Nonmanuals in sign languages: a research desideratum

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Abstract. Hands do not play an exclusive role in sign languages. Rather they co- and interoperate with motions of parts of the face, head, shoulders and the (upper part of the) body – briefly defined as ‘nonmanuals’ – as sort of an ensemble. This introductory chapter aims to describe the desideratum of this special volume. To do so, the chapter summarizes the historical, analytical, descriptive as well as linguistic and/or gestural dimension of nonmanuals in sign language research. This chapter also includes contributions to discussions on sign language and nonmanual issues which were collected during a network meeting at the “Workshop Sign Nonmanuals 2” (Graz, Austria, May 2019) as well as an overview of the contributions of this workshop proceedings.

Keywords. sign language, nonmanuals, research collaboration
1. Introduction

Sign language research often draws attention to the very nature of production and perception of language itself. ‘Hands’ are quickly perceived as articulators that produce signs in the three-dimensional signing space. Even Stokoe (2001) titles his book that argues for sign having been before speech “Language in Hand”. However he rejects to limit sign language research to an analysis of solely manual components: “This emphasis on the strictly manual aspects was unfortunate; it was many years before a thorough study was made of the (grammatical and necessary) nonmanual activity in ASL” (Stokoe 2001:60). Still, the book title clearly states that the configurations and movements of hands in space are considered as crucial components for producing signs and signed utterances. Such a view that places “hands in focus” represents a fascinating desideratum responsible for years of work done within the field of sign language research. This desideratum often puts the hand on a pedestal and underlies the discussion on sign language structures on different linguistics levels.

On the other hand, research developments increasingly support the idea that hands do not play an exclusively important role in sign languages. They co- and interoperate with motions of parts of the face, head, shoulders and the (upper part of the) body as a kind of ensemble. The differences between articulators soon led researchers to their classification into manual (movements of the hands) and nonmanual (movements of the other body parts) components of sign languages. The development of research on nonmanual components

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2 In this article the terms ‘nonmanual behavior’, ‘nonmanual action/activity’, and ‘nonmanual movement(s)’ are used synonymously to describe movements or positions of the face, head and body occurring while signing and being defined as ‘language-relevant’ by native signers. They are used independently of their use within several theoretical framework models. When results and research of linguists is
and their interplay with other components will be introduced in this chapter as a promising field of research.

Baker (1976) was one of the first researchers who acknowledged meaningful behavior to nonmanual components. She suggested that researchers who could not find any clear answers to their questions by solely analyzing manual movements should investigate nonmanual movements. Her paper mentions four nonmanual channels (eyes, face, head and body) that are used additionally to the channel hands in American Sign Language (ASL) and bear linguistic and regulatory functions. Both holding and changing facial as well as other expressions may convey meaning. According to Baker such movements (co-)occur simultaneously and continuously.3

Two years later Baker & Padden (1978) introduced the term ‘nonmanual’ components for ASL. This specific terminology, the identification of a set of nonmanual components and the analyzation of linguistic and regulatory functions present Baker & Padden to be one of the first researchers to describe such components. They already noticed different signers vary in their usage of nonmanual components within their first attempt of description. Therefore, they suggested “it is the configuration or pattern of co-occurring behaviors that serves a given function rather than any specific behavior” (Baker & Padden 1978:33). Their suggestion is supported by an interesting incident that occurred when Padden was watching an ASL video. Face and upper body were split into two screens of which the latter was invisible from time to time. Padden could still follow the main content of the signed discourse even at times when the hands were not visible at all on the second screen. This instance seems to promote Baker’s (1976) assumption that (quite a lot of) linguistic information is given by other channels than the hands.

From then on, further research on nonmanual behavior continued to puzzle sign language linguists. Difficulties included understanding its nature, structural composition, importance at different linguistic levels, functional roles, as well as its linguistic versus non-linguistic/gestural status. Research interests and theoretical background led to diverse approaches to overcome these

3 In her conclusion Baker remarks that treating ‘hands’ in sign language equal to ‘mouth’ in spoken language fails the nature of sign languages. ASL rather uses different channels to convey linguistic information.
difficulties especially when it comes to status and nature of nonmanual behavior. Interestingly, the five channels introduced by Baker (1976) have been quickly transformed and treated as bipartite division between 'manual' and 'nonmanual'. This could very likely have further influenced researchers’ view on nonmanual description and theoretical implications.

Chapter 2 gives a brief overview of different approaches to research nonmanuals and covers possible linguistic analyses and interpretations, options of nonmanual identification, description and the discussion on their language status. Chapter 3 lists urgent needs that have not been addressed in the attempts reviewed in chapter 2. These needs were suggested by several sign language teams during a network meeting that took place within the framework of the “Workshop Sign Nonmanuals 2” (Graz, Austria, May 2019). Chapter 4 introduces contributions to this special issue.

2. Linguistic analyses of nonmanuals

The introduction demonstrates that ‘nonmanuals’ present a more complex research issue than it may appear on first sight. The term directs the focus towards the movements of the articulators and implies a dichotomous view on information given 'by the hands' and 'not by the hands'. This dichotomous view raises several questions of how nonmanual information is to be understood. Is it linguistic in nature? Is it ‘other’ information? How is it interwoven in the entire ‘visual-gestural’ language activity? These general questions underlie different research attempts on nonmanuals and are addressed repeatedly in several subsections of this chapter.

2.1 Linguistic analyses and interpretations of nonmanuals

At the Workshop Sign Nonmanuals 2, Crasborn (2019) referred to classifications of phonetic variation in speech based on an overview

4 In this volume the term ‘visual-gestural’ refers to the modality of a language i.e., the visual perception and the bodily production of the language. Therefore, the term ‘gestural’ should neither be associated with language status itself nor the discussion on ‘linguistic’ versus non-linguistic (‘gestural’) language status of particular elements in sign languages.
of Schölz (2002). Depending on how linguists define ‘linguistic’, they separate it from ‘other’ information defined as ‘paralinguistic’, ‘extralinguistic’, ‘non-linguistic’ or ‘(intra)linguistic’. Attitudes, emotions, physical and physiological features along with other features are frequently subsumed as ‘other than linguistic information’. This division may be accurate for spoken languages (or not), which are mainly produced by one channel (apart from the co-speech gestural behavior). However, it causes problems when the exact same view is applied onto languages that use more than one channel, which is the case for sign languages.

In what way analyzation processes of nonmanuals are carried out strongly depends on the linguist’s approach to sign language research. There are two main approaches researchers follow depending on their assumption on what structure underlies sign languages. Both approaches will be introduced in the following subsections.

2.1.1 A ‘structure in focus’ view

Studies describing sign language structure focus either on production or perception of nonmanual behavior or both. The overall goal is mostly to separate linguistic information they convey from ‘other’ information.

Baker-Shenk (1983) conducted one of the first production and perception studies on ASL. Her results show that syntactic constituents are accompanied by specific facial configurations. This observation does separate such grammatical facial expressions from emotional ones. The first ones are produced with rapid and fast on-and offset, the latter are produced more gradually and in varying patterns.

A very recent study on production and comprehension of prosodic markers in ASL and German Sign Language (DGS) (Brentari et al. 2018) focuses on (prosodic) facial expressions and their temporal patterns in imperatives. The study was conducted via an experiment with results that show commands are very easily distinguish-

5 Nonmanual action was identified via following several steps: With questions, for instance, the linguist identified each nonmanual behavior. The frequently accompanied nonmanuals were analyzed and linguistically interpreted based on the manual bias i.e. whether the particular nonmanual action is used for marking a question or occurs due to another purpose (Baker-Shenk 1987:175-176).
able from neutral sentences due to (prosodic) nonmanuals while other types such as explanations, permissions, and advice seem to be not distinguishable in the same way.

Other studies do not show such clear results. An Auslan corpus study (Johnston et al. 2015) on nonmanual behavior of the channel ‘mouth’ demonstrates, among other things, an enormous variation between individuals and text types in the usage of mouth action. This study included production criteria of ‘mouthings’ such as completion of articulation, segment of production, or production co-occurrence with manuals and categorical as well as spreading criteria of ‘mouth gestures’. These findings provoked further discussion about the use and status of mouth actions within a sign language system. They also challenged the implementation of mouthing in a general description of nonmanuals.

Methods of instrumented measurements are finding their way into the research field and open possibilities of studying nonmanuals. Tyrone & Mauk’s (2016) electronic motion capture study, as an example, was done for head and body action occurring during the production of particular signs in ASL. Results of this study show two different behaviors of nonmanual articulators when hands are moved in a forward direction: The head tends to converge with the hands, but the body does not. This result suggests that nonmanual activity has to be taken into account when signs are described on a phonetic level.

But how are nonmanuals treated in sign language research? Several sign language linguistics have focused on particular nonmanual actions, such as eye movements (e.g. Emmorey et al 2008 for ASL or Saito 2016 on JSL), mouth actions (e.g. Mohr for Irish SL), and head and body actions (e.g. Lackner 2017 for ÖGS or Puupponen 2019 for FinSL). Some sign language researchers combine several nonmanuals to clusters corresponding to particular linguistic units. In their sense

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6 The study follows Crasborn et al.’s (2008) categorization of mouth actions. The categorical schema for the mouth gesture annotation in the Auslan study included echo/empty, prosodic and adverbial, mouth for mouth and whole-of-face mouth gestures (Johnston et al. 2015).

7 For an overview on instrumented measures of perception and production of sign language including electronic motion capture systems, video-based motion production analyses, or eye-tracking methods see Tyrone (2015).
facial nonmanuals can be divided in upper and lower face markers. The first correspond with higher/larger constituents such as clauses or sentences, the latter with lexical or phrase constituents (see Liddell 1980 or Wilbur 2000).

Sign language researchers not only have to consider how they conduct their study, for example as an empirical experiment or by using corpus data, but also how they annotate and interpret nonmanuals. Annotation varies due to several factors, here presented as questions: (a) Who is the annotator? Is it a linguist or a sign language user? Is it an early or a late sign language learner? (b) How are nonmanual channels treated in terms of annotation tiers? Are tiers offered for configurations of nonmanual behavior, for each nonmanual channel or for each possible movement of each nonmanual channel? (c) Is nonmanual behavior pre-categorized during the annotation process such as the nonmanual behavior of the mouth which is frequently pre-divided into ‘mouthings’ and ‘mouth gestures’ and further subdivisions? (d) Are human beings identifying and consequently interpreting nonmanual behavior in signed discourses or are machines measuring nonmanual activity? If the latter is the case, the interpretation of any values measured would require human evaluation. All these factors explain strong differences in research findings and therefore have to be taken into account when findings are read and interpreted.

2.1.2 A ‘function in focus’ view

Several linguists focus on the functions associated with manuals and nonmanuals. Zeshan’s (2006) edited volume on interrogative and negative constructions in sign languages, for example, shows the functional contribution of nonmanuals within these constructions is described in various sign languages. Pfau & Quer (2010) present an overview on several prosodic and grammatical functions of nonmanuals occurring in several sign languages. Pendzich (2020), using an experimental studies framework, finds nonmanuals to be a factor at the lexical level in DGS. Lackner (2017) focuses on functional domains such as ‘contrast’, ‘reference’, or ‘illocution and modality’ and finds that native signers associate several functions

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8 For instance, one nonmanual channel such as the head can produce more movements/positions at the same time such as a forward movement together with a nodding movement.
with particular head and body movements within special contextual constructions in Austrian Sign Language (ÖGS). Lackner (2017 and 2019) proposes that a functional interpretation of signed utterances that aims to identify and read the role of nonmanuals in signed discourses requires their analysis by native signers. Findings from functionally oriented studies show that nonmanual behavior is constantly involved in sign language production and can not only fulfill diverse functions but even be multifunctional. Nonmanuals can simultaneously occur with manual and/or other nonmanual components. They are active at all levels of linguistic structure including emotions and affects as well as regulating mechanisms within interactions (cf. Crasborn 2006, Herrmann & Steinbach 2013).

As already outlined in chapter 1.2.1 every approach to analyze nonmanuals needs consider that the interpretation of their research results depends on annotation guidelines they follow. These guidelines are developed to address several annotation issues which will be addressed in the next section.

2.2. Identification and description of nonmanuals

Chapter 1 introduced a number of linguistic analyses according to the approach that underlies them. Annotation plays a crucial role in the interpreting and reading of the results for every approach to analyze nonmanual behavior. Linguists therefore need to be aware of and familiar with widely used ways of identifying and (an)notating nonmanual behavior. They need to critically and carefully consider the impact of their chosen annotation method when it comes to defining linguistic domains. This chapter tries to explain how challenging the identification, discrimination, and temporal localization of nonmanual activity can be. Sign language researchers use different approaches to respond to these challenges, including those discussed below.

The well-known phonetic circumscription system ‘Hamburger Notation System’ (HamNoSys) is done by human beings and allows a phonetical description of signs. The system includes description possibilities for nonmanual movements which (co-)occur with manual

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signs as well as coding schemes for nonmanual movements which co-occur with signed utterances, even though to a limited extent (Hanke 2004).

Most projects use a system that divides nonmanuals into particular channels and annotates their values in separate nonmanual channel tiers. Braffort (2014)\textsuperscript{10} has shown how different projects list different values annotated with ‘eye gaze’, such as directional and/or target values (e.g. ‘to the right’ versus ‘to the right hand’), target values and degrees (e.g. ‘to the right hand’ versus ‘to the addressee’), other values than directional and/or target values (e.g. ‘rolling eyes’ or ‘blink’) and several additional varying values.

Other researchers have offered different but comparable annotation conventions for sign language corpora. Johnston (2019:50-55), for example, includes the annotation of nonmanual features and prosody in his annotation guidelines.

Lackner (2019) works with annotation guidelines from a functional perspective. She describes annotation conventions and templates for nonmanuals that are based on judgements from a Deaf native signers’ perspective. In this sense, the annotated values are not a conglomeration of form and meaning criteria (such as ‘gaze left close to 90 d°’ versus ‘gaze towards a referent’), but an expandable entry list (i.e. a controlled vocabulary list) that contains various nonmanuals apprehended as ‘language-relevant’ by Deaf signers.

In addition to various annotation approaches carried out by humans, computer-generated measurements such as motion capture or video-based motion analyses are used more and more in this field of research. These approaches allow the analysis of collections of different articulators’ movements at the same time (Tyrone 2015).

Some vision-based projects have been implemented to specifically understand nonmanual activity. Benitez-Quiroz et al. (2016) study of facial expressions of emotion, for example, examines which of these expressions are grammaticalized in ASL. Most of such projects are in the phase of conception or an early stage of development (for example, Puupponen et al. 2016 who use a computer-vision

\textsuperscript{10} The projects Braffort inspects are the Auslan Annotation Guidelines (Johnston 2013), the ASL Linguistic Research Project in Boston (Neidle 2002), the ECHO project (Nonhebel et al. 2004), the ViSiCAST European project (Hanke 2002), and the Intersign European network (Engberg-Pedersen 1999).
based approach to nonmanual activity in data from a corpus of Finnish Sign Language). Chances and opportunities as well as restrictions of these computer-based developments and their contribution to sign language research will provide issues for further discussions in the future. Criteria which will have to be established to identify and discriminate ‘language-relevant’ from ‘other’ manual and nonmanual activity are a relevant starting point for future discussions.

Most current studies establish the criteria they use to annotate nonmanuals referring to a basis of sequences of manual signs i.e., the manual channel is taken as bias. Considerations on how nonmanual behavior is interpreted when it comes to linguistic analysis and the definition of linguistic domains has raised several questions: Are nonmanuals (a) part of lexical signs and thus to be analyzed as phonemes (phonology) (cf. Pendzich 2020 on lexical nonmanuals in DGS), (b) markers – in the sense of one form being associated with one particular semantic(-phonological/-morphological/-syntactic/-pragmatic) feature (cf. Pfau & Quer 2010) or (c) prosodic elements (prosody) and/or intonation contours (cf. Dachkovsky & Sandler 2009)? Crasborn (2019:5) states “there is no function without a form”. Nonmanuals require a phonetic/phonological form to be defined as grammatical markers. If this form is not segmental, it should be seen as prosodic in its nature. Phonological effects such as assimilation could influence such prosodic elements. A consideration of Crasborn’s statement begins to reveal the difficulties which need to be dealt with when it comes to discussing the contribution of nonmanual behavior to sign languages.

Apart from this general discussion, nonmanuals are significant features of several further aspects of sign languages. They play a crucial role in expressing attitude towards the signed context (cf. Lackner & Riemer 2014, Lackner 2017 on expressing epistemic modality when signing thoughts), when signing and/or revealing feelings while signing (cf. Du, Tao & Martinez 2014 on facial expressions when signing motions) and in expressing emotions or bodily action of the agent in the context of constructed action and constructed

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11 Caridakis et al. (2012) for instance discuss options of analyzing nonmanual cues by means of automatic sign language recognition.
Nonmanuals in sign languages

On the level of discourse, nonmanual elements play a crucial role in interaction and turn-taking (cf. Baker 1977 for ASL, Lackner 2009 for ÖGS). Their multifunctionality and permanent occurrence in signed discourse could lead to promising results in further investigations of nonmanual behavior in sign languages. Past studies have provided sufficient evidence for the significant roles nonmanuals play in sign languages and should make any discussion about their language status obsolete. Arguments for the language status of nonmanuals are briefly outlined in the next chapter.

2.3 Language status of nonmanuals

This chapter has attempted to explain how strongly nonmanuals are interwoven among themselves and with manuals. The previous chapter has already explained how their analysis is toughened by this and other issues.

Consequently, we now should be aware that frequently nonmanual behavior (a) is not completely analyzable, (b) is not clearly countable and in its appearance gradient, (c) shows variance in its frequency of occurrence, (d) shows more or less alignment with linguistic units, (e) shows vagueness in meaning and (f) is more or less conventionally used by different sign language users and communities (cf. Lackner 2015). Linguists often treat these conclusions as evidence for the questionability of treating nonmanuals as linguistic features.

Dotter (2018:56) discusses this issue critically and concludes that language is an “activity of the whole body”. In his view nonmanuals cannot simply be seen as non-linguistic elements. Such view would result in analyzing nonmanuals on a gestural level. Pupponnen (2019:14-16) argues in line with Dotter: Categorical distinctions between linguistically relevant nonmanuals such as nonmanual adjectives and adverbs or nonmanual grammatical markers and non-linguistic nonmanuals such as emotions and attitudes would block the view of the essentials. She reasons that historical sign language developments such as following the (theoretical) presuppositions that the hands serve as a base or transmitting findings of particular non-

12 Nonmanual instances are annotated in the tiers CA-eye gaze, CA-head, CA-face, and CA-torso (Cormier et al. 2015:10-14).
manual behavior (e.g. the face) to other nonmanual behavior (e.g. head and body movements) influenced the perspective on and analysis of nonmanual behavior.

Following their critical objections, I also argue for the following: The synthetic character of language should not be neglected or interpreted in a misleading way when sign languages are analyzed in order to classify, categorize and hierarchize manual and nonmanual components. This requires rethinking the involvement of nonmanuals in sign language structure, their nature, inferences drawn about their language status, their functional interpretations (that might be caused by functions interrelated among each other or interferential reasons), their interpretation in linguistic analysis and concerning the definition of linguistic domains. Further discussion could aid to more progress within this field of research.

This brief argumentation for the language status of nonmanuals and all the analysis and annotation difficulties addressed in this chapter demonstrate several needs for deeper understanding of nonmanual behavior. Some of these needs were discussed in a network-meeting during the “Workshop Sign Nonmanuals 2”. They will be outlined in the next chapter.

3. Urgent needs concerning research on nonmanuals

Chapter 2 describes studies on nonmanuals conducted for different research purposes. All of them raised further questions about nonmanual behavior. Within the framework of a network-meeting which took place during the “Workshop Sign Nonmanuals 2” (Graz, Austria, May 2019) urgent needs regarding such questions were discussed. Contributions13 to this discussion are summarized and discussed in this chapter. A mind map drawn during the network-meeting portrays contributions and gives an idea of how lively the discussion at this workshop was.

Almost every team participating in the workshop stated one

13 The summarized contributions date from transcripts and a mind-map drawn during the network-meeting as well as additional formulations exchanged between the co-operation partners and the authors before the workshop. They were all collected, summarized and are presented in this volume.
of the most urgent needs is to enhance (or if not already done to start) corpora which include annotation and analysis convention options for nonmanual behavior. Of course, methods for describing nonmanual behavior have to be established and/or interchanged between teams in order to allow the comparison between sign languages. This process has to include deeper discussions on linguistic analyses and interpretations, options for the identification and description of nonmanuals and discussions on their language status.

During the discussion at the workshop several countries described their corpus creation (including annotation and analysis of nonmanuals) as being at the very beginning (see the mind-map). Many countries lack governmental subsidization on sign language (nonmanual-focused) research. The academic field of linguistics that could support sign language research does not seem to think about it as relevant research subject. Sign language research is therefore viewed as sort of an orchid discipline. Due to these and other reasons, applying for national and international grants for basic research is exceptionally unlikely leaving void the basis for applications. Several participants wished for finding ways of supporting one another by bringing international sign language research on an academic research-relevant level in every country.

The Austrian Workshop team argued for a stronger inclusion of Deaf native signers in sign language data collection, annotation, and analysis especially for the analysis of nonmanual behavior. This statement was supported by their contributions to the network-meeting as well as Lackner’s presentation and welcomed by the participants. Several sign language teams agreed that this approach would lead to more awareness of nonmanual behavior while signing and consequently new approaches to sign language teaching and acquisition. One participant pointed out that it could support late sign language learners such as interpreter students in acquiring a sign language that looks more like ‘natural signing’.

Several teams mentioned that linguistic research on sign language needs to include ways of using corpora and the findings on sign language structure for educational purposes especially for the education of Deaf children. Researchers should think about possibilities of disseminating findings on different levels i.e., provide information and educational material for academics, teachers, parents, as
well as hearing and Deaf children. The latter are in urgent need of this kind of support due to their current upbringing in an inclusive setting i.e., being surrounded by a spoken language majority that lacks support of sign language. Crasborn and the team from the Netherlands suggested discussing and promoting curriculum developments as well as innovative learning and testing tools, both of which should include the nonmanual channel to a much greater extent as soon as possible. Rathmann’s presentation at the workshop supported this view that future sign language research should have a broader perspective on the research field. Rathmann (2019) sees several needs met by crosslinking and networking between different sign language research fields. As a first steps towards a broader network he suggests to promote and interconnect corpus creation, provision of inventories of other data/studies done on a sign language in a small scale, the compilation of a list of glossaries (that are important for linguistic analysis and comparison between linguists) and grammars offered written and signed, a collection of signed literature, and the development of educational material. His aim is to bring the entire international sign language research community forward by ‘signing up’ [speaking up] for more discussions about a path to open data, open science and open publication.

This requires more cooperation between Deaf communities/associations, teams of sign language linguists, interpreter associations and sign language teacher/lecture teams. International cooperation should be supported by promoting interesting research fields, applying for common funding and creating possibilities to meet researchers from different sign language teams. Conferences often include too many participants and do not encourage mingling with upcoming but not very well-known researchers, which in turn leads them losing interest in field of research or suppress their opportunity to express their needs. One participant commented that we need to meet personally “at a table” and encouraged the plenum to schedule time for exchanging ideas with others. Another participant suggested: “Meet at dinner and divide into groups that focus on nonmanual functions”. A future solution for this aim may be the creation of “virtual tables” i.e., virtual exchanging rooms or platforms focusing on a particular topic\textsuperscript{14}. Another form of suggested cooperation is

\textsuperscript{14} This was an idea before “corona-time” but still valuable. We should find ways to encourage groups of researchers to start “Zoom-mingling”, get-
the organization of more network meetings and summer schools by teams with long sign language research tradition. Such meetings would support other younger teams or teams without strong networks who want to learn more about different research approaches. All participants were very fond of such suggestions. Statements such as “we are very open to collaboration” were also very welcomed by all sign language teams. Collaboration and support are crucial when it comes to sociolinguistic and political questions concerning sign language issues.

**Figure 1:** Mind-map of the network meeting showing contributions of the different participating sign language research teams

The mind-map drawn during the network-meeting on nonmanuals records various comments of the international sign language teams who attended the workshop. Of course, this transcript can only be fully understood by the participants of the meeting. Nevertheless, readers of this volume can take an overview of urgent needs listed by diverse teams. The meeting itself already was a first step towards meeting one urgent need visible on the mind-map: The lively discussion was a collaboration of many teams discussing important topics together in “gather.town” or similar activities.

15 The entire mind-map in a huger format as well as all separate illustrations of contributions of several sign language teams are to be found in the appendix of this article.
with all their related aspects. This volume presents another step towards an international research network by giving an overview of work done on nonmanuals in several sign languages.

4. Contributions of this volume

This chapter briefly introduces the contributions to this special issue on “nonmanuals in sign languages”. Bahtiyar Makaroğlu starts the issue by discussing nonmanual behavior in event plurality. Based on signed data of Turkish Sign Language (TİD) he illustrates and discusses a distinctive nonmanual pluractional morpheme and the semantic portrayal of nonmanual pluractional forms.

Szíliárd Engelhardt addresses the interplay of mouthings with sign morphology. He elaborates on Deaf bimodal-Bilingual users of Hungarian Sign Language (MJNY) who offer promising insights into spoken inflections and their synchronization with manual inflectional markers.

Johanna Mesch and Krister Schönström explore the nonmanual mouthings from a different theoretical angle. They compare the use of mouthing patterns of Deaf signers with adult second sign language learners (L2) in Swedish Sign Language (STS). The analyzed two corpora which led to interesting data show similarities and differences in the usage of mouthings in particular on full and reduced mouthings.

The next article shows collaborative results from studies carried out by Marina Milković and Tomislav Radošević. The article offers an overview of research done on Croation Sign Language (HZJ) and addresses research areas that require further investigation.

Rosalee Wolfe and John C. McDonald present a special addition to this issue. They draw attention to sign language avatars and the question they raise about nonmanuals. The authors connect issues of animation technique and technical possibilities of alternative sign language representation with urgent requirements of linguistic analyses on nonmanals in different sign languages.

The Workshop was dedicated to Franz Dotter, an Austrian linguist who was a pioneer and brilliant contributor to the field of Austrian sign language linguistics and Deaf rights. This special issue will follow this dedication with an article that visualized Dotters’ impact on current discussions – also regarding the research of nonmanuals. Andrea Lackner who worked together with Franz
Dotter in her ÖGS projects and Sherman Wilcox who exchanged ideas on language issues with Franz Dotter discuss Dotter’s views on language typology, gesture and nonmanuals in a dialogue-like format. Their deliberations and examination of Dotter’s reflections are based on personal exchange – face-to-face or via e-mail – as well as discussions led with him on his publications and presentations. As a kind of continuation of Dotters’ approaches, the authors include their own current point of view on sign language as well as their own approaches in the discussion.

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1 Appendix: contributing countries

Figure 2: All contributing countries of the network meeting

Figure 3: American Sign Language (ASL)

16 Fig. 2 shows all comments of all contributing countries of the network meeting. In order to provide a readable version of all contributions, Fig. 3-20 show the comments from all contributing countries individually.
Figure 4: Austrian Sign Language (ÖGS)

Figure 5: British Sign Language (BSL)

Figure 6: Croatian Sign Language (HZJ)
Figure 7: Czech Sign Language (CzSL)

Figure 8: Finnish Sign Language (FinSL)

Figure 9: French Sign Language (LSF)
Figure 10: German Sign Language (DGS)

- Project (cooperation) on educational issues
- Cooperation is about knowledge: get to know each other
- Guidelines for annotation of Nonmanuals
- Nonmanuals play subordinate role
- Corpus project
- Corpus focusing on various aspects

Figure 11: Hungarian Sign Language (MJNY)

- Survey of deaf education, good practices, development and testing of teaching materials
- Research Centre for Multilingualism of the Research Institute for Linguistics of the Hungarian Academy of Sciences
- Corpus building
- Extended research on Nonmanuals needed with more application to L2 teaching
- Interest in research cooperation with neighbouring countries

Figure 12: Italian Sign Language (LIS)
Figure 13: Sign Language of the Netherlands (NGT)

Figure 14: Polish Sign Language (PJM)

Figure 15: Russian Sign Language (RSL)
Figure 16: Slovenian Sign Language (SSL)

Figure 17: Swedish Sign Language (SSL)

Figure 18: Swiss Sign Language (DSGS)
Figure 19: Turkish Sign Language (TİD)

Figure 20: Ukraine Sign Language (USL)