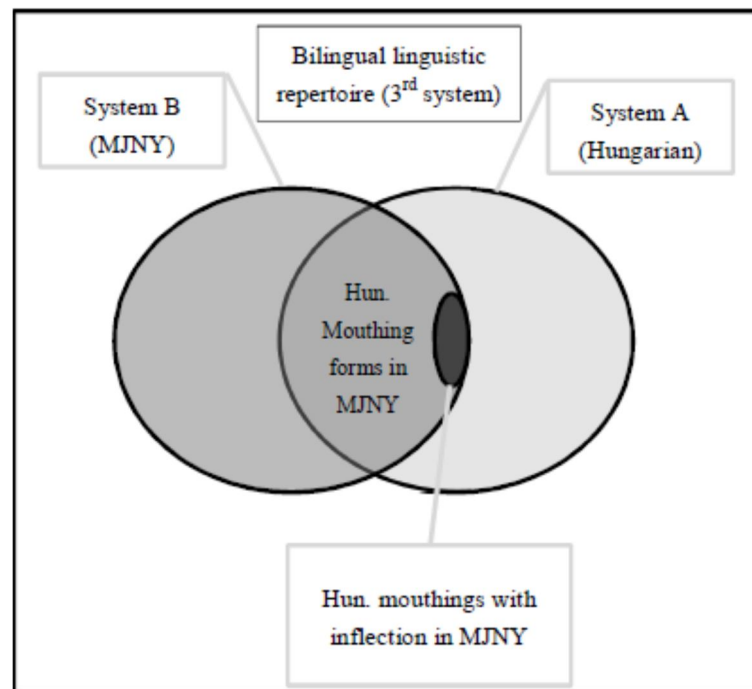
Figure 9.1: A model of visual mouthing forms in the contact situation of MJNY and Hungarian

Mohr (2014) looks at mouthings in ISL as instances which fulfil lots of functions in the linguistic system as a whole. This argument is to say that mouthings become part of the linguistic system. For MJNY, I would rather argue from a bilingual point of view. Mouthings are part of the bilingual linguistic repertoire of Hungarian signers. It involves the mouth activity during speech with hearings, sign supported speech, contact signing and mouthings in MJNY. In an MJNY discourse among native signers, some unique linguistic entities can emerge through the specific sign–spoken language contact. All these different patterns are part of the bilingual system.

Many studies on mouthings approached the phenomenon by speaking about two linguistic systems, a sign and a spoken, and the different types of language contact between a certain adaptation of mouthings to the sign language. The MJNY data challenged this view in some way. According to the bilingual view I prefer here, linguistic data does not come from two separate linguistic systems. Only one bilingual system exists. This is of course not to say that MJNY itself would be a bilingual system in the sense of Ebbinghaus and Heßmann (2001).

This bilingual language use doesn't change the fact that both MJNY and Hungarian exist as full-fledged linguistic systems with their own grammars. However, these ought to be treated as theoretical constructs. In the actual diverse and dynamic usage, elements that are described in one or the other grammar actually appear as part of a specific linguistic repertoire. Berent (2006) criticised

this view, stating that such a third system cannot be described in terms of monolingual grammar theory. It is important to keep in mind that bilingualism is not a theory of language, but rather a characteristic of its use (Mackey 2000). Future studies of MJNY should also focus on the different patterns of this language production across sociolinguistic situations in order to provide a more detailed picture of the cross-modal language contact situation in the Hungarian deaf community.

10 General Conclusion

10.1 Summary of the dissertation

This dissertation presented the first empirical investigation of the inflectional patterns of mouthings in MJNY. The research began by observing the use of inflection in the Hungarian deaf community. The literature review showed that sign language mouthing is a controversial and relatively under-researched topic in sign linguistics. We discussed that the case of inflection in mouthings was hardly investigated in other sign languages and was mentioned usually in the context of bilingual deaf–hearing interaction and contact signing.

The description of the morphology of Hungarian and MJNY showed that both languages exhibit inflectional morphology and have a capacity in which inflectional markers could co-occur. The methodology description dealt with the data collection, annotation and the construction of the small-scale corpus. The criteria for and the process of the collection of mouthing instances were also discussed.

The results presented in this thesis focused on the different patterns of inflections. Three large morphological categories were investigated in-depth on various word classes: Person, Number and Case. It was concluded that Person-Number markers and Case markers were found on mouthings predominantly, with limited extension to Tense and Definiteness. The mouthings were one or two time occurrences, but the inflectional endings showed a limited number or subset of possible Hungarian inflectional values. Some of them, e.g. 1Sg, 3Sg or the inessive and accusative case, were more prominent.

The findings of this thesis suggest the re-examination of the usual conceptualisation of the spoken language connection in mouthings. As the findings showed, spoken inflection can occur in utterances which are considered here as good examples for MJNY. The spoken element can still appear as a visual modality residue of the original Hungarian syllabic patterns. Double marking of inflections can be applied (Person-Number in mouthings and signs). In addition, the data suggest, that the forms and the types of mouthings, as discussed in other accounts, do not always reveal whether the mouthing instance is established in the language or not. An inflected mouthing can be established as a frequently used, but not obligatory element, while inflected mouthings can be a one-time instances. A language contact framework for mouthings, with respect to the findings and the theoretical consideration of other studies, was discussed at the end. I concluded

that most of the existing language contact concepts of spoken and sign linguistics cannot be fully applied to mouthings. Cross-modal language contact, or code-mixing, have been proposed as general terms to address the phenomenon.

Finally, a bilingual perspective on the nature of sign language production was emphasised. The idea of describing mouthings as spoken or sign language elements, in other words, code-blending mouthings vs. gesture-like instances, was criticised for its fragmental view. Using the example of spoken language literature on bilingualism, it was demonstrated that the idea of adhering linguistic entities to one or the other language failed to explain the bilinguals' creative and rapid mixing techniques and dynamic conversation strategies. In the spirit of Grosjean (2008), I proposed that there may be one single bilingual language use system which is based on a third, unique linguistic configuration including the MJNY and the Hungarian systems. It provides an alternative explanation on how mouthings with or without inflection can appear and disappear and how they can be individually coloured and different from situation to situation, while still omnipresent in the language use of the community. In this account, there is no need to define mouthings as being part of MJNY or not; rather, I pointed out the value in considering the dynamic language use of the community and investigating the linguistic patterns and conversational strategies in a sociolinguistic framework. This perspective can provide a more precise answer regarding how and why mouthing as a unique cross-modal language contact occurs in MJNY as it does.

Note that the study examined a limited number of signers and only one text type. A larger, more complex corpus is needed to gain further confirmation on the statements made in this thesis. An important part of this further work is the analysis of manual sign strategies that co-occurr with certain inflectional patterns.

In conclusion, this dissertation provided the first empirical study on the spoken inflections in MJNY. It emphasised the uniqueness of mouthing as a language contact phenomenon and called for the expansion of the language contact framework shaped by spoken languages. It also offered a dynamic bilingual explanation for the diversity and unpredictability of mouthing occurrences that were found in different sign languages.

10.2 Suggestions for cross-linguistic comparisons

As previously pointed out, there must be a variety of reasons that led to the use of inflections in MJNY. The motoric reason, the educational, sociolinguistic situation and the strong inflectional morphology have all contributed to this

phenomenon. It would be of interest to compare such factors in other agglutinative languages and to learn more about their impact on morphology, for example, or other aspects of the sign languages. Also, the role of mouthing and the manual structure of utterances could be investigated cross-linguistically, involving, for example, MJNY, NGT or DGS.

Another important process to be revealed is the modification of sign structure due to spoken influence. My bilingual perspective would suggest that a spoken dominant mouthing, for example, does not automatically lead to spoken dominant structure. There is still little empirical evidence on contact signing and other models in other sign languages than ASL. Today, the continuum is still more of a theoretical construct. It would be useful to test this concept on actual linguistic patterns, including mouthings, in comparable cross-linguistic studies.

10.3 Applications of the findings

The empirical data that was analysed in this thesis can contribute to a deeper understanding of mouthings in MJNY. The phenomenon has not been empirically investigated in the documentation of the language so far. The theoretical and methodological considerations, as well as the empirical findings, can be applied in the construction of a large-scale language MJNY corpus in which the description of mouthings would be a significant part.

Also, further research on the sociolinguistic situation of the Hungarian Deaf community has to take mouthings into consideration as one of the important indicators which show the different types of linguistic behaviour towards deaf and hearing signers. The data and the theoretical suggestions in this work can be taken for initial considerations.

Last but not least, spoken influence in MJNY production, and especially mouthings, have been subject to highly politicised linguistic debates in Hungary. One common misconception about mouthings that was also discussed in other countries (Nadolske & Rosenstock 2007; Johnston et al. 2015) concerns the presence of mouthings as temporary phenomena in the sign language due to an oral education background. It was also suggested by Hohenberger and Happ (2001) that mouthings will, with time, disappear from the DGS. Mohr found the contrary for ISL; it seems that ISL incorporates more mouthings than in previous generations. As for MJNY, it is important to understand that the specific contact of Hungarian and MJNY led to this specific cross-modal language contact of 'mouthing with inflection'; this resulted in the contemporary situation, which is reflected in my data as well: stronger spoken dominance in mouthing does not

necessarily mean contact signing or signed supported English, but rather that it can be combined with MJNY. The study contributes to the dissemination of the knowledge of bilingual interactions and cross-modal language contact, and supports the acceptance of these phenomena as part of the deaf community's linguistic behaviour.

10.4 Directions for future research

This study was based on a small corpus of MJNY data. Further, it is very important to investigate more text types in order to gain a broader picture of inflectional patterns. Also, it is suggested to include all mouthing patterns, sort them out according to different formal and functional characteristics, and provide a more detailed linguistic description of mouthings, as in the studies on NGT by Bank et al. (2011, 2013) and Johnston et al. (2015). It would be worth looking at the language contact continuum and providing more evidence for the different mouthing forms and their accompanying manual structures. An additional topic that has yet to be included in MJNY research is the spreading patterns of mouthing.

Also a complex sociolinguistic analysis based on a bilingual perspective should be carried out in order to capture the diversity of mouthing patterns and the variables behind them. Bank et al. (2011) did not find a correlation of mouthing appearance with frequent sociolinguistic variables like age, gender or region. However, a more situation-based analysis in which language competence, familiarity, interlocutors, text type, register etc. are tested for, could reveal some correlation, as shown in Nadolske & Rosenstock (2007) and Sutton-Spence (2007), for example. Such an analysis can be combined with different conversational analytic methods to find out when and how signers may change mouthing patterns (e.g. inflection). Also, future studies should carfully exemine the accurancy of a language contact model in the case of hearing bimodal bilingual signers vs. deaf unimodal signers. It is possible that different processes are involved in different type of signers.

 Finally, it is important to note that the situations in which a linguistic event takes place would be better described if sociolinguistic research considers contemporary theories on deaf communities. Sites for interactions in the traditionally deaf communities were, for example, deaf clubs or home situations. In today's Western society, the deaf community is much more open to the hearing world and there are a lot more interactions and events taking place outside the community in the

hearing world. A network model for interaction patterns (e.g. Kusters 2015) would provide more insight into contemporary mouthing use as well.

Another direction of research that can be a follow-up to the present thesis is the psycholinguistic analysis of mouthing perception; I dealt with this topic extensively in the part 'Methodology'. There is still no clear evidence for the psychological reality of the different patterns. The method of orthographic annotation would definitely gain more support if there would be empirical evidence on such spoken syllabic perception. Also, experiments on, for example, language mode in sign–spoken interaction based on Grosjean (2008) would reveal more about the bilingual nature of deaf signers. As Grosjean pointed out, there is no real acceptance among linguists that the bilinguals' two grammars can be quite different from the corresponding monolingual grammars (2008). The bilingual view on the MJNY–Hungarian case, as presented in this paper, is still in need of more empirical support and theoretical innovation and could be refined through research on cross-modal language contact and language use strategies among Hungarian sign language users.

Appendix

A   Access to raw video data and transcripts

For the purpose of transparency and good scientific practice, all corpus data (raw video and annotation) are available on demand for researchers, teachers and interested sign language users from Deaf communities. Please direct your request to the author, Szilard Racz-Engelhardt, via the following email address: **jkm.veszprem@gmail.com**

B   Short Biography

Szilárd RACZ-ENGELHARDT has been doing research on bilingualism and sign languages since his graduate years. He completed his doctoral studies at the University of Hamburg and is currently (2018) working as a postdoctoral research fellow at the Institute of Hungarian and Applied Linguistics, University of Pannonia, in Veszprém, Hungary. His research activities include the linguistic behaviour of Deaf bilinguals and the morphology of sign languages, especially in relation to the use of mouthings in Hungarian Sign Language. His respective papers advocate a holistic view of bilingualism and the recognition of unique linguistic phenomena coming from the interaction between sign and spoken languages.

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