Chapter 4
Methodology

As it is the case for spoken language studies, a thorough methodology and a systematic analysis of the methods within a research discipline is equally important for sign language studies. It provides the basis for every linguistic investigation, and guarantees transparent and correct data collection and data evaluation.

Methodology issues for sign language studies have received particular attention in recent years. Debates about the authenticity of sign language data have led to a serious reconsideration of methods for data elicitation and documentation. As the title of an article that elaborates on these issues suggests, “real data are messy” (see Johnston et al. 2007). Real data are difficult to obtain under the problematic conditions of sign language acquisition and the technical effort for research on sign languages in general. The parameters of metadata about the informants and the data collection process may have an enormous impact on the results so that the metadata need to be linked to the video data and the analysis. Furthermore, the comparability of data elicitations and annotations is necessary, so that the outcome and findings might be reproduced and tested. These factors have recently provided the grounds for methodological discussions focusing on clear and transparent data and metadata for sign language research.

The following sections are thus dedicated to the methodology framework used in the presented studies. They give a systematic overview of the approaches that are taken, the methods used for data elicitation, the informants involved in the study, and the annotation conventions used and refined for my data set. This chapter sets the basis for the comparative approach (section 4.1) and the experimental approach (section 4.2) that were combined in this book. Some general issues with regard to data collection are discussed in section 4.3. I briefly mention some aspects about metadata in general and the metadata of the informants that participated in my project (4.3.1). Concerning the issue of native status, I discuss the specific situation with regard to language acquisition of deaf children by summarizing important aspects discussed in chapter 2. I argue for the respective approaches and provide evidence for the authenticity of the data. The locations of the data elicitation are listed in 4.3.2 and the setting of the video recordings is described in 4.3.3. In section 4.4, I
explain the annotation procedure and the specific software that was used. A complete list of all tiers, categories, and abbreviations used in the annotations for this project can be found in the appendix (chapter 9.4).

The information provided in this chapter is generally valid for all data sets of my study. Further details with regard to specific constellations of informants, the different experimental designs, and the actual tasks are given in chapters 6 and 8, which investigate modal particles and focus particles in sign languages.

4.1. Comparative approach

In this study, the basic underlying question is how the three sign languages DGS, NGT, and ISL behave with respect to the realization of modal and focus particles. The results are compared with each other and analyzed against the background of the variation hypothesis, which states that sign languages are more similar to each other than spoken languages (cf. Meier 2002; Hohenberger 2007, and section 2.5). Sign languages have many common properties that all languages in the visual-manual modality seem to share. However, the recently detected cross-linguistic differences between various sign languages shed new light on the variation hypothesis. Sign languages vary in many unexpected ways and further cross-linguistic sign language research projects are required to display the various differences across languages in the visual-manual modality (cf. Zeshan 2006; Perniss et al. 2007).

Testing the variation hypothesis also means that spoken languages have to be taken into account when analyzing the results. Data from spoken languages are opposed to data from signed languages and theories based on spoken languages are considered in the evaluation of the results. The main focus of the study, however, is on the comparison of the three sign languages. Due to the different modalities of signed and spoken languages, three comparative approaches to analyze variation between languages in general can be stated: inter-modal variation (1), intra-modal variation (2), and typological variation (3) (see Hohenberger et al. 2002: 114).

The results of a comparison between spoken languages and sign languages bring to light an ‘inter-modal variation’ (1), as the comparison cuts across modalities. Spoken languages are compared to signed languages and theoretical approaches are tested in both modalities. In the early periods of sign language research, the theoretical models from spoken language research were
tested for their validity with regard to sign languages. This was done to show that the complexity of languages in both modalities is comparable. Since this period, more and more studies in the ever increasing field of sign language linguistics have revealed the need for modality-specific tools of analysis. Furthermore, results from sign language research may influence spoken language theories and prompt the reconsideration of certain theoretical approaches. Overall, however, many spoken language theories are applicable to sign languages, as natural language theories hold for both modalities.

In showing the differences between various sign languages, so-called ‘intra-modal variation’ (2) is apparent. During the last few decades it has become apparent that sign languages differ much more than previously assumed, so this intra-modal variation is of particular interest for a better understanding of the structure of sign languages. Young sign languages can be compared to well established sign language systems to unveil diachronic changes or consistencies. The variation between completely unrelated sign languages might be more evident than sign language variation within language families. On the other hand, unrelated sign languages may show extremely similar grammatical properties. Thus, studying language families and/or language bonds, their similarities and differences may especially be interesting in an intra-modal perspective.

Linguistic sign language research has always focused on very few sign languages such as ASL, BSL, and a few other, mostly European, sign languages. Zeshan (2004a,b), however, has studied a great amount of sign languages with respect to certain phenomena such as negation and interrogative constructions. These large scale studies show the various options that sign languages exhibit in marking questions and negating utterances and give an invaluable insight into intra-modal variation. Village sign languages such as Adamorobe Sign Language in Ghana (AdaSL, see Nyst 2007) or Kata Kolok (KK, Sign Language of Desa Kolok) in Bali, Indonesia (see Branson et al. 1996; Marsaja 2008; Vos 2012) have recently been described in detail; these studies revealed some interesting idiosyncrasies and specific properties like particular uses of space or a lack of metaphoric time lines, for example. Furthermore, recently studied and extensively described sign languages such as Jordanian Sign Language (LIU, see Hendriks 2008) and Mauritian Sign Language (MSL, see Adone & Gébert 2006; Croze et al. 2006) additionally give insight into how sign languages may differ cross-linguistically.

Studies on more recently developed sign languages such as Nicaraguan Sign Language (ISN, Idioma de Señas de Nicaraguensee, see Senghas et al.
2005; Pyers & Senghas 2007) and the Al-Sayyid Bedouin Sign Language (ABSL) in Israel (see Sandler et al. 2005; Fox 2007) have shown that a sign language may evolve within three generations of deafness and signing, but may differ to further developed sign languages in certain respects. ABSL exhibits a less established syntactic structure than many older sign languages and a prosodic system emerges and develops progressively (cf. Sandler et al. 2011). It was found that classifier constructions in these young languages are not yet an elaborate system as in developed sign languages, but exist and function similarly. The comparison of extremely young, i.e. recently evolved, and old sign languages provides a fascinating basis for investigating the properties of the language faculty in general. Many more variation studies are needed to gather detailed knowledge about the similarities and differences between the world’s sign languages.

‘Typological variation’ (3) is linked to both other types of variation within comparative research. Categorizing sign languages according to typological characteristics reveals that they often behave similar to Asian or African languages and do not exhibit many properties of the respective spoken language in their country. From a typological point of view, sign languages may sometimes display two properties that are considered mutually exclusive in spoken languages. While sign languages have classifying and agreeing verbs along with non-classifying and non-agreeing verbs, the same cannot be said for spoken languages, for instance. These findings may cause a reconsideration of categories set up in spoken language theories and classification. Each language can be positioned on a continuum, with concatenative properties of grammar on one end, and fusional or agglutinating properties on the other. Sign languages, however, combine properties from both ends of the continuum and exhibit concatenative and a highly fusional morphology. Some sequential morphological operations in sign language grammar resemble the simple morphology of creole languages, but the simultaneous morphological processes, which are highly complex and well established in sign languages, resemble complex inflectional systems in old spoken languages. This is called the ‘morphological-typology puzzle’ by Aronoff et al. (2005: 302). This puzzle can be explained via terms such as ‘age’, ‘origin’, and the situation of ‘language acquisition’, as well as ‘iconic and topographic aspects’ of sign languages, which are perfectly equipped for layered multi-channel articulation that allows a fast development of simultaneous morphology.

In this book, I focus on ‘intra-modal variation’ between the three mentioned sign languages. Moreover, the variation hypothesis is tested on the ba-
sis of inter-modal variation with respect to German, English, and Dutch. I do not expect the results to suggest new typologically relevant categorizations. The questions rather aim at revealing basic structures and signed realizations of specific phenomena in the three sign languages. The study investigates how modal particles and focus particles are realized and how the results may be implemented within a broader framework of language theory.

Intra-modal variation makes an invaluable contribution to cognitive and linguistic research that looks at language variation on the background of the general search for language universals that has been proposed for spoken languages. I present possible syntactic, semantic, and pragmatic analyses of the respective phenomena under investigation. Depending on the structure of the three sign languages and varying results, this book aims at providing analyses that operate within UG.

Concerning focus particles, all languages in one way or the other have some morphological realization for at least one inclusive/additive and one exclusive/restrictive particle such as also and only (König 1991: 34). Additive particles are clearly different from restrictive particles in most languages, and König (1991) explains that, cross-linguistically, they often develop out of similar expressions such as numerals or cardinals (identifying words of order). Therefore, I expect all sign languages to exhibit equivalent expressions for such particles as also and only. Initial findings from ASL (Wilbur & Patschke 1998) and DGS (Happ & Vorköper 2006) seem to confirm this hypothesis, but so far, we lack systematic investigations and comprehensive data sets so that resulting analyses are missing.

With regard to modal particles, I assume sign languages to include the concept of modal meaning and gradually modified sentences in their language system. As it is called a universal category of meaning, sign languages should expectedly show a systematic realization pattern for various aspects of modality and modal meaning (see chapter 6 for a detailed discussion of terminology). Modal particles, however, are specific to only a few spoken languages and some languages like English, for example, do not exhibit this particle class and have other means to express modal meaning. It is thus interesting to see in which way the studied spoken and signed languages display similar or differing patterns. Overall, the aim of this study is to show whether the sign languages under investigation (DGS, NGT, and ISL) are more similar with respect to particles than the spoken languages German, Dutch, and English.
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The following section 4.2 presents aspects of experimental approaches in linguistics and provides an overview of the empirical methods that are used in this book. I emphasize the need for empirical data elicitation in sign language research and introduce two relevant aspects of empirical work, namely corpus development (4.2.1) and experimental elicitation methods (4.2.2).

4.2. Data elicitation: Methods and materials

Empirical linguistics combines the need for professional data collection in search of language usage and theoretical linguistic research that analyzes the data and language structure in general. One part cannot be successfully carried out without the other. Thus, theoretical and empirical linguistics are not separate fields but need to go hand in hand (cf. Skopeteas 2012). This book is therefore based on an experimentally elicited dataset that builds the grounds for theoretical analyses of sign language structure and the use of modal particles and focus particles in DGS, NGT, and ISL.

Sign language linguistics in particular relies on experimental data and the intuitions of native signers. As a minority language in each country, sign languages are used by a heterogeneous group of people including the Deaf community, people that are hard of hearing, CODAs (Children Of Deaf Adults), interpreters, hearing parents learning sign language, teachers, social workers, educational trainers, sign language linguists, and interested people that study sign languages for private or business reasons. However, Deaf native signers in second or even third generation are very rare. Nevertheless, they are invaluable informants in guaranteeing reliable investigations into the structure of sign languages. Many native signers around the world have so far participated in different studies and projects. Most importantly, more and more Deaf researchers actively take part in the process of linguistic investigation as evidenced by the increasing number of Deaf academics and scientists working in sign language linguistics, data collection projects, and other socio-linguistic environments.

Empirical data collection can be undertaken in two different ways: 1) collecting naturally signed data through video recorded interviews, conversations, and storytelling and 2) eliciting data experimentally through various tasks, which also include neuro- and psycholinguistic experiments (see 4.2.2). Results of both methods may be integrated into language corpora (see 4.2.1), although natural signed data are more often connected to large corpus
projects. In the following sections, I briefly introduce both methodological approaches and discuss their relevance and practical value for the project of this book.

4.2.1. Corpora

Like spoken language corpora, sign language corpora are collections of large amounts of language data. For sign languages, of course, recorded video data rather than audio or written input data are necessary. This poses extraordinary challenges to researchers and technicians that work in corpus projects and sign language data collection. Canvassing informants and considering data protection laws are often as difficult as the technical problems such as data storage and data handling. Transforming the raw video data into linguistic corpora is yet another difficulty. Annotation tools and specific annotation and transcription systems are required to guarantee the accessibility of the data for linguistic research. It would exceed the scope of this book to elaborate on the problematic situation for sign language corpora in general, but I would like to emphasize that the lack of clear annotation conventions complicates a cross-linguistic comparison and the search for homogeneous results even when researchers have corpora data available. Thus, the need for a unified way of annotation, comparable conventions, and appropriate data storage is more exigent than ever. Recent conferences, workshops, and meetings have aimed at bringing together researchers that work on corpus projects all over the world, encouraging them to find appropriate solutions for these issues. Even though universal annotation conventions are hardly realistic for the near future, effort is undertaken to agree on common bases, systems, and tools.

Browsing natural corpora data principally might be the best way to obtain authentic results and gain an understanding on how languages use expressions, words or utterances. For sign languages, however, not many sophisticated large scale corpora of natural signed discourse exist up to now. However, the following corpora are extant or currently being developed:

- The BSL Corpus Project in Great Britain
  Website: www.bslcorpusproject.org (Schembri 2008, 2007)

- The DGS Corpus Project in Germany (Entwicklung eines elektronischen korpusbasierten Wörterbuchs DGS - Deutsch)
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– The ISL Corpus ‘Signs of Ireland’ in Ireland (Leeson et al. 2006; Leeson & Nolan 2008)

– The ‘Corpus NGT’ in the Netherlands
  Website: www.ru.nl/corpusngt/ (Crasborn & Zwitserlood 2008; Crasborn et al. 2008)

– Corpora from the ECHO (European Cultural Heritage Online) Project: Case Study 4, Sign Languages, with data of NGT (Sign Language of the Netherlands), BSL (British Sign Language), and SSL (Swedish Sign Language), Website: www.let.ru.nl/sign-lang/echo/ (Crasborn et al. 2004; Nonhebel et al. 2004; Crasborn 2008; Crasborn et al. 2008; Crasborn & Zwitserlood 2008)

– Australian Sign Language (Auslan) Signbank in Australia
  Website: www.auslan.org.au (Johnston & Schembri 2006)

– The LIS Corpus Project in Italy
  Website: http://w3.uniroma1.it/progettolis/index.php (Geraci et al. 2011)

Despite the fact that these projects and the development of extensive sign language corpora are currently underway, very few are open to the public and accessible for academic researchers. For NGT, it was possible to use data provided by the corpus from the ECHO Project: Case Study 4, Sign Languages, which comprises data of NGT, BSL, and Swedish Sign Language (SSL). In addition, the free accessible web based NGT corpus could be searched through for relevant items. For ISL, I was granted access to the digital ISL corpus ‘Signs of Ireland’ from the Corpus Development Project (see above and also Leeson et al. 2006). The results from these corpora, however, were quite scarce for both modal and focus particles. The results are summarized and discussed in the respective chapters 6 on modal particles in sign languages and 8 on focus particles in sign languages (see section 6.1.2 of chapter 6 and section 8.3 of chapter 8).

4.2.2. Empirical approach

Data elicitation is generally based on experimental tasks that are developed to test specific phenomena and theoretical assumptions. Language production and language perception can be tested using various different methods.
Regular linguistic experiments concerning production are picture elicitation tasks (e.g. descriptive task or question answer task), retelling picture stories, (re)telling narratives, performance tasks following instructions, and various types of interviews (cf. Skopeteas 2012 specifically for information structure). Perceptual experiments are, for instance, reading tasks, reaction tests, eye tracking experiments, EEG (electroencephalography) experiments, and MEG (magnetoencephalography) experiments (cf. Bornkessel-Schlesewsky & Schlesewsky (2009) on the latter methods). In addition, highly developed brain imaging tools such as PET (Positron Emission Tomography) and fMRI (functional Magnetic Resonance Imaging) have recently showed promising results. These tools neurologically test linguistic and cognitive assumptions about language and the brain (see Moro (2008) and Bornkessel-Schlesewsky & Schlesewsky (2009) for introductory books on these tools and their linguistic implications).

In this study, I elicited utterances through production tests to investigate sign language structure. Perception experiments are usually designed to verify results from previous production tasks, so that such tests would usually follow an initial pilot study like this project. The topics investigated in this book have not been studied experimentally for sign languages before. Very few papers relating to these issues mention focus particles or list such lexical items and their functions (see Wilbur 1994b; Wilbur & Patschke 1998; Happ & Vorköper 2006, for instance). This was done in passing, however, and the authors did neither scrutinize these issues systematically nor investigated the syntactic behavior of the respective items. Apart from Herrmann (2004, 2007), modal particles have not yet been analyzed for sign languages. Happ & Vorköper (2006) have briefly explained the phenomenon of ‘speaker’s attitude’ in their seminal book on DGS grammar. The authors noted one expression which they called a modal particle, but they neither specified their findings nor discussed modal meaning or modal particles any further.

Thus, I had to decide on appropriate methods and design new experiments to elicit the required data. In order to find out how the respective sign languages realize the particles of interest, the elicitation tasks needed to be systematically structured and not manipulative. As the project describes a pilot study, there were no materials from previous studies available that could be adapted. In the meantime, materials from language acquisition studies eliciting focus particles in German have been developed and might be an interesting testing ground for the sign language data (cf. Müller 2007, 2012; Müller et al. 2011). Nevertheless, it has not yet been tested whether the materials
are applicable to sign language experiments. Furthermore, as seen in section 4.2.1, I could not rely on existing corpora. Therefore, pictures, written examples, and pictures stories were tested.

Pictures were taken out of the Questionnaire on Information Structure (QUIS) developed at the University of Potsdam and the Humboldt University of Berlin and were tested for their practical value for the experiments (see chapter 8 section 8.4.3.1 for a discussion and the pictures). The pictures were embedded in a question-answer task.

Written examples were created in the respective languages German, Dutch, and English with the help of professional translators and native speakers. The target sentences were translated as close to the German original as possible. To keep the utterances of the specific situations in a natural flow, the context descriptions allowed a few adaptations towards the respective language usage and habits, like peoples names, the names of cities, and specific expressions such as idioms, tag questions, or colloquial idiosyncrasies of the language.

The picture stories were designed to elicit degree variants of the focus particle only. The stories display the same final picture for comparative reasons and consist of 3 to 4 sequenced pictures (see chapter 8, section 8.4.3.3 for a detailed description and the picture stories themselves).

In the following paragraphs, I briefly discuss the authenticity of the data as well as the shortcomings of certain materials and elicitation methods. For the most part, the presentation of pictures is a very modality-independent way of eliciting language data. Pictures are conceptually language independent and therefore generally quite useful materials for elicitation tasks. However, it is very complicated to elicit focus particles and subtle contextual information through the use of individual pictures. Furthermore, the available pictures influenced the signing of participants in different ways and made the elicitation of minimal pairs and comparable sentences impossible.

Apart from the choice of materials and methods, a second delicate issue of the elicitation process is the hearing status of the interviewer. The interviewer of the German participants was a fluent but non-native hearing signer and the entire conversation was signed in DGS. In Ireland and the Netherlands, the sessions were signed by professional interpreters who were naturally fluent in the respective sign language. Nevertheless, the fact that the interviewers were hearing may have influenced the signers to adapt to spoken language syntax or increase their use of mouthings. Most informants, however, were very aware of the interaction with hearing signers and were instructed to sign
as natural as possible regardless of the interviewers and interpreters competences. The results show very little syntactic adjustment to the spoken languages. To the contrary, many signers adapted the contexts, added signs, and used sentences in a sign language-specific way.

Many methodological considerations with regard to sign language research particularly list arguments that are skeptical towards translation tasks with written stimuli, as it might have an impact on word order and natural signing (cf. Johnston et al. 2007). In the case of a pilot study and under the given conditions, however, it was necessary to a) elicit focus particles, their distribution, and their scope behavior according to varying focus constituents, and b) create minimal pairs with regard to modal particles and elicit the respective meaning difference between the two sentences. Regarding the status of a pilot study and the resources available, this was not possible with visual stimuli alone.

Being aware of the shortcomings of a translation task, I minimized influential options and intervention effects for the focus particle translation task. I gave clear instructions to only sign when the elicitation screen had turned blank and after the participants had memorized the content of the utterances. They could choose to sign to the camera or to the interviewer. For the context creation task for modal meaning, the signers were allowed to freely retell what they had read and did not need to adhere to particular words or expressions. It was up to the participants to add further sentences to the context for clarification or an extension of the situation as long as the meaning of the target sentence was maintained. The signed sentences mostly exhibited a completely different word order than the primary written sentences and contexts, an order particular to the sign language investigated. The signing contained idiomatic signs, classifiers, and sign language-specific adaptations of the contexts and target sentences. This provides evidence for an independent translation without influences or manipulations from the written examples.

The experimental interview situation, in parts, was still different from natural sign language conversation. For some tasks, however, this was deliberately anticipated, as the purpose of the recordings was to find out how certain aspects are realized in the respective languages and whether there are further options for individual expressions. Thus, conscious debates about language use and language structure were necessary and expected. Jointly double checking the video tapes after the sessions guaranteed a selection of correct sentences. Rare instances of ungrammatical examples were rejected. These discussions and additional cross-informant confirmations also provide further evidence towards the authenticity of the data.
In sum, the methodology of the data elicitation in this project was built upon various production tasks. The general procedure of the sessions was a predefined experimental design with a post-experimental interview. I tested pictures, contexts, written examples, and picture stories and discussed the signers’ intuitions and further options of possible answers. The authenticity of the data was guaranteed as much as possible considering the predefined conditions. Influences of the methodological shortcomings were eliminated or reduced. The individual tasks are described in detail in chapter 6, section 6.2 and chapter 8, section 8.4 respectively.

4.3. Data collection

To provide as much background information as possible about the importance of metadata, this section presents the problematic situation of language acquisition as described in chapter 2. Section 4.3.1 reviews the native speaker status of the people that participated in the studies and discusses general issues about informants being involved in sign language projects. In addition, sections 4.3.2 and 4.3.3 provide details about the data elicitation and describe the setting, showing where and how the video recordings were conducted. It was important to keep the conditions of the setting and the procedure constant to guarantee comparability and the reproducibility of the experiments.

4.3.1. Informants - General issues

In this section, I discuss the relevance of metadata with regard to participants of sign language studies. Considering the educational and cultural history of the Deaf minority in nearly every country, sign language acquisition is generally a sensitive issue. The oral method practiced in most deaf schools in Europe since the Milan Congress in 1880 has formed and influenced sign language acquisition and language use. However, the increasing amount of linguistic studies and the development of cultural emancipation has changed the reputation of sign language in recent decades. Events like the student protests at the Gallaudet University in Washington, both in 1988 and 2006, and recent achievements of many Deaf individuals in economics, academia, and arts, for instance, have attracted a lot of attention towards the Deaf communities, their needs, and interests. Sign language acquisition has become an important is-
sue and bilingual education as well as early sign language training with deaf children of hearing parents have recently come to the fore. Supporting sign language as a natural minority language is especially important considering the debate about medical achievements like the Cochlear Implant. Without recapitulating this complex debate, I would just like to emphasize the importance of broad access to information in relation to both the medical and the sign language oriented perspectives. Bilingual education has been proved to be equally possible intra- and inter-modally (see Ahlgren 1994; Krausneker 2005; Leuninger 2007; Plaza-Pust & Morales-López 2008). Independent from the language modalities, bilingual deaf children have no disadvantages whatsoever. Rather, written language skills and articulatory training are most efficient if a native sign language has been previously acquired and is used as a teaching language.

In Germany, deaf schools and mixed schools for pupils that are hard of hearing in various degrees are far from optimal for signing children. The oral tradition still influences teacher training and classroom atmosphere (cf. chapter 2, section 2.1.1 for more information). The acknowledgment of sign languages as teaching languages is only slowly increasing. The faculties in deaf schools have only recently started to change their traditional opinions although sign languages have long been accepted as fully natural and complex language systems that enable children to develop further language skills (signed, written, and spoken language skills). Using their signed mother tongue in school facilitates the memorizing of taught material, informational input, and instructions in class. However, the official acknowledgment of DGS as a teaching language and method is not yet widespread in Germany and this applies to schools in most other countries.

Even though the situation is still not ideal, the Netherlands are nevertheless leading the way towards a more promising future, as the institutional progress is quite trendsetting with regard to deaf education and sign language research. Pioneering work is being done with respect to many bilingual school projects (see Baker et al. 2008; Knoors 2000; Tervoort 1991; Wingerden 2003 for information about linguistic institutions related to NGT and an overview of bilingual education in the Netherlands). Furthermore, the corpora projects and their achievements in a controlled standardization process for NGT show that cooperations between professional researchers and the Deaf community may be fruitful and productive.

As described in chapter 2, section 2.3.1, Irish Schools today are still influenced by oral methods. Even though oralism started quite late in Ireland, the
actual situation is comparable to German schools. However, within a small country like Ireland, important changes and political awareness may develop more quickly. The linguistic research teams and corpora projects are pushing towards those changes (see Crean 1997; Dunne 2006; Matthews 1996 for further details).

Taking these conditions into account, language competences may vary a lot within the deaf communities. The variation can be seen not only with regard to second language written and spoken competences, but also with regard to sign language skills. These are some of the reasons why detailed information on metadata are necessary to understand the participants’ sign language status and their professional background. As I investigated basic grammatical structures and the linguistic usage of sign languages and did not primarily intend to analyze socio-linguistic issues and variation, an important condition with respect to the informants was that they were native signers. This status was defined in terms of sign language acquisition before the age of five.

Thus, the participants of the studies did not constitute representative cross sections of the Deaf populations in the respective countries. Due to the difficult situation with regard to sign language acquisition of deaf informants, however, some signers with late exposure to sign language have also been included in the study. True native signers are difficult to find, so I also accepted near-native signers and very few exceptions of participants who acquired their sign language late. The fact that late learners of different ages were included in the study, as a positive side effect, allowed a first approximation of the influence of language acquisition age with respect to the investigated phenomena. Self-evidently, the native background of the signers was considered in the analysis to check whether the results differed according to native language status.

The metadata information was gathered by a questionnaire that all signers were asked to fill out. This questionnaire included information about name, age, hearing status, signing competences, etc. A following text informed the signer about the project and how the data will be used for academic purposes. All participants signed this permission for data use willingly. As for the hearing control group, which was tested with regard to the main task eliciting German modal particles, the only criterion was their native status concerning German. The participants were students at the Goethe-University of Frankfurt am Main and filled out a questionnaire similar to that of the deaf participants. They also signed a text that informed them about the procedure of data
processing and the usage for academic purposes. Thus, all of the informants gave their permission to use the video data for this study, for further research, presentations, and publications within academia.

4.3.2. Locations

The data collection for DGS took place in 2007 and 2008 at various places in Germany (Frankfurt am Main, Mainz, Berlin, Leipzig, and Freiburg). For the recordings in Frankfurt am Main, the seminar room of the ‘Graduiertenkolleg Satzarten’, the graduate school I was part of at the Goethe-University, was available. In Mainz, a session was recorded at the Johannes-Gutenber University. During my visits to Berlin, I was invited to set up the camcorder equipment at the sign language school ‘Gebardensprachschule Visual Hands Schick & Schick GbR’ and at the ‘Gebärdenfabrik’. In Leipzig, a session was conducted on private grounds. For the elicitation in Freiburg, the Deaf club ‘Gehörlosenzentrum Freiburg’ offered me to use their facilities. In Ireland, I met Deaf informants in Galway (2003) and in Dublin (2008). In Galway, the ‘NAD Center’ and the ‘Conroy School’ kindly opened their doors for the recordings. The ‘Center for Deaf Studies’ in Dublin supported the sessions in 2008 and provided the room, the blue background walls, and many cups of tea. As for the Dutch informants, I visited Amsterdam and elicited the data at the University of Amsterdam (Universiteit van Amsterdam) and the Deaf Club ‘Stichting Welzijn Doven Amsterdam e.o.’ (SWDA). The German participants of the hearing control group were invited and filmed in the seminar room of the above mentioned graduate school in Frankfurt am Main.

I would like to thank all of the deaf and hearing informants for their participation and invaluable contribution and feedback to this book. I am very much indebted to the people from the various Deaf centers and sign language schools in Germany for their generous permission to use the rooms and locations. Furthermore, I wish to thank the people from the institutions in Ireland for their assistance and most friendly welcome. My gratitude also goes to the people from the Amsterdam ‘Center for Language and Communication’ and to the ‘SWDA’ (www.swda.nl/) for their spontaneous and sincere invitation.

The settings in these different locations were kept as constant and comparable as possible and included the same technical equipment. Further information about the setting is provided in the following section 4.3.3.
4.3.3. Setting

Supplied with complete video equipment, I either visited the participants and established a setting for video recordings in different locations or invited the informants to the graduate college in Frankfurt am Main and prepared the sessions in the seminar room. For each session, two camcorders were set up on tripods standing close to each other. The first camcorder recorded the person’s torso and the second camcorder captured the signer’s face. Figure 4.3.3 sketches the setting in an imaginary room and shows how the technical devices and instruments were positioned during a session. Minor differences and slightly varying adjustments due to individual locations were possible but can be neglected.

![Figure 16. The setting of the video sessions](image)

The signers were sitting on a chair in front of a blue background to avoid any interference from different backgrounds and light reflections. This also facilitated the annotation process and depersonalized the settings as the sessions sometimes took place on private grounds. The participants were facing the camcorders, the laptop, and the interviewer, who sat right next to the camcorders. Sitting had a relaxed effect on the signers, because a session lasted between 1.5 and 2 hours including pauses and time for drinks, which the participants could take whenever they wished. The signers were given an appropriate allowance for their participation.
Of course, the use of camcorders during interviews can even be more intrusive than audio taping (Hoopes et al. 2002: 145). However, most of the deaf informants were used to camcorders and signing in front of an audience. In today’s world of web-based communication, especially Deaf people continuously use blogs, video clips, video-phones, and web cams to present themselves and get in contact via videos, and use sign language in their daily conversation. In addition, some of the signers have participated in other experimental studies and four of the informants sometimes act on stage for various purposes, such as sign language poetry, theater, television, or movies. Therefore, the atmosphere was never tense or strained and the signers were not irritated by the camcorders.

The instructions were given in DGS in a predefined but natural way. The sessions which included the experiments, additional conversations, discussions, and question-answer pairs, were completely signed either by the interviewer (DGS) or by professional interpreters (NGT, ISL). Moreover, signing in between the tasks, discussing interesting issues, and giving instructions in sign language was fluently and naturally performed and perceived during the entire sessions.

The setting was identical for the hearing control group. Two camcorders were used in the same way to capture torso and face, the informants sat in front of a blue background, the screen was presented by a beamer projecting onto a white wall, and the interviewer sat next to the camcorders presenting the tasks and instructions. The hearing participants were also given an appropriate allowance for their participation and were offered to have drinks and pauses whenever they wished.

4.4. Annotation and transcription

After the recordings, the video data were processed, cut, and edited, so that small video sequences of sentences and short dialogs from both the torso material and the face videos were transformed into separate mpg-files. The names of the files followed a specific coding that provided information about the language, the informant, the task, and the sentence. These files were then implemented and linked to the annotation software ELAN (European Distributed Corpora Project Linguistic Annotator) from the MPI in Nijmegen. ELAN is widely used for sign language annotation and was designed for multiple video synchronizations and self defined annotation tiers. It is thus
suitable for video data that either show one person from various perspectives or different discourse participants simultaneously. The time aligned tiers can be created individually according to the data or the annotators needs. They can be named and listed quite flexibly and may also be structured in hierarchical orders. Abbreviations of lexical entries that can be stored in a word list automatically pop up on the respective tiers and facilitate the annotation procedure. This tool is particularly suitable for sign language data and annotation. Neidle (2001) discusses another, similar annotation tool called SignStream (see Neidle 2001 and references for more information about this sign language annotation tool from the ASLLRP group). Hanke (2001) presents the interlinear editor syncWRITER, but shows that this software is not well-suited for large scale corpus projects. A recently development tool for the corpus based sign language dictionary created in Hamburg, called iLex, however, has the potential to work as an annotation tool with multiple layers and can be exported back and forth into ELAN and other tools (see Hanke & Storz 2008 for further information).

Annotation of signed video data imposes many challenges on linguistic researchers and annotators. The various articulators that sign languages simultaneously use to express meaning and compose utterances require separate descriptions on separate tiers. Lacking a written form that is suitable for systematic research, sign languages need to be professionally annotated for later analysis. ELAN provides such a tool and also includes invaluable search functions and the possibility of a synchronized alignment of the annotation and the video material.

Following the ECHO conventions, I created my own list of tiers and categories (cf. Nonhebel et al. (2004) and the appendix in chapter 9.4). Taking into account aspects of other annotation systems like the conventions used in the Auslan Corpus Project (cf. Johnston & Schembri 2006; Johnston 1991, 2008), I adapted and modified the ECHO suggestions. The two fitting videos were time-aligned and 14 tiers were used for the annotation of the data. English and German translations of the signed utterances were given on separate tiers. With respect to manual signs, an English gloss tier was heading two German or Dutch gloss tiers that represented the left and the right hand of the signer respectively. The manual component of the signing was glossed by words in capital letters. Apart from the manual gloss, I annotated eight nonmanual channels that may convey linguistic information in sign languages. Categories like eyebrows, eye aperture, eye gaze, mouth actions, cheeks, head movement, body posture, and additional facial expressions
displayed nonmanual aspects of the signing in different colors. An additional underspecified tier for comments left space for notes and further specifications concerning the analysis.

*Table 4. List of annotation tiers*

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>translation English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 2</td>
<td>translation (‘German/Dutch’)</td>
</tr>
<tr>
<td>Tier 3</td>
<td>gloss English</td>
</tr>
<tr>
<td>Tier 4</td>
<td>gloss RH (‘DGS/NGT/ISL’)</td>
</tr>
<tr>
<td>Tier 5</td>
<td>gloss LH (‘DGS/NGT/ISL’)</td>
</tr>
<tr>
<td>Tier 6</td>
<td>brows</td>
</tr>
<tr>
<td>Tier 7</td>
<td>eye aperture</td>
</tr>
<tr>
<td>Tier 8</td>
<td>eye gaze</td>
</tr>
<tr>
<td>Tier 9</td>
<td>mouth</td>
</tr>
<tr>
<td>Tier 10</td>
<td>cheeks</td>
</tr>
<tr>
<td>Tier 11</td>
<td>head</td>
</tr>
<tr>
<td>Tier 12</td>
<td>body</td>
</tr>
<tr>
<td>Tier 13</td>
<td>facial expressions</td>
</tr>
<tr>
<td>Tier 14</td>
<td>comments/notes</td>
</tr>
</tbody>
</table>

This list of tiers summarizes the annotation template. The following screenshot in figure 17 gives an impression of the ELAN user interface and illustrates the annotation of the data in this study.

The video of the torso seen on the left and the video of the face seen on the right were synchronized and a time-aligned viewer showed the respective annotation for the active part of the video. Each frame of the video could be scrutinized in succession. In addition, various further setting options such as slow motion play and the selection of tiers that should be displayed separately could be chosen. It was possible to mark and repeatedly replay a certain sequence of the video or single signs.

The ELAN software incorporates a search tool that allows the user to systematically comb the annotations. ELAN provides the option to search for a certain item within a single file or across various files in specific search domains and lists the results of the searched item including information about position, duration, frequency of occurrence, and further statistical computations. Results can be exported to text editors, Excel grids, and interlinear transcriptions. To guarantee a most effective usage of the search tool, a number of rules and standards for transcriptions should be maintained and followed.
Figure 17. Screenshot of the ELAN user interface

consistently.\textsuperscript{41} Even though it is generally possible to specifically search tier by tier, identical abbreviations for different expressions or signs should be avoided (see the transcription conventions in the appendix). One form of a sign should generally have one single gloss, the so-called ID that functions as an identification number for a sign form. This is generally a word from the respective spoken language or English that describes the meaning of the sign best. However, there are a few problematic cases like verb/noun pairs in DGS, for instance, or signs that may convey various functions like the sign FERTIG, which can be a perfect marker that is often glossed as PERF. CHAIR and SIT are phonologically not distinguished in DGS. Many signs are thus not specified for word class. The question arises, which gloss should be chosen - the verb form or the noun? As there are no clear conventions yet, this remains up to the annotator or research group. The general rule, however, states that even if the context is clear in DGS, two different IDs for a single form are not desirable. In ASL, the distinction between CHAIR and SIT is realized by a change in movement. As movement is a phonological distinctive feature, two different glosses (IDs) must be used in this case. Another difficult case in DGS is the sign for person. This noun sign has undergone grammaticalization towards an agreement marker functioning as an auxiliary.\textsuperscript{42} Both signs coexist within the language. For an ID, it might be best to choose the source
sign, but I sympathize with many researchers that prefer to gloss the noun as PERSON and the auxiliary as PAM (Personal Agreement Marker), as the latter has reduced movement and can change according to the context and the loci that it associates with. The rather underspecified PAM is thus phonologically different to the lexically determined sign PERSON. Solutions to these problematic cases are yet to be discussed and agreed upon.

Furthermore, the abbreviations for nonmanual expressions should be logically understandable. Additional explanations can be given in the word lists of the dictionary in ELAN. The logic of sign language transcriptions and their abbreviations is not always straightforward and also depends on the theoretical framework and the analytic background interest of the researcher. We still lack clear conventions and many issues are under constant debate. In Herrmann (2008), I argue for a consistent annotation of a continuous signing stream and exact alignment of nonmanuals. In this proposal, I discuss how classifiers or indexicals might be transcribed in an attempt to refrain from theoretical assumptions. However, many issues still remain unresolved. As research groups use different annotations and different transcriptions for their projects, the comparability and handling of annotated data (natural corpora data or elicited data) is very difficult. A meticulous list and description of existing transcription sets would at least facilitate data exchange and cross-linguistic comparative research (see Herrmann 2009 for an initial Excel grid and a systematic comparison).

The transcriptions used in the examples throughout this book are based on the annotated data. Following my own ID system, I represent the signs as glosses in small capitals and display all of the nonmanuals and prosodic features that are relevant for the analysis. As three different sign languages were investigated, the data were glossed in the respective spoken language of the country, even though the sign languages, of course, are not related to these spoken languages. The fact that I also discussed the data with deaf informants from Germany and the Netherlands required transcriptions in the respective written languages. In this way, they were more easily accessible to the deaf informants and also guaranteed a better attribution to the respective sign language.

In a nutshell, ELAN is a powerful tool to work with, systematically annotate, and linguistically analyze sign language video data. My self-developed small scale corpus that comprises the elicited video data was thoroughly annotated and builds the ground for the theoretical analyses presented in this book.
4.5. Summary

Discussing the methodological framework of this study, this chapter has set the basis for the following sections that investigate the three sign languages in a comparative approach. Sign language research requires particular considerations and a strict methodological procedure. The problematic acquisition situation, the status of minority languages, the age of sign languages, and the specific modality impose extra challenges on the choice of informants, data collection, data elicitation and processing, and the analytic tools that are used. In this book, I have combined a cross-linguistic comparative approach with an empirical approach, using both corpora and elicited data. Based on experimental tasks, translations, and grammaticality judgments of native signers that were videotaped, a considerable amount of data was processed and annotated. The results have been compared and applied to different theoretical analyses set up for spoken languages. The findings have thus been analyzed to test language universals in general and language-specific or modality-specific effects in particular.