(Don't) Write My Lips: Interpretations of the Relationship between German Sign Language and German across Scales of SignWriting Practice

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ABSTRACT

Perceptions of boundaries between communicative codes and the modalities through which they are produced and perceived are mediated by social actors' particular communicative repertoires and histories. I focus in particular on how the affordances of SignWriting (SW), a writing system for sign languages that has been adapted in Germany to additionally inscribe the physical movements by which spoken languages are produced, reveal and affect users' diverse interpretations of the relationship between German Sign Language (DGS) and German. I examine the production and interpretation of DGS SW texts on two different scales: a classroom in Germany and a transnational, multilingual online network of SignWriters with whom classroom participants engage.

Linguistic anthropologists have long been sensitive to the fact that boundaries between linguistic codes are not given but are ideologically and interactionally mediated (e.g., Gumperz 1958; Irvine and Gal 2000). Through an analysis of how perceived boundaries between German Sign Language (*Deut-*

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sche Gebärdensprache, or DGS) and German shift within and across several sites and scales of signing practice, this article argues for attention to how likewise mediated perceptions of boundaries between communicative modalities affect and are affected by assessments of the boundaries between codes.

I focus on perceptions of the relationship between a spoken and signed language because both popular and scholarly discussions of these types of languages often explicitly center on modality in either accounting for differences or masking similarities between them.[1] Spoken languages are typically framed as sound based (e.g., Saussure [1906–11] 1986), in contrast with visual signed languages (e.g., Vediz 1912). However, this dichotomy erases the now well-established importance of visual modalities (such as cospeech gesture) in the performance of "spoken" languages (e.g., McNeill 1985; Gullberg 1998; Kendon 2008; Streeck et al. 2011), ignores the ways in which signers can engage sound as a semiotic resource (e.g., Friedman and Helmreich 2012), and downplays the overlapping kinesthetic processes through which each type of language is performed. Thus, as a recent body of literature has begun to make clear (e.g., Clements 1985; Meier et al. 2002; Enfield 2004, 2009; Vermeerbergen et al. 2007), comparisons between signed and spoken languages that fail to take into account the multimodal "ecologies" through which each code is performed and perceived miss relevant points of overlap or difference between these languages.

A simplistic code-modality mapping is likely an artifact of the ways in which both academic and popular beliefs about language broadly have been informed by written language in particular. Earlier studies of spoken languages ignored phonetic, phonological, and gestural information not represented in alphabetic writing systems (Tedlock 1983; Farnell 1995; Duranti 1997), while much work on sign languages relied on spoken language glosses that obscure the formal properties of signing and hinder comparison across signed, and between signed and spoken, languages (see Pizzuto and Pietrandrea 2001; Pizzuto

1. For example, as Vermeerbergen et al. (2007) note, linguists studying sign languages often felt that spoken languages were linear, while signed languages involved simultaneity in articulation—a difference attributed to modality differences (e.g., Stokoe 1960). This differentiation seems to have been overstated; work on autosegmental phonology (Goldsmith 1976; Clements 1985) shows that phonemic features can spread across segments, making it clear that audible language can also involve simultaneity. Similarly, linguists studying sign languages have argued that their structure involves more linear sequentiality than had been attributed to them earlier (e.g., Sandler 1989; Perlmutter 1992). Despite this weakening of the modality-driven formal divide, many scholars still assume that sign languages have greater scope to incorporate simultaneity due to the multiple visible articulators they employ (eyes, face, body shifts, as well as two hands). This, however, only serves as an appropriate contrast if the multimodality of spoken language practice (which systematically includes gesture, eye gaze, etc.) is ignored (Streeck et al. 2011).

et al. 2006 for critiques of this approach). In the case under examination here, I focus on how the affordances of SignWriting, a newly adopted script for writing sign languages—adapted in Germany to inscribe the physical movements by which spoken languages are produced as well—affects users' interpretations of code and modality boundaries between DGS and German.

Originally derived from dance notation, SW is a feature-based writing system that can iconically represent hand shape, location, orientation, and movement, as well as facial expressions, postural shifts, mouth movements, and other aspects of a bodily communicative ecology. The system's flexibility has allowed signers from around the world to adapt SW to represent their particular sign languages.[2] Small groups of SignWriters from over thirty countries are creating texts in their respective sign languages, in a range of genres, and using them in local contexts such as schools, churches, and research institutions. While local communities of users tend to be quite small, with roughly one to twenty people in a given place,[3] many SignWriters participate in multilingual, transnational online networks, such as listservs dedicated to the circulation and discussion of SW texts. As a consequence, despite the relatively small number of users, the social life of this writing system takes place in both local contexts and on a wide, if circumscribed, global scale.

Though, as mentioned above, it is possible to write the movements by which speech is produced with SW, most SignWriters use the system exclusively for writing sign languages. However, SignWriting has been adapted to write German as well as DGS in the *Landesbildungszentrum für Hörgeschädigte* (National Training Center for the Hearing Impaired) in Osnabrück, Germany. In an experimental program in this school, a single teacher, Stefan Wöhrmann, offers three groups of deaf students instruction in DGS, German, German literacy through German orthography and SW, and DGS literacy through SW. I conducted ethnographic research in this classroom during the summers of 2010 and 2012, observing and participating in lessons, creating a corpus of roughly twenty hours of video recorded classroom interactions, and conducting interviews. I was able to observe three classes of students—a group of six (ages seven to ten) who first joined the class in the 2011–12 school year; a middle cohort of five (in their early teens) who had been participating in the

2. Sign languages vary in the ways in which they draw on bodily movements to generate linguistic meaning. In its goal of accommodating all sign languages, SW is comparable to the International Phonetic Alphabet.

3. Though its use is growing, SW does not currently enjoy widespread acceptance in most signing communities, where members may not feel that writing their sign language is necessary or, if it is, that SW is the most appropriate tool for the purpose. For more on these issues, see Hoffmann-Dilloway (2011).

class for roughly five years; and an original group of students, ages eighteen to twenty, who had been working with Wöhrmann for about eight to ten years.

As result of prior isolation from accessible language, students typically enter the class with diverse but often extremely "truncated" communicative repertoires (Blommaert and Backus 2011). In order to accommodate these students, classroom practices involve a great deal of "chaining" (Humphries and MacDougall 2000), that is, pointed combination and juxtaposition of codes and modalities (including scripts) to allow students to draw on the semiotic forms they already control in their efforts to acquire new linguistic resources, including literacies. In describing these practices I focus in particular on how the use of SignWriting to inscribe both DGS and German becomes a pedagogical tool for highlighting iconic resemblances between mouthings (lip movements phonologically, morphologically, and prosodically incorporated into many DGS lexical signs) and the mouth movements by which German words are pronounced. Through the production and comparison of SW texts, formal resemblances between these practices are framed as productive points of bivalency between the codes and the channels through which they are produced and received.

However, as the students' repertoires expand they are increasingly encouraged, through all-German and all-DGS sessions, to adapt their signing, speaking, and writing practices to conform to locally salient expectations about appropriate boundaries between codes and the modalities (including scripts) with which they are associated. Among other things, this process includes using SW as a means of highlighting formal differences between mouthings in DGS and the pronunciation of German words. For example, Wöhrmann distinguishes two subscripts for writing mouth movements in SW texts: *Mundbilder in GebaerdenSchrift* (mouth pictures in SignWriting) are used when writing DGS to inscribe only externally visible mouth movements, while *MundbildSchrift* (mouth picture writing) is used when representing the full set of visible exterior and invisible interior mouth movements involved in voicing German words.

I then focus on what happens when class participants engage with SW users from other countries by circulating written DGS texts online. Members of the SW listserv, from highly diverse sociolinguistic backgrounds, frame boundaries between signed and spoken codes, and the modalities through which they are performed and perceived, in varying ways. For many participants, representations of mouthings in DGS SW texts—even those written with *Mundbilder in GebaerdenSchrift*, which locally distinguish these forms from German—are emblematic of spoken language and the oppression of d/Deaf signers by the dom-

inant hearing population.[4] Drawing on seven years of participant observation on the SW listserv, I analyze the debates that divergent interpretations of the DGS texts engender among participants. In addition to further highlighting the ideologically mediated nature of perceived boundaries between codes and modalities, these discussions also reflect and produce different ways of imagining boundaries between both hearing and d/Deaf populations and between different d/Deaf populations within what is often imagined as a global "Deaf world" (Lane 2005). While a unified Deaf world is a common concept in Deaf studies and one deployed by some listserv participants, the circulation and discussion of SW texts function as a process by which certain written forms are "reanalyzed . . . as behaviors capable of indexing stereotypic characteristics of incumbents of particular interactional roles and of relations among them," or "enregistering" indexical icons of geographic and social difference within that world (Agha 2007, 55).

In addition to providing ethnographic data about an underdescribed writing system and social network, I see this project more broadly as an attempt to respond to work calling for the investigation of the whole ecology of sign systems used by social actors in contextualized interaction (e.g., Heath 1983; Streeck et al. 2011), the exploration of how these sign systems become subject to linguistic and semiotic ideologies (e.g., Irvine and Gal 2000; Keane 2003; Gershon 2010), and the understanding of the processes by which novices are socialized into these interactive practices and ideological perspectives (e.g., Haviland 2000; Tulbert and Goodwin 2011).

Osnabrück

Deaf education in Germany is known for its focus on oralism—that is, on teaching deaf students to read lips and speak and write German, while often framing sign language as an impediment to this goal and discouraging its use (Monaghan 2003). Since cochlear implants have become widely available, this focus on spoken language has become more entrenched, even as the European Union of the Deaf has worked to promote the recognition of sign language as a fundamental right for d/Deaf Europeans.[5] However, it is sometimes the case

4. I follow the widespread convention, often seen on SignWriting listservs, of writing the word *deaf* (lowercase) to indicate the inability to hear and *Deaf* (with a capital *D*) to indicate identification as a member of a signing community. In cases in which I refer to a group or situation in which both aspects of d/Deafness are relevant, I use mixed case (d/Deaf). My use of this convention should not be taken to imply that I view this binary as universally adopted by signers or as relevant in the same ways across social contexts.

5. Cochlear implants are electronic devices surgically implanted behind the ear. They do not restore hearing but provide an electronic substitute that can be processed by the brain with varying results for the acquisition of linguistic and communicative competence (Spencer 2004).

that profoundly deaf students in oral programs that discourage the use of sign languages do not acquire a reasonable degree of competence in spoken or written language despite intensive surgical and pedagogical interventions (e.g., Peterson 2004; Spencer 2004).

In Osnabrück's National Training Center for the Hearing Impaired, only when the oral approach was deemed to have failed did the students I observed join Stefan Wöhrmann's DGS-medium classroom. Students typically did not join the class until they were age seven or older—by which time most were suffering from their extended linguistic isolation. However, though incoming students to the class had in common the fact that, due to unsuccessful oral pedagogies, they had lacked access to "comprehensive language learning" (Blommaert and Backus 2011, 11), they came to the class with highly diverse communicative repertoires.

"Repertoire," a concept initially outlined by Gumperz ([1972] 1986) and Gumperz and Hymes (1982) and recently updated by Blommaert and Backus (2011), refers to the ever-changing "functionally distributed patchworks of competences and skills" derived from "subjects' engagement with a broad variety of groups, networks, trajectories, tactics and technologies." Elements in such repertoires are derived "from fully formal language learning to entirely informal 'encounters' with language" resulting in "different degrees of knowledge of language, from very elaborate structural and pragmatic knowledge . . . to elementary recognition" (Blommaert and Backus 2011, 2). This framework, which helps subvert the tendency to assume that when speakers or signers have a language in their repertoire they have access to some totalizing whole, is necessary in accounting for all persons' repertoires, but its value is especially visible in ethnographic contexts such as the ones described in this article.

Though isolated from regular exposure to an accessible sign language before coming to this class, all the students had experienced some "ephemeral and restricted" (Blommaert and Backus 2011, 4) forms of language learning, which may have included home signs (idiosyncratic systems of gestural communication developed with hearing interlocutors in the home and derived from the accessible visual modalities involved in spoken language practice, such as gesture) and possibly some DGS acquired in school dormitories and other informal social spaces. Some also entered with limited control of a spoken language; for example, some students had begun to acquire spoken German before being deafened and retained some knowledge from that experience. Most had received cochlear implants, and though the outcomes had not been considered successful in these students, the devices had conveyed varying degrees of ac-

cess to spoken German. In some cases, their control of German was derived less from sound than from oralist training in lip reading and the conscious manipulation of the vocal tract to produce speech and thus had experienced German as a visual and kinesthetic, if not aural, phenomenon. More than half of the students in the class were from families in which Turkish or another language was spoken at home and initially had better, though still limited, control of that language than of German. The students had all received some German literacy instruction, though few had acquired significant literacy skills before entering the class.

Despite these "encounters with language" (Blommaert and Backus 2011, 2), Wöhrmann reports that many incoming students came to the class with very little linguistic and pragmatic communicative competence. For example, one boy, age seven when he joined the class, responded indiscriminately to all communicative overtures by loudly stating his name, Jan.[6] Wöhrmann also reports that, in addition to exposing students like Jan to accessible linguistic forms, it was necessary to socialize them to communicative and interactive practices most teachers can take for granted in their students.[7] For example, he notes that many of his incoming students failed to use other people as communicative resources. Upon realizing that this might be the case, Wöhrmann would send the student out of the room and then hide one of his or her belongings, such as a backpack, in sight of the remaining students. Many of the students, on returning, would first look for the item without enlisting the aid of those who had been present when it was hidden. To encourage such students to see their classmates as communicative partners, Wöhrmann would encourage a peer to guide the child to the missing item and then repeat this activity until the student in question began to proactively seek this assistance.[8]

Only one student entered the class with linguistic and communicative competence comparable to hearing age peers: Selma, the only deaf member of the class born to deaf signing parents. As Wöhrmann recalls, "she has deaf parents, deaf grandparents, deaf great-grandparents, and so on for some number of generations. So she had access to a sign language from the time when she was a baby, and when she comes to school she is able to think about the things that are going on like a hearing child (e.g., as a child exposed to language from

6. All students' names have been changed.

7. Even as all students are, to varying degrees of success and with different social effects, socialized to "school language," genres, registers, and interactive styles specific to their schooling institution (Heath 1983; Collins and Blot 2003).

8. A growing body of research suggests that difficulty with "Theory of Mind" tasks often characterizes late learners of a first language (e.g., Peterson 2004; Schick et al. 2007).

birth)." Wöhrmann recalls that as he worked to bring her classmates' communicative skills to a level appropriate for the class activities, "constantly she was looking at me like [imitates a "bored" face] and I all the time had to say 'calm down calm down, we have to be patient.'" This contrast is consistent with the literature observing that d/Deaf children of d/Deaf signers, who have had access to language from birth, do not suffer the same social, linguistic, and cognitive delays as deaf peers born to hearing parents and not exposed to an accessible language from birth. As this makes clear, the deficits described above do not arise from the inability to hear but rather from the socially contingent isolation from interactive language use this often entails.

Classroom Practices

Once incoming students were immersed in a signing environment, they rapidly began to acquire DGS skills and were able to parlay these into the study of German and of literacies. By the end of their first year in the class, all of the students' repertoires had expanded considerably, if not uniformly.[9] In this section I describe how, through a range of classroom activities, Wöhrmann seeks to help his first-year students forge iconic and indexical associations between signed, spoken, and written forms in order to facilitate the continued expansion of their repertoires. These practices have been described in the literature on d/Deaf educational pedagogies as "chaining" (Humphries and MacDougall 2000): the juxtaposition of semiotic elements drawn from different codes and modalities as a means of "emphasizing, highlighting, objectifying and generally calling attention to equivalencies (or differences) between languages" (Ramsey and Padden 1998; Humphries and MacDougall 2000, 90).[10]

I begin with a transcription of a typical moment of classroom interaction in 2012 among the youngest class of six boys. On the afternoon I describe, the students had been participating in the class for about nine months. When the video from which this transcript is derived was recorded, the students had just returned from recess. Wöhrmann gave the children a moment to change their shoes (they wear fuzzy slippers, often decorated with amusing characters,

9. However, they remained behind their age peers in German and literacy skills, likely due to their late first-language exposure.

10. Chaining practices often draw on the affordances of writing to facilitate the objectification and discussion of forms. However, they also highlight the fact that literacy events are embedded in talk and action (Heath 1983). Further, chaining can also be accomplished using only relatively evanescent signs and utterances: semiotic forms in these modalities can also be "entextualized," transformed from an instance of discourse into a text that can be detached from its initial context of utterance, objectified, replicated, and analyzed (Urban 1996, 21).

rather than street shoes, in the classroom), stop roughhousing, and settle into their seats. He then indicated that they should quiet down; this group of children vocalized a great deal, as they had recently been embedded in oral classrooms that sought to train them to use vocalizations as their primary communicative channel. Many continued to habitually use their voices to pronounce German words, to provide additional prosodic emphasis while signing, or as an attention-getting mechanism. For example, the students often loudly voiced phonologically varying approximations of the target, "Herr Wöhrmann! Herr Wöhrmann!"—while also waving their hands or jumping up and down—to get their teacher's attention and to vie for a turn in class exercises. The transcript begins after Wöhrmann had called the class to order and responded to their attention-getting bids by selecting a particular child to come to the computer at the front of the classroom.

In the following transcript of the resulting activity, I represent audible components of interactions through German orthography or IPA when appropriate. I represent visual components of interactions using SW and also reproduce the SW texts the students produced in class. I realize that most readers will not be familiar with this writing system, and, while space does not allow a complete description here, I offer a few details that, together with my analysis of the transcript, should orient readers sufficiently.[11] SignWriting is written from the expressive rather than receptive perspective, that is, from the viewpoint of the person producing the signs rather than from the viewpoint of someone watching the signer. Though written in vertical columns in many sites of SW use, here the system is most frequently written from left to right. Representations of hand shapes in SW are constructed by combining symbols that iconically represent the configurations of the hands. Orientation of the hand is "encoded through the shading of the hand shapes; white indicating the palm of the hand, black indicating the back of the hand. Orientation is further expressed by the use of a broken line through the handshape to indicate that the sign should be read as oriented to a horizontal plane, while lack of this line indicates that the hand should be read as occupying a vertical plane. There are no separate symbols for location. Rather, in map-like fashion, the system reproduces on small scale the physical relationships that inhere in the

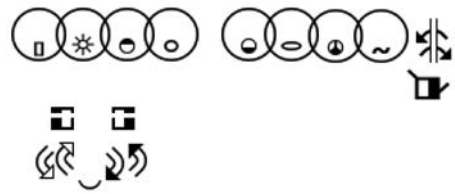
11. Interested readers can visit http://www.signwriting.org for more information. The SignWriting script was first invented by Valerie Sutton in 1974, in collaboration with the Deaf Action Committee for SignWriting from 1988 to the present. The International SignWriting Alphabet 2010 is an established World Script, ISO 15924-Sgnw-095.

actual performance of the sign" (Hoffmann-Dilloway 2011, 350). Also included in SW are a range of symbols representing "detailed movement, different kinds of contact between hands and other body parts (e.g., striking, holding, brushing, and rubbing), facial expressions, mouth movements, postural shifts, timing, and emphasis" (350–51).

SignWriters choose how much and what type of detail to represent in a given text, depending on their analysis of what aspects of a signing ecology are significant in general or for a text of a particular genre. For example, while detailed representations of eye gaze might be deemed a necessary component in a text representing a signed storytelling session (Hoffmann-Dilloway 2011), the SW documents produced in the interaction presented below belong to a genre of worksheets designed to juxtapose DGS and German and focus less on elements important in the coordination of signing interactions in context than on features deemed of interest in comparing simple, decontextualized sentences from each language. As the reader will notice, mouth movements are highly salient in these texts, and *Mundbilder* appear prominently in multiple overlapping head circles read from left to right.

Wöhrmann selected Ulf, whom he considered the student with the greatest control of both spoken and written German, from among the students. Ulf came to the front of the room and seated himself at the computer, which was open to the *Delegs* (*Deutsch lernen mit GebärdenSchrift*—learn German with SignWriting) program. This program, which facilitates the quick generation of documents that compare DGS and German texts, has been recently developed by members of the German IT company CI WPS GmbH and the University of Hamburg, in consultation with Wöhrmann.

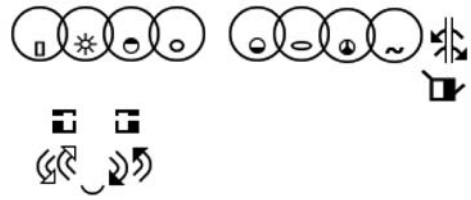
Line 1.—After Ulf was seated, Wöhrmann asked him to write a DGS sentence and gave him the following prompt:[12]

Visual channel: 

Aural channel: Auto gelb.

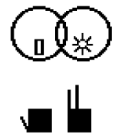
12. An English gloss for this sentence is "Car yellow," and a translation is "The car is yellow."

Line 2.—Ulf, looking at Wöhrmann, repeated the utterance:

Visual channel: 

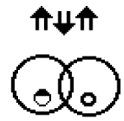
Aural channel: Auto gelb.

Line 3.—Ulf began to type on the computer's keyboard, which featured the Latin alphabet adapted for German orthography. He hesitated as he begin to type and, again looking at Wöhrmann, performed hand shapes representing the Latin alphabet letters *a* and *u*, while voicing the sounds associated with these letters in this combination in spoken German:

Visual channel: 

Aural channel: a

Line 4.—Nodding, Wöhrmann pronounced the second syllable of the word:

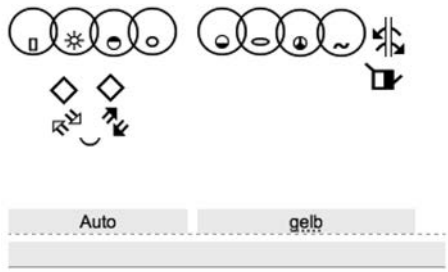
Visual channel: 

Aural channel: to

Reassured, Ulf slowly, with one finger, typed first "Auto" then "gelb" into the *Delegs* computer program. Entering these German words brought to the screen

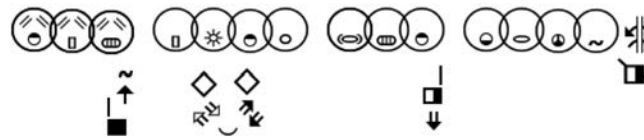
a wide range of preloaded DGS lexical items rendered in SW.[13] The system allows a user to choose the renderings appropriate to their needs (i.e., inflected for grammatical or contextual appropriateness). If no existing sign meets the user's needs, a new entry can be written and loaded into the system.

Line 5.—Ulf selected his signs and then displayed via an overhead projector the following sentence, in which SW appears on the upper line and the German glosses he entered to access the signs are visible below:



Then Ulf returned to his seat.

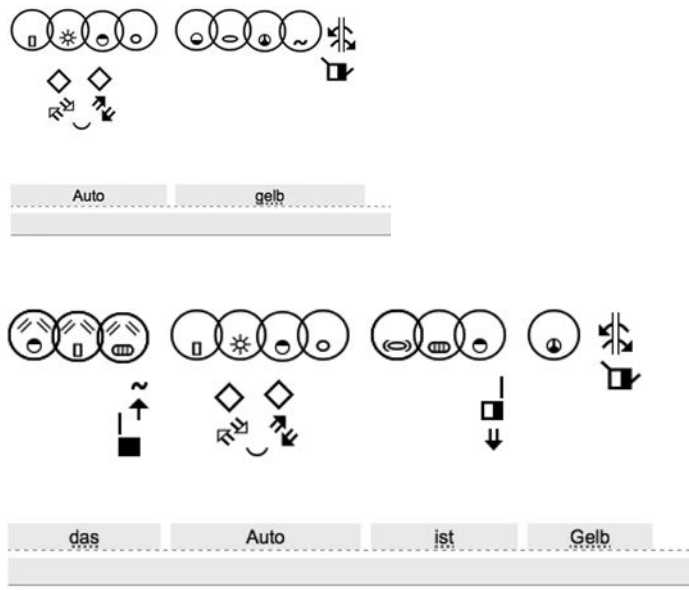
Line 6.—Another student, Deniz, whose control of both DGS and German is weaker than the others', was called to the computer and asked to translate the sentence into German. After Deniz was seated he turned to look imploringly at his classmates. Several of them signed and voiced the following loudly and in unison:

Visual channel: 

Aural channel: Das Auto ist Gelb!

13. While SW can be written from scratch through a computer program or by hand, SW is much faster to read (the many details can be taken in holistically) than to write. The preloaded options in *Delegs* save time in the classroom. These options were written and loaded into the program by Wöhrmann and by members of the older classes.

Line 7.—Having elicited this prompt, Deniz turned to the keyboard. After a fairly long period of one-fingered typing, with pauses for reflection, Deniz projected his sentence below Ulf's, as shown:



This image remained projected on the screen as the class went on to discuss points of difference or similarity between the sentences. On this occasion, the conversation focused in particular on the presence of an article and copula in the German example and their absence in the DGS.[14]

This classroom interaction involved chaining practices similar to those described in the literature (Padden and Ramsey 1999; Bagga-Gupta 2000; Humphries and MacDougall 2000): several iterations of the "same" sentence in DGS and German, spatiotemporally adjacent or simultaneous, each performed across

14. One of the major hurdles for deaf children learning German is that the language is highly inflectional, with three grammatical genders and four cases. German sentences, unlike DGS, include articles, which are inflected for gender, case, and number. As Gisela Szagun (2004, 2) notes, German articles are characterized by a low degree of "perceptual discriminability" of many forms (e.g., *den* and *dem* or *ein* and *einem*), may "merge with prepositions and thus may become hard to distinguish" (e.g., *zum*), and feature pervasive "ambiguity of form–function mapping" (e.g., "nominative and accusative feminine—*die, eine*—as well as nominative and accusative neuter—*das, ein*—are formally identical"). Even hearing children, who are exposed to the use of these terms in daily speech and can learn the inflections through gradually developed indexical associations are nevertheless relatively slow to acquire the ability to produce these forms correctly (e.g., Czepluch 1996).

multiple modalities. For example, in the prompts for each sentence (lines 1, 2, and 6) both the DGS and German sentences were simultaneously voiced and signed. This practice is referred to in the literature on deaf education as "simultaneous communication." Because the grammatical structures of spoken and signed languages diverge, it is often impossible to produce both languages simultaneously without allowing the grammatical structure of one code to dominate. In these instances, in framing these utterances as DGS or German, the modality of production was less important than the presence or absence of grammatical structures associated with each code. Accordingly, the first prompt was framed as DGS, despite the presence of voiced German lexical items, while the second was framed as German, despite the presence of DGS lexical items (and some manual signs not part of DGS, created by educators to manually convey aspects of German grammar—e.g., articles—not found in DGS). The manual component of the utterance in line 6 is referred to as Signed German (*Lautsprachbegleitende Gebärden*, or LBG). While in some educational contexts such codes, developed by hearing educators to convey spoken language structures through visual channels, are considered "sign language" (modality trumping structure), in this class LBG is treated as German (structure trumping modality).

As in many other educational contexts involving chaining practices, fingerspelling plays a role here in mediating between the sign language and the written form of the spoken language. When Ulf requests and receives help in spelling *Auto* (lines 3 and 4), he draws on a system of manual signs used to represent the letters in German's alphabetic writing system. Such systems, in many contexts invented and introduced to deaf signers by hearing educators, have been deeply incorporated into some sign languages. For example, in addition to being used to manually spell words from a spoken language, in some languages fingerspellings have been productively incorporated into signed morphology in coining "initialized" signs in which the sign's hand shape is derived from the fingerspelled alphabet (often the letter with which an associated spoken language word begins). Native signers may grow up performing fingerspellings as part of their signing practice before they realize that, or how in particular, they may be linked to the written form of a spoken language (Paddden and LeMaster 1985; Padden 1991). The status of fingerspellings in such sign languages (as "belonging" to the sign language, spoken/written language, or bivalent) is often debated (e.g., Battison 1978; Liddell and Johnson 1989; Lucas and Valli 1992). Fingerspellings are far less incorporated into DGS, however, so that for members of this classroom they are, like LBG, ideologically framed as German in a manual form.

In this section I focus on two interrelated ways in which practices in this classroom diverge from extant descriptions of chaining practices in d/Deaf education: the use of SW to write both DGS and German, and the effects of this practice on perceptions of the relationships between mouthings and the spoken and signed languages. As mentioned above, mouthings are lip movements performed while signing that can be taken to resemble the act of pronouncing a spoken language word.[15] Though there was variation in the DGS and German language competencies within and across the cohorts I observed, all the students regularly performed mouthings when signing. Students with more residual hearing, more control of German, and more experience with intensive oral training were more likely to voice mouthings (as seen in line 2 of the transcript), but mouthings were more frequently unvoiced in DGS practice.

There is often semantic congruency between the DGS signs in which mouthings are performed and the German word the pronunciation of which they resemble (Emmorey at al. 2005; Baker and van den Bogaerder 2009; Bank et al. 2011). The fact that DGS grammatical and morphological constructions often differ from German means that mouthings follow DGS rather than German grammatical structure when these diverge. Mouthings typically only resemble the root of spoken language words—grammatical inflections usually occur in the signed component of the discourse. In addition, as with initialized signs in languages that more fully incorporate fingerspelling, mouthings often function as a (visual) phonological element that distinguishes between minimal pairs of signs. In some cases, mouthings may be an obligatory component of a sign, while in others signers have stylistic freedom in whether to mouth or how much to mouth in performing a given sign (e.g., a signer may only mouth the first syllable of the potentially associated word) (Boyes-Braem 2001; Hoenburger and Happ 2001).

Knowing that I came from the United States, and knowing that mouthings are not generally thought to be as integrated into signing practices there as they are in Germany, Wöhrmann and his students often explicitly pointed out to me the role that mouthings played in their signing practice. They especially enjoyed examples of minimal pairs of signs distinguished only by mouth movements that would cause confusion or embarrassment if mixed up. For example, the sign for the town Darmstadt and the sign for pubic hair (*Schamhaar*) were identical except for the mouthings (see fig. 1). (Of course, context would—hopefully!—suffice to clarify which sign was meant.)

15. The literature distinguishes between mouthings and "mouth gestures," or mouth movements involved in signing that do not appear to have any relation to a spoken language form (e.g., Schermer 1990).

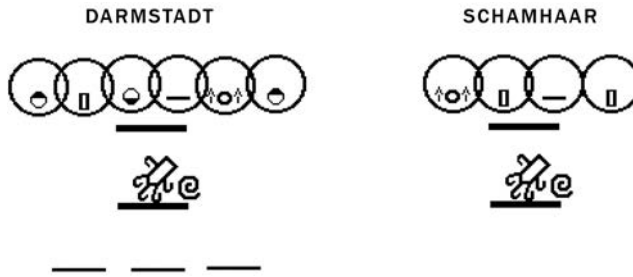


Figure 1. *Mundbilder in GebaerdenSchrift* inscriptions of the DGS signs DARMSTADT and SCHAMHAAR

As with fingerspelling, there is a great deal of debate in both the literature and among signers about the nature of these movements in the sign languages that incorporate them. Opinions range from framing mouthings as simultaneous code mixing to considering them fully lexicalized components of the sign language (Boyes-Braem 2001; Ebbinghaus and Hessmenn 2001; Hoenburger and Happ 2001; Bank et al. 2011; Mohr 2012). Despite their different claims, most scholars working on the topic have in common a focus on resolving the question at the level of the named sign language rather than at the level of the individual signer. Further, many discussions of mouthings are informed by an "implicit but widespread assumption that unvoiced mouthings of signers actually link to the identical phonological information that underlines the voiced articulations of phonetic strings of the speakers of the host spoken language" (Keller 2001). Both of these perspectives stem in part from a broader tendency to treat abstractions of languages as totalizing wholes as "a psychological reality at the level of the individual human being" (Blommaert and Backus 2011, 8).

However, given the diverse repertoires of the deaf students in the class, whether and how mouthings are semiotically related to spoken language words, and what these connections are taken to signify about the relationship between the codes, can vary. As Keller (2001) suggests, the mouthings the students performed were not always derived from underlying phonological knowledge of the potentially associated German word. Wöhrmann observed that without exception his students acquired DGS vocabulary much more easily and quickly than German vocabulary. As a result, when he first began to work with deaf students he assumed that if the student did not know an associated German word, they would not perform any mouthings when signing. He recalls discussing this assumption with a colleague who had more experience with mouth-

ings, saying to her, "Oh, my kids don't know the German words, so they can't do any mouthing." However, she insisted that they would likely use mouthings even if they did not know the potentially associated German term. This discussion led him to pay more attention to whether students with very little control of German mouthed.

He recalls, "I looked at them very carefully. Darya, with Russian parents, was not able to understand many German words. I noticed that she just moved her mouth in random ways when signing, for example, KATZE (cat). She didn't know the German word but nevertheless moved her mouth." These mouth movements did not initially resemble the act of pronouncing *Katze*, nor, he observed, were they initially consistent across different instances of her production of the sign. A signer with very little experience with German, Darya may have been aware that the mouth movements were a component of her peers' signing but did not appear to have acquired the particular movements others produced. However, Wöhrmann observed that over time Darya, and students with similar trajectories, typically acquired the same mouth movements as their peers.

However, consistently producing the mouthed elements of signs in ways that formally resembled the act of pronouncing a German word did not guarantee that a student could identify, through voicing, writing, or reading the particular German word in question. For example, during my 2010 visit the students were involved in a study unit focusing on German cities—this is what led to the Darmstadt and *Schamhaar* example mentioned above. After joking about this minimal pair, the class moved into a broader discussion about the cities they had visited. In the course of this class session, which involved translating the city names from DGS to German, Wöhrmann discovered that several of the students, whom he assumed had long connected the DGS signs for the cities to their German names, could not in fact voice or identify them correctly in written form, despite performing the appropriate mouthings when producing the signs; for such students the mouthings were phonologically incorporated into DGS but were at most emblematically associated with German. However, that class period's subsequent creation of texts comparing SW and German orthographic renderings of the city names, and discussion of mouthings as a point of resemblance between them, furthered Wöhrmann's pedagogical goal of framing mouthings as a productive point of bivalency between codes.

Variations in the interpretations of mouthings are likewise evident in line 1 of the transcript. In lines 2–5, Ulf demonstrates through signing, voicing, typing in German, and selecting prewritten SW signs with *Munbilder*, that he is able

to link the mouthings to both spoken and written German. Deniz then created a German rendering, in both German orthography and SignWritten LBG, with which Ulf's sentence was compared (line 7). In addition to highlighting grammatical differences between the codes, this comparison had the potential to highlight iconicity between the mouthings in the DGS signs for AUTO and GELB and the visible component of pronouncing the associated German words. However, in the sentences projected on the board that afternoon, this iconicity was only fully apparent regarding the sign and word AUTO/*Auto*. In constructing the LBG component of his German sentence, Deniz chose from the *Delegs* program a SW rendering of the sign GELB that included *Munbilder* for only the first mouthed syllable of *gelb*. This would have been framed as simply a stylistic choice if he, like Ulf, had been tasked with creating a DGS sentence. However, his task was to produce a German sentence. While his sentence was written correctly in German orthography, the SignWritten LBG component of his sentence was incorrect in not reflecting all of the visible mouth movements that would accompany the pronunciation of the word *gelb*.

Indeed, Wöhrmann has observed that some members of the youngest class do not necessarily or consistently frame elements of their repertoires as belonging to distinct codes. As the students' repertoires expand, however, all-German and all-DGS class periods began to socialize students to locally appropriate assessments of boundaries between the codes and the modalities through which they are produced and perceived. For example, in all-DGS class periods, vocalizations—including simultaneous voicing while performing DGS signs and the use of voice as a prosodic or attention-getting resource—are forbidden. Students who wish to use sound to attract their teachers' attention are instead encouraged instead to stomp their foot on the floor. When students forget and use their voices, Wöhrmann (or a peer) reminds them of the proscription by making a gesture, resembling turning a lock in a keyhole, at the throat.

Concurrent with increased mapping of particular grammatical forms or modalities onto distinct code-focused class sessions was an increased association of each code with particular genres. For example, Wöhrmann is an avid and skilled wildlife photographer. He frequently incorporates this hobby into his pedagogy by using his photos as centerpieces for class activities. In DGS class periods these images are often used as prompts for DGS storytelling sessions; for example, a shot of a falcon feeding its baby may become the focus on an elaborate narrative about the birds. These sessions socialize students to a genre important in Deaf German cultural life and provide an opportunity for metalinguistic discussion of DGS grammatical forms like classifiers. In German ses-

sions, viewing a series of shots of different bird species becomes an opportunity to expand the students' German vocabulary.

Such curricular efforts to keep spoken and sign languages separate are often found in bilingual-bicultural approaches to d/Deaf education, where such "border patrolling" is sometimes "zealously maintained" (Bagga-Gupta 2000, 103). This may be in part a reaction to pedagogical approaches which treat manual versions of spoken languages as sufficient exposure to "signed language" and in so doing fail to expose deaf children to the structures of the signed languages used by d/Deaf adults. However, as Bagga-Gupta (2000, 114) notes in her analysis of "visual bilingualism" in Swedish d/Deaf education, written versions of a spoken language "often mediate the execution" of classroom tasks even in sign language-only class periods; the presence of the spoken language in this modality "is not focused upon" or "even recognized." This may in part result from the fact that a written version of Swedish Sign Language was not available in the context she observed.

In the Osnabrück classroom, however, where SW is available, literacy events in DGS class periods focus on reading and writing DGS with SW rather than German texts. Conversely, in German classes, while German orthography plays an important role, *MundbildSchrift* is also employed. Unlike the use of *Mundbilder* in writing visible mouth movements in DGS or LBG, *MundbildSchrift* encodes the entire complement of movements, including those that take place invisibly inside the vocal tract, involved in voicing German words. As an example of the difference between *Mundbilder* and *MundbildSchrift*, compare figure 2 below, which includes *MundbildSchrift* inscriptions of the German words *Darmstadt* and *Schamhaar*, with the *Mundbilder in GebaerdenSchrift* inscriptions of the DGS signs DARMSTADT and SCHAMHAAR in figure 1.

Thus, while chaining activities among the younger classes sought to highlight the visible components of mouthing as a point of bivalency between DGS

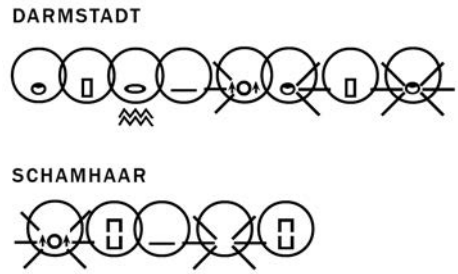


Figure 2. *MundbildSchrift* inscription of the German words *Darmstadt* and *Schamhaar*

and German in terms of both form, semantic meaning, and modality, the shift to using *MundbildSchrift* in German classes and discouraging voicing in DGS classes frames this bivalency as existing only on the visual, but not kinesthetic or aural, modalities.

The SignWriting Listserv

Although there have recently been efforts to employ SW in adult d/Deaf literacy classes in Hamburg, Wöhrmann's class is currently the only group in Germany who read and write DGS through SW on a daily basis. However, though DGS is employed at a hyper-local scale within Germany, through engagement with transnational online SSW networks, classroom participants can also participate in SW literacy events that take place on a global but circumscribed scale. I now explore the circulation and discussion of DGS SW texts online.

Differently positioned members of the classroom engage these networks in different ways. Students do not typically participate on the listserv devoted to the circulation and discussion of SW texts, as it is populated exclusively by adult SignWriters. However, students do frequently explore the texts that SignWriters from around the word have uploaded into what are called SignWriting Puddles: databases including dictionaries, encyclopedias, and signed literature from around eighty sign languages.[16] The content in each of the Puddles is user generated. Members of the Osnabrück class themselves contribute much material to the DGS Puddle.

Some students also communicate more directly with distant SignWriters. For example, after the 9/11 attack in the United States, Selma wrote a letter in DGS SW, accompanied by a picture she had drawn, and asked Wöhrmann to forward it to Valerie Sutton, the creator of SW and a major presence on the SW listserv (figs. 3–4). After replying, Sutton posted Selma's picture and text on the SW website, as an example of the engagement between signers around the world that Sutton hoped SW would help mediate.[17] Indeed, because d/Deaf communities in general are often relatively small and "geographically dispersed throughout the majority hearing community" (Keating and Mirus 2003, 693), many embrace the idea of a global Deaf world (Monaghan 2003; Lane 2005). As Keating and Mirus (2003) point out, the Internet affords increased opportunities for communicative engagements within and across d/Deaf social networks; the online circulation of SW texts is one such form of emerging trans-

16. These databases are called "Puddles" because they were initially developed by programmer Steve Slevinski through his involvement in the group Pittsburgh United for Deaf Literacy (PUDL).

17. http://www.signwriting.org/forums/teachers/deafchild/.

Figure 3. Drawing sent by an Osnabrück student to the inventor of SW

national d/Deaf sociality. For example, Sutton describes the Puddles and listserve as "Deaf cultures coming together through global communication."

While the classroom's children are not currently participants on the SW listserv, Wöhrmann is one of its most active members. He has been engaged with the list since he first learned of the existence SW at a conference in the late 1990s and often turned to list members for advice when first implementing SW in his classroom. Now considered an expert himself, through engagement on the list he has advised educators from a wide range of countries, such as Brazil and Belgium.

While listserv members have in common an interest in using the SW system to create, read, and discuss SW texts, and in connecting with a community of fellow users, the diversity of communicative repertoires that characterized incoming students to the Osnabrück class is yet greater among listserv participants; d/Deaf and hearing teachers, students, poets, researchers, computer programmers, and interpreters who hail from around thirty different countries and who use a wide range of spoken and signed languages. The linguistic resources in list members' repertoires may or may not overlap and, accordingly, members sometimes go to great lengths to communicate with each other. Written English often functions as a lingua franca, though some members must employ Google Translate to use this language—the ability to use this program itself a resource in their repertoires. Others post in, for example, Italian, Portuguese, French, or German, and list members who do not command these languages likewise use Google Translate to participate in the discussion. There is currently no equivalent of a Google Translate option for translating SW sign language texts. However, one area in which all members' repertoires overlap is in the ability to "sound out," or rather, "act out," one another's SW texts for form if

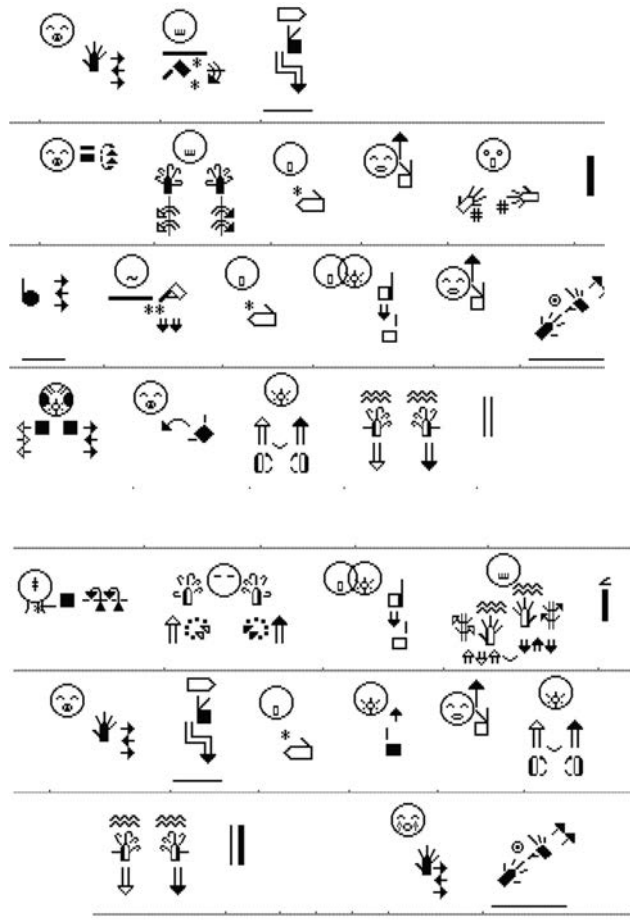


Figure 4. Letter accompanying the drawing sent by an Osnabrück student to the inventor of SW. (Translation: Hello, Mrs. Valerie Sutton. I saw a film on television. I was very frightened. Danny informed me. Then I also saw the film. The airplane flew into the skyscraper. The skyscraper collapsed. There was dirt and smoke. There was also fire. Did you see how the skyscraper collapsed?)

not reference (though an accompanying translation of the content is usually provided). They may then comment on the writing style, which elements of a signed communicative ecology the writer chose to encode, SW spelling choices, and so on.

Sometimes participants will post videos of signing they are working to represent in writing to facilitate commentary on their rendering or to invite members to produce alternative transcriptions. A common refrain on the list is "Write what you see!" Members are aware, however, that "what participants

see" is mediated by their particular repertoires, including assumptions about what sign languages are and how they should be represented in writing. These transcriptions then become fodder for making different metalinguistic and metasemiotic assumptions more explicit and subject to discussion—discussion of SW texts being the purpose of the list.

Mouthings, and the appropriateness of representing them in SW texts are a frequent—and sometimes heated—topic of discussion on the list.[18] For example, in 2003, a member posted a Swiss German Sign Language (DSGS) video of a signer telling the story of Noah's ark and asked for advice about rendering it in SW. Like DGS, DSGS practice includes extensive mouthing. Sutton, who does not know German or DSGS, transcribed a section. When she posted her text, she noted that "the person who was signing was using a very 'Deaf storytelling style' and I bet she wasn't thinking of spoken words . . . (so) I did not write every detail of mouth movements." Wöhrmann replied, "hm—you should not bet—Of course she was thinking of spoken words . . . here are the ones I could see" and provided a very extensive list of German words he identified in the mouthings. As I argued above, without knowing more about the original signer's repertoire we can't guess she was "thinking"—this isn't clear from the presence of the mouth movements alone.[19] What we can know is while the mouthings in the video functioned semiotically as bivalent with German for Wöhrmann, for Sutton, who is from the United States, is not accustomed to considering mouthings part of American Sign Language (ASL), and does not know German, the mouth movements did not function referentially or in this case necessarily even emblematically as German. As Wohrman put it, "we look at the mouth of the signer, we see different things. Me as a fluent German speaker, I look and I see 'ah, a German word!' And you look and you just see mouth movements, and say 'I see them open their mouth little bit and slightly put their tongue out and so on.'"

The ability to identify discourse as belonging to a named language or language family, even independently of the ability to understand its content, can be an important part of social actors' repertoires. Often this involves noticing

18. Awareness of and reactions to different writing styles may be heightened by the fact that SW is usually read from the expressive rather than receptive viewpoint, perhaps increasing the degree to which readers experience themselves as the embodied origo of the sometimes socially indexically charged choices made by writers in reading the texts.

19. While it might be assumed that the performance of mouthings without knowledge of the potentially associated German word is only found among young signers still acquiring the language, anecdotal evidence suggests that adult d/Deaf signers considered fluent likewise may perform mouthings without associating them with particular German words.

emblematic forms that, for a given interpreter, index a particular named code (along with indexing other social connotations), as, for example, when certain phonological features or contours of a script are taken as indexing a language from a particular geographic region (Collins and Slembrouk 2007). Such emblematic forms can, in some cases, also serve to categorically exclude a stretch of discourse from indexing a particular code. Some list members, who themselves did not know German but accepted Wöhrmann's interpretation of the DSGS mouthings as representing German words, took that to indicate that the signing might not count as sign language per se, but perhaps as some form of manually coded spoken language. Likewise, some members responded in that way to the DGS texts entered in the Puddle and circulated online because of the inclusion of *Mundbilder*.

While in Osnabrück the use of *Mundbilder* rather than *MundbildSchrift* distinguishes mouthings as DGS rather than German speech, many list participants from different sociolinguistic backgrounds have, in local practice, only encountered mouthings in the context of oral education or as a form of "contact signing"[20] when interacting with hearing interlocutors not fluent in sign language. Thus, some list members respond to German texts by interpreting the representation of mouthings according to their own interdiscursive experiences with similar forms. For example, one participant from the United States commented that "you can't [mouth in English while signing ASL] because that is not real ASL . . . it is something in between English and ASL . . . and there is nothing wrong with that . . . but it is not pure ASL . . . you can't mix the two . . . and ASL definitely can stand alone without mouthing specific English words." Others argued that mouthing while signing may be performed in practice but is a bad habit that should not be enshrined in writing. For example, one participant wrote, "As one of the many learners who are practicing to eradicate English lip patterns from their own [signing], I certainly wouldn't introduce it into my SignWriting!" Another wrote that if Wöhrmann chooses to mouth movements through DGS, he must be educating his students in the oralist tradition. Thus, for many listserv participants, performing and especially writing mouthings is politicized as a metapragmatic affiliation with spoken language, hearing interlocutors, or oralism.

In response to such comments, listserv members from Germany, Malta, Norway, Brazil, and other places where mouthings are a common component of signing practice have written to the list to explain why they see mouthing as in-

20. Contact signing is highly influenced by spoken language, which can serve to accommodate hearing signers and/or to limit their access to sign language as used in all-d/Deaf interactions.

tegral to their sign languages, most commonly providing examples in which mouthings distinguish between minimal pairs and arguing that "without mouthing, so many distinctions would be lost." While some list members accepted this argument, for some this "dependence" suggested a deficiency or lack of development on the part of these sign languages. Other list members objected to this characterization, responding, for example, that choosing to write mouthings indexes nothing but commitment to an accurate representation of signing practice. For example, Wöhrmann wrote, "If DEAF persons sign with these [mouthings)] in order to express their ideas in sign language there cannot be a doubt that these [movements] are indisputably a part of the language." Over the roughly fifteen years that the list has existed, this debate has played out many times as new members join and encounter videos and texts representing sign languages and ways of thinking about the nature of sign languages and SW texts that are unfamiliar to them.

However, just as the Osnabrück classroom activities described above affect, as well as reflect, students' interpretations of relationships between DGS, German, and the modalities through which they are performed and perceived, participation on the list likewise becomes a part of members' interdiscursive histories and can affect as well as reflect their perceptions of such boundaries. Participating on the list expands members' repertoires, not necessarily through increased ability to produce or decode other signed languages, but in exposing them to multiple possible interpretations of the semiotic and pragmatic significance of forms like mouthings. In fact, more senior participants often retreat from the debates over mouthing, having become increasingly sensitive to the mobility of semiotic resources across boundaries of code and modality, as well as the mobility of these boundaries themselves as interpreted by differently positioned persons.

While for some participants the co-existence of multiple kinds of practices and interpretations within a Deaf world remains as a problem to be resolved, not only at the level of a particular named sign language but also for signed languages in general, for many others encountering these differences of practice and interpretation begins a process of enregisterment of these differences as iconic indexes of linguistic and social distinctions between sign languages and signers, and not simply between hearing and Deaf worlds. As a consequence, by bringing into contact diverse signing publics through the circulation and discussion of the SW texts, the practices described in this section semiotically facilitate both the production of a global signing network and the relational production of different localities (Appadurai 1996) within a Deaf world.

Conclusion

Some approaches to understanding the complex relationships between codes and modalities of communication do so through an analytical separation of types of semiosis from the modalities through which they are materialized; these approaches have yielded important insights in so doing (e.g., Okrent 2002). However, in contextualized interactions modality and semiosis cannot be untangled: the media and channels through which semiotic forms are materialized are not incidental but themselves bear meaning for situated interpreters in ways that are not necessarily predictable (e.g., Keane 2003). Accordingly, this article has focused on how interpretations of the relationships between both communicative codes, and the modalities through which they are produced and perceived, are mediated by social actors' particular communicative repertoires and histories, and has further explored some of the social consequences resulting from differences in these interpretations. The interdiscursive mediation and semiotic and pragmatic effects of such relationships are particularly visible in ethnographic contexts, such as that described here, in which a channel taken for granted in other contexts is unavailable (here, reception of audible sound) or in which a previously unavailable medium is introduced (here, a written form for sign languages). However, these issues are relevant to all communicative interactions, and attention to them can enrich our understanding of sociolinguistic contact more broadly.

References

Agha, Asif. 2007. *Language and Social Relations*. Cambridge: Cambridge University Press.

Appadurai, Arjun. 1996. *Modernity at Large: Cultural Dimensions of Globalization*. Minneapolis: University of Minnesota Press.

Bagga-Gupta, Sangeeta. 2000. "Visual Language Environments: Exploring Everyday Life and Literacies in Swedish Deaf Bilingual Schools." *Visual Anthropology Review* 15 (2): 95–120.

Baker, Anne, and Beppie van den Bogaerde. 2009. "Code Mixing in Signs and Words in Input to and Output from Children." In *Sign Bilingualism: Language Development, Interaction, and Maintenance in Sign Language Contact Situations*, ed. Carolina Plaza-Pust and Esperanza Morales-López, 1–27. Amsterdam: Benjamins.

Bank, Richard, Onno Crasborn, and Roeland van Hout. 2011. "Variation in Mouth Actions with Manual Signs in Sign Language of the Netherlands (NGT)." *Sign Language and Linguistics* 14 (2): 248–70.

Battison, Robbin. 1978. *Lexical Borrowing in American Sign Language*. Silver Springs, MD: Linstok.

Blommaert, Jan, and Ad Backus. 2011. "Repertoires Revisited: 'Knowing Language' in Superdiversity." Working Papers in Urban Language and Literacies, no. 67, Kings College, London.

Boyes-Braem, Penny. 2001. "Functions of the Mouthings in the Signing of Deaf Early and Late Learners of Swiss German Sign Language (DSGS)." In *The Hands Are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, ed. Penny Boyes-Braem and Rachel Sutton-Spence, 99–131. Hamburg: Signum.

Clements, G. N. 1985. "The Geometry of Phonological Features." *Phonology* 2:225–52.

Collins, James, and Richard Blot. 2003. *Literacy and Literacies: Texts, Power, and Identity*. Cambridge: Cambridge University Press.

Collins, James, and Stef Slembrouk. 2007. "Reading Shop Windows in Global Neighborhoods: Multilingual Literacy Practices and Indexicality." *Journal of Literacy Research* 39 (3): 335–56.

Czepluch, Harmut. 1996. "Case Morphology and Case System in L1 Acquisition: A Pilot Study of a German Child." In *Theoretical Linguistics and Grammatical Description*, ed. Robin Sackmann and Monica Budde, 89–108. Amsterdam: Benjamins.

Duranti, Alessandro. 1997. *Linguistic Anthropology*. Cambridge: Cambridge University Press.

Ebbinghaus, Horst, and Jens Hessmann. 2001. "Sign Language as Multidimensional Communication: Why Manual Signs, Mouthings, and Mouth Gestures Are Three Different Things." In *The Hands Are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, ed. Penny Boyes Braem and Rachel Sutton-Spence, 133–52. Washington, DC: Gallaudet University Press.

Emmorey, Karen, Harry B. Borinstein, and Robin Thompson. 2005. "Bimodal Bilingualism: Code-Blending between Spoken English and American Sign Language." In *Proceedings of the 4th International Symposium on Bilingualism*, ed. James Cohen, Kara T. McAlister, Kellie Rolstad, and Jeff MacSwan, 663–73. Somerville, MA: Cascadilla.

Enfield, Nick. 2004. "On Linear Segmentation and Combinatorics in Co-speech Gesture: A Symmetry-Dominance Construction in Lao Fish Trap Descriptions." *Semiotica* 149 (1/4): 57–123.

———. 2009. *The Anatomy of Meaning: Speech, Gesture, and Composite Utterances*. Cambridge: Cambridge University Press.

Farnell, Brenda. 1995. *Do You See What I Mean? Plains Indian Sign talk and the Embodiment of Action*. Austin: University of Texas Press.

Friedman, Michele, and Stefan Helmreich. 2012. "Deaf Studies Meets Sound Studies." *Senses and Society* 7 (1): 72–86.

Gershon, Ilana. 2010. "Media Ideologies: An Introduction." *Journal of Linguistic Anthropology* 20 (2): 283–93.

Goldsmith, John. 1976. "An Overview of Autosegmental Phonology." *Linguistic Analysis* 2:23–69.

Goodwin, Charles. 1994. "Professional Vision." *American Anthropologist* 96 (3): 606–33.

Gullberg, Marianne. 1998. *Gesture as a Communication Strategy in Second Language Discourse: A Study of Learners of French and Swedish*. Lund: Lund University Press.

Gumperz, John. 1958. "Dialect Differences and Social Stratification in a North Indian Village." *American Anthropologist* 60 (4): 668–82.

———. (1972) 1986. "Introduction." In *Directions in Sociolinguistics: The Ethnography of Communication*, ed. John Gumperz and Dell Hymes. London: Blackwell.

Gumperz, John, and Dell Hymes, eds. 1982. *Discourse Strategies*. Cambridge: Cambridge University Press.

Haviland, John. 2000. "Early Pointing Gestures in Zincantan." *Journal of Linguistic Anthropology* 8 (2): 162–96.

Heath, Shirley Brice. 1983. *Ways with Words: Language, Life, and Work in Communities and Classrooms*. Cambridge: Cambridge University Press.

Hoffmann-Dilloway, Erika 2011. "Writing the Smile: Language Ideologies in and through Sign Language Scripts." *Language and Communication* 31 (4): 435–55.

Hohenburger, Annette, and Daniela Happ. 2001. "The Linguistic Primacy of Signs over Mouthings: Evidence from Language Production in German Sign Language (DGS)." In *The Hands Are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, ed. Penny Boyes-Braem and Rachel Sutton-Spence, 153–89. Washington, DC: Gallaudet University Press.

Humphries, Tom, and Francine MacDougall. 2000. "'Chaining' and Other Links: Making Connections between American Sign Language and English in Two Types of School Settings." *Visual Anthropology Review* 15 (2): 85–94.

Irvine, Judith, and Susan Gal. 2000. "Language Ideology and Linguistic Differentiation." In *Regimes of Language*, ed. Paul Kroskrity, 35–84. Santa Fe: School of American Research Press.

Keane, Webb. 2003. "Semiotics and the Social Analysis of Material Things." *Language and Communication* 23 (3–4): 409–25.

Keating, Elizabeth, and Gene Mirus. 2003. "American Sign Language in Virtual Space: Interactions between Deaf Users of Computer-Mediated Video Communication and the Impact of Technology on Language Practices." *Language in Society* 32:693–714.

Keller, Jörg. 2001. "Multimodal Representations and the Linguistic Status of Mouthings in German Sign Language (DGS)." In *The Hands Are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, ed. Penny Boyes Braem and Rachel Sutton-Spence, 191–230. Washington, DC: Gallaudet University Press.

Kendon, Adam. 2008. "Some Reflections on the Relationship between 'Gesture' and 'Sign.'" *Gesture* 8 (3): 348–66.

Lane, Harlan. 2005. "Ethnicity, Ethics, and the Deaf-World." *Journal of Deaf Studies and Deaf Education* 10 (3): 295.

Liddell, Scott, and Robert Johnson. 1989. "American Sign Language: The Phonological Base." *Sign Language Studies* 64:195–278.

Lucas, Ceil, and Clayton Valli. 1992. *Language Contact in the American Deaf Community*. San Diego: Academic Press.

McNeill, David. 1985. "So You Think Gestures Are Non-verbal?" *Psychological Review* 92 (3): 350–71.

Meier, Richard, Kearsy Cormier, and David Quinto-Pozo, eds. 2002. *Modality and Structure in Signed and Spoken Languages*. Cambridge: Cambridge University Press.

Mohr, Susanne. 2012. "The Visual-Gestural Modality and Beyond: Mouthings as a Language Contact Phenomenon in Irish Sign Language." *Sign Language and Linguistics* 15 (2): 185–211.

Monaghan, Leila. 2003. "A World's Eye View: Deaf Cultures in Global Perspective." In *Many Ways to Be Deaf: International Variation in Deaf Communities*, ed. Leila Monaghan,

Constanze Schmaling, Karen Nakamura, and Graham Turner, 1–24. Washington, DC: Gallaudet University Press.

Okrent, Arika. 2002. "A Modality Free Notion of Gesture and How It Can Help Us with the Morpheme vs. Gesture Question in Sign Language Linguistics (or at Least Give Us Some Criteria to Work With)." In *Modality and Structure in Signed and Spoken Languages*, ed. Richard Meier, Kearsy Cormier, and David Quinto-Pozos, 175–98. Cambridge: Cambridge University Press.

Padden, Carol. 1991. "The Acquisition of Fingerspelling in Deaf Children." In *Theoretical Issues in Sign Language Research, Psychology*, ed. P. Siple and S. Fischer, 191–211. Chicago: University of Chicago Press.

Padden, Carol, and Barbara LeMaster. 1985. "An Alphabet on Hand: The Acquisition of Fingerspelling in Deaf Children." *Sign Language Studies* 47:161–72.

Padden, Carol, and Claire Ramsey. 1999. "American Sign Language and Reading Ability in Deaf Children." In *Language Acquisition by Eye*, ed. Charlene Chamberlain, Jill Morford, and Rachel Mayberry, 165–89. Mahwah, NJ: Erlbaum.

Perlmutter, David. 1992. "Sonority and Syllable Structure in American Sign Language." *Linguistic Inquiry* 23 (3): 407–42.

Peterson, C. 2004. "Theory-of-Mind Development in Oral Deaf Children with Cochlear Implants or Conventional Hearing Aids." *Journal of Child Psychology and Psychiatry* 45 (6): 1096–106.

Pizzuto, Elena, and Paola Pietrandrea. 2001. "The Notation of Signed Texts: Open Questions and Indications for Further Research." *Sign Language and Linguistics* 4 (1/2): 29–43.

Pizzuto, Elena, Paolo Rossini, and Tomasso Russo. 2006. "Representing Signed Languages in Written Form: Questions That Need to Be Posed." In *Proceedings of the Second Workshop on the Representation and Processing of Sign Languages: Lexicographic Matters and Didactic Scenario*, ed. C. Vettori, 1–6. International Conference on Language Resources and Evaluation. Genoa: LREC.

Ramsey, Claire, and Carol Padden. 1998. "Natives and Newcomers: Literacy Education for Deaf Children." *Anthropology and Education Quarterly* 29 (1): 5–24.

Sandler, Wendy. 1989. *Phonological Representation of the Sign: Linearity and Nonlinearity in American Sign Language*. Dordrecht: Foris.

Saussure, Ferdinand de. (1906–11) 1986. *Course in General Linguistics*. Chicago: Open Court.

Schermer, Trude. 1990. *In Search of a Language: Influences from Spoken Dutch on Sign Language of the Netherlands*. Delft: Eburon.

Schick, Brenda, Peter de Villiers, Jill de Villiers, and Robert Hoffmeister. 2007. "Language and Theory of Mind: A Study of Deaf Children." *Child Development* 78 (2): 376–96.

Spencer, Patricia. 2004. "Individual Differences in Language Performance after Cochlear Implantation at One to Three Years of Age: Child, Family, and Linguistic Factors." *Journal of Deaf Studies and Deaf Education* 9 (4): 395–412.

Stokoe, William. 1960. *Sign Language Structure*. Silver Spring, MD: Linstok.

Streeck, Jürgen, Charles Goodwin, and Curtis Lebaron. eds. 2011. *Embodied Interaction: Language and Body in the Material World*. Cambridge: Cambridge University Press.

Szagun, Gisela. 2004. "Learning by Ear: On the Acquisition of Case and Gender Marking by German-Speaking Children with Normal Hearing and with Cochlear Implants." *Journal of Child Language* 31 (1): 1–30.

Tedlock, Dennis. 1983. *The Spoken Word and the Work of Interpretation*. Philadelphia: University of Pennsylvania Press.

Tulbert, E., and Marjorie Goodwin. 2011. "Choreographies of Attention: Multimodality in a Routine Family Activity." In *Embodied Interaction: Language and Body in the Material World*, ed. Jürgen Streeck, Charles Goodwin, and Curtis Lebaron, 79–92. Cambridge: Cambridge University Press.

Urban, Greg. 1996. "Entextualization, Replication, and Power." In *Natural Histories of Discourse*, ed. Michael Silverstein and Greg Urban, 21–44. Chicago: University of Chicago Press.

Veditz, George. 1912. *Proceedings of the Ninth Convention of the National Association of the Deaf and the Third World's Congress of the Deaf, 1910*. Philadelphia: Philocophus.

Vermeerbergen, Myriam, Lorrain Neeson, and Onno Crasborn. 2007. "Simultaneity in Signed Languages: A String of Sequentially Organized Issues." In *Simultaneity in Sign Languages: Form and Function*, ed. Myriam Vermeerbergen, Lorrain Neeson, and Onno Crasborn, 1–25. Amsterdam: Benjamins.