More Than Signs: International Sign as Distributed Practice

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ABSTRACT

This article makes a case for understanding International Sign (IS) as a distributed practice. IS, a translingual practice, arose from interactions among individuals from diverse linguistic backgrounds, integrating signs from multiple national sign languages and leveraging iconic and transparent features of sign language lexicons and grammars. At the heart of IS is the principle of calibration, an adaptive process aimed at aligning signs to foster mutual understanding. This study delves into the use of IS in an adult education classroom in Denmark, where IS includes not only the use of signs but also their interplay with technology and writing. The discussed examples suggest that IS is a fluid process in which people shift between conventional and adaptive signing. Furthermore, the examples showcase an intricate relationship between signing and forms of writing, suggesting that the latter should not be seen as separate from IS.

The study of International Sign (IS) diverges from sign language studies' primary focus on national sign languages. When sign linguistics emerged as a field in the 1960s, it was primarily directed toward identifying linguistic structures within national sign languages to affirm them as legitimate languages. This led to a reticence in many early researchers to emphasize the iconicity of signs or similarities between gestures and signs, prioritizing instead the demonstration that sign languages possessed semiotic complexities on par with spoken languages. The interplay between sign and spoken languages, manifested in features such as mouthing and fingerspelling, was therefore also commonly underemphasized. Fingerspelling is a method of representing letters of an alphabet on the hand, where each letter is associated with a specific handshape; it is used to communicate names or words, resulting in a signed replication of the

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written modality. Mouthing refers to the silent formation of words or names on the lips. However, while these components were initially understudied within the broader context of sign linguistics, there is a growing appreciation for the broader semiotic aspects of sign languages. Gestures are now recognized as vital for conveying meaning in both spoken and sign languages; and elements like mouthings and fingerspelling have regained their importance in the overarching study of sign languages' semiotics (see Kusters and Lucas [2022] for an overview).

Within this wider context of sign language research, IS holds a unique position. IS is a translingual practice that emerged during international encounters, such as those that were held in Europe since the nineteenth century (Murray 2007). IS incorporates signs from different national sign languages while also leveraging common features of sign languages, like enactment and depiction, to visualize concepts. It is thought that IS demonstrates a greater degree of iconicity than many standardized national sign languages (Rosenstock 2008). IS use varies based on geographical, political, social, cultural, and linguistic contexts, as well as the backgrounds of its users. IS is framed as a more neutral and a more transparent medium of communication than widely used national sign languages such as American Sign Language, or ASL (Kusters 2021).

Furthermore, IS is grounded in a moral imperative for cooperation; interlocutors are expected to adapt their language to enhance mutual understanding, exemplifying IS's intrinsic flexibility and variability with the central goal of achieving comprehension. This practice is central to IS functioning as a leveler or equalizer (Moriarty and Kusters 2021). Deaf people describing or defining IS often use signs that signify "adapting," "aligning," "matching," "modifying," or "calibrating."

Calibrating (see fig. 1) is an English translation of a sign used in British Sign Language (BSL) and other sign languages, which depicts a person spinning one or two dials on the body (Moriarty and Kusters 2021). This sign (two variants are shown in fig. 1) is often used to describe a person adapting when signing with someone from a different country. It can involve using signs from different national sign languages, enactments and examples, mouthings, fingerspelling, and so on. To illuminate the process of IS as calibration, I use the lens of the "semiotic repertoire." The semiotic repertoire is the range of semiotic resources that individuals draw upon to communicate, including speech, images, text, gestures, signs, facial expressions, and objects (Kusters et al. 2017).

Crucially, and perhaps unexpectedly, the term "International Sign" covers the abovementioned process of calibration *and* conventionalized repertoires that emerged as a result. Indeed, throughout the years, repeated interactions

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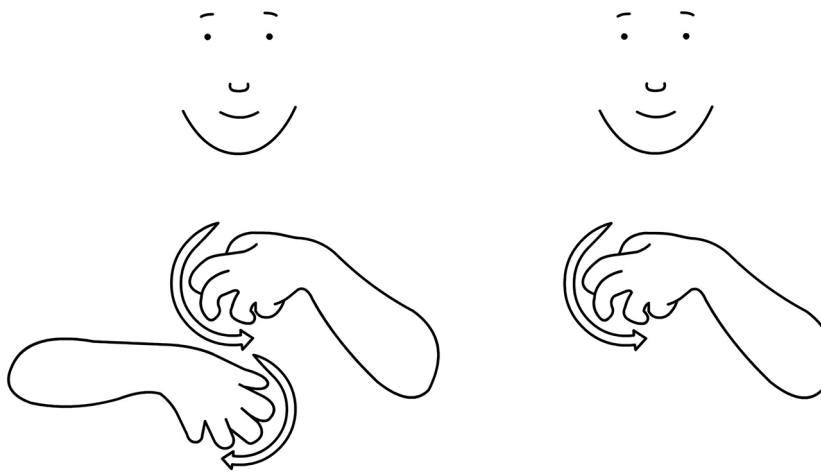


Figure 1. Sign for *calibration*, two versions

at deaf events, like the Deaflympics and the World Federation of the Deaf (WFD) Congress, have led to the emergence of common repertoires of signs. These are primarily derived from various European national sign languages and ASL. Although the used lexicon can differ based on the event type, there is overlap. Conventionalization and institutionalization have mutually reinforced each other in the evolution of IS. Its institutionalization is evident in its adoption by organizations such as the WFD and the European Union of the Deaf, its use as a language of interpretation in the United Nations and the European Parliament, and its use as a teaching medium in educational settings, including the one explored in this article.

Though conventionalized IS is increasingly being taught in classrooms, the degree of conventionalization varies, and resource availability is limited. Existing IS dictionaries often display different signs for identical terms, depending on the source. Also, in contexts like conferences, both adept users and novices calibrate their IS to better connect with their audiences or interlocutors, which shows that there is no strict demarcation between conventionalized IS and the process of calibration in these contexts. Because of the adaptability of IS, it is hard to pin it down in the ways that researchers have done with national sign languages.

Above, I mentioned the use of mouthing and fingerspelling in the process of calibration; however, studies of IS typically focus solely on signing. References to the use of resources such as fingerspelling and mouthing are scant in the

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literature on the topic. Much of the existing research on IS aims to highlight its uniqueness and distinctiveness from national sign languages. Early studies on IS praised its ability to function across borders, as it is less reliant on fixed lexicon than national sign languages and less susceptible to spoken language influences such as mouthing and fingerspelling. In addition to overlooking fingerspelling and mouthing, this also applies to references to the role of objects and technologies in the surrounding environment that are used for incorporating writing into IS communication.

Herein lies the reason for studying IS as a distributed practice, which is the aim of this article. According to Cowley (2011, 4–5), language is "neither localized within a person (or a body) nor a property of the environment" but instead is "grounded in the play of dialogue," making it a situated and local practice. The notion of distributed language challenges the notion of languages as internalized systems or individual competence and suggests that language is "embodied, embedded, and distributed across people, places, and time" (Pennycook 2018, 51). This suggests that IS is not solely limited to individual signers or the act of signing. Instead, it encompasses their engagement with technology, their act of writing on various mediums, and their collaborative efforts in communication. Using the lens of "the semiotic repertoire," I depict IS as a practice deeply rooted within language ecologies, as opposed to being a "pure signing" practice that stands apart from other sign languages and exists with minimal contact from spoken languages.

This article examines recordings of interactions that took place in an adult education classroom in the Frontrunners course (an international educational program for deaf youth) in Denmark in 2017, where IS is used to teach. The examples I analyze involve interlocutors calibrating in this international classroom where teachers and students work cooperatively toward understanding. In the process, they use technology, write on various surfaces, and offer mutual assistance, incorporating elements of three spoken/written languages.

Moving forward, I first demonstrate how the "semiotic repertoire" provides a valuable framework to study classroom interactions, along with the concept of "chaining." I draw on previous studies of signing in higher education classroom settings to illustrate how the use of signing is only one aspect of a larger set of distributed activities. I then discuss studies of IS, emphasizing that researchers have not fully treated IS as a distributed activity. After this, I provide background information about the Frontrunners program and the data collected before delving into specific examples. I conclude by reflecting on the broader applicability of the findings.

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The Semiotic Repertoire and Chaining

The "semiotic repertoire" denotes the range of resources employed for meaning-making (Kusters et al. 2017). During communication, various semiotic resources—spanning various individuals, bodily channels, and external objects—interconnect through a process called "chaining." The concept of "chaining" has been used in sign language scholarship since at least the late 1990s (Bagga-Gupta 1999; Humphries and MacDougall 1999). Initially, it was used specifically to theorize how fingerspelling was linked to signs; one of the examples given by Humphries and MacDougall (1999) includes the following sequence uttered by a teacher: VOLCANO (ASL sign)—V-O-L-C-A-N-O (fingerspelling of the English word)—"volcano" (point at printed English word)—V-O-L-C-A-N-O (repeat of the fingerspelling). Chaining thus involves connecting elements that have the same meaning but are expressed in different modalities (here signing, fingerspelling, print text) or languages (here English, ASL) either simultaneously or sequentially. In this process, translation and modality switches serve to indicate equivalence between terms, to aid understanding. In sign languages, chaining serves various purposes, such as introducing new signs or words/names, clarifying terms in conversations, and supporting language learning in classrooms (Humphries and MacDougall 1999; Tapio 2019).

Fingerspelling is commonly used in deaf education, and fingerspelling alphabets vary across countries (Padden and Gunsauls 2003). In IS, fingerspelling predominantly uses an alphabet common to both ASL and various European sign languages. However, while certain letters, such as the vowels, are more consistently represented, others like *F*, *T*, or *W*, exhibit more variation. Fingerspelling can be used to partially or fully represent words or names, and abbreviations may also be standardized (Padden and Gunsauls 2003). A common practice in many sign languages, such as BSL, includes initialized signs, which involves abbreviating fingerspelling to just the initial letter of a word, often accompanied by a mouthing—I analyze an example of this below. Signers also modulate the speed of fingerspelling for various purposes (Patrie and Johnson 2011).

Fingerspelling differs from mouthing in that it usually occurs sequentially, rather than simultaneously with the sign. Mouthing while signing or while fingerspelling is an example of synchronous chaining, which involves two connected streams of meaning distributed over two modalities (Bagga-Gupta 2004). Because of their simultaneous use with signs (although there are exceptions), scholars are divided on whether mouthings are part of signs. Some scholars have argued that mouthings form part of the phonology of sign languages (e.g., Sutton-Spence and Boyes Braem 2001). In contrast, others believe they indicate code-blending

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between signed and spoken languages. This debate has strong metalinguistic undertones, stemming from the abovementioned wish to establish sign languages as languages independent of spoken ones. Additionally, the persistence of oralism in deaf education—an educational philosophy that enforced speech upon deaf children—has fed and underlain this discussion. The close contact between speech and signing, fostered by oralism, has led some scholars to view mouthings as troubling residues of this oppressive teaching method rather than intrinsic or essential elements of sign languages (Adam and Braithwaite 2022). Recent studies based on large sign language corpora suggest that mouthing-sign pairs are generally not obligatory and that the use of mouthing reflects borrowing rather than that it is inherent to the linguistic structures of sign languages (see, e.g., Bank et al. 2016). This article discusses the flexible use of mouthings from various languages in IS, confirming the perspective that mouthing reflects borrowing.

Several sign language researchers have used the concept of chaining to study classroom interactions. In recent years, several studies have focused on higher or adult educational contexts with deaf learners. Tapio (2019) investigated a course on English reading within a higher education context in Finland. She found that participants utilized a variety of semiotic resources, including spoken words in Finnish and English, fingerspelling, typing, and pointing to words, thus exhibiting the process of chaining in their communicative activities. As an example, Tapio noted that participants adjusted the speed of their fingerspelling and mouthing while syncing them by mouthing English terms using Finnish phonetics for individual letters. As an example, they communicated about the English translation of the Finnish Sign Language sign KITARA, by fingerspelling in English (G-U-I-T-A-R) and simultaneously mouthing the word while adhering to Finnish phonological pronunciations for each letter.

Holmström and Schonström (2018) studied chaining practices at a university level as well, specifically within theoretical courses such as "Sign Language," "Swedish as a Second Language for Deaf," "Sign Language and Teaching," and "Cognitive Grammar." In these courses, the lecturer conveyed information in Swedish Sign Language (SSL) to both deaf and hearing students, while employing both Swedish and English in PowerPoint presentations. The authors specifically analyzed the range of media used in this classroom, including PowerPoint with text and figures, and written language on a whiteboard. They found that lecturers frequently used fingerspelling and mouthing in both Swedish and English, while signing in SSL or using SSL signs in Swedish order and pointing at words and sentences on the board.

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In a later study, Duggan and colleagues (2023) conducted a study on classes in which deaf migrant students (adults) learn SSL and Swedish. They identified various translingual practices, including the use of SSL and Swedish, English and ASL, as well as students' own national sign languages. Students and teachers employed a variety of strategies, such as using Google Translate to translate between Swedish and other languages, fingerspelling English words using the Swedish fingerspelling alphabet (which differs quite a lot from the alphabet used in IS), mouthing English words with a Swedish-based pronunciation (similar to the KITARA example above), writing Swedish sentences on the blackboard, and then signing them word by word while adhering to Swedish grammar. The authors found that these strategies could both aid and hinder the language learning process and that individuals who do not know European languages, English, and/or ASL may be disadvantaged due to limited opportunities to utilize or understand elements in the semiotic repertoire of the classroom. Similarly, in a study with deaf adult learners of English through BSL, Aldersson (2023) found that the written modality of English serves multiple functions, including its use in worksheets and laminated cards, as well as being signed in BSL structure. Aldersson argued that chaining plays a key role in learning English via BSL, as students frequently translate between BSL and various forms of English.

In this article, I draw from the foundational insights of the aforementioned research, applying them to the unique framework that IS presents. Importantly, these scholars have analyzed multimodal multilingual signing practices and demonstrated how elements from various spoken languages are used together. They have shown how mouthing, fingerspelling, and various types of writing are employed both on the body (as in fingerspelling) and on objects surrounding the body, such as blackboards and PowerPoint slides. However, there is an important difference between the contexts of the abovementioned studies and the current study. These previous studies were anchored in contexts where the learning, understanding or application of *structures* inherent in written languages like English, Swedish, or Finnish was important. In the context under study, where IS is used as a language of instruction, the emphasis is less on mastering sentence structures or grammatical constructs of any single spoken language. Participants are instead immersed in a diverse tapestry of signs where *individual* words or signs, drawn from varied linguistic backgrounds, become the pivotal focus of calibration, via a range of chaining processes. My research explores this dynamic, highlighting the prominence of clarifying individual signs or words in IS communication.

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Studies of IS

While sign language researchers have explored semiotic repertoires that extend beyond the use of signs, including fingerspelling, mouthing, and written text, those studying IS have yet to adopt a similar approach. One of the IS researchers' foci has been on identifying the nature of IS. Linguists have described IS using a range of labels, such as "jargon," "pidgin," "koine," and "language."[1] Scholars who called IS a pidgin emphasized the limited size of the vocabulary that emerges through repeated language contact. Calling IS a "koine" directed attention to the similarities in the grammars of national sign languages, which made the emergence of IS possible. The question of whether IS is a language, on a par with national sign languages, has also been hotly debated. Conventionalized versions of IS are considered to be more language-like, having led to some researchers stating that conventionalized IS is a *language*, calling it International Sign Language (Rathmann and De Quadros 2023). These labels emphasized different aspects of IS, but all referred to it as an entity rather than a process. The designations of "International Sign" or "International Sign Language" are used alongside process-oriented terms such as "calibration" (Moriarty and Kusters 2021), or "cross-signing" (Zeshan 2015; Byun et al. 2018), to which I return later in this section.

IS use has been studied mostly in conferences, with scholars exploring IS used by presenters or sign language interpreters. These studies are notable for their analysis of sign-based strategies and specific forms of signing within IS, such as regarding signing space, constructed action, paraphrasing, depiction, and borrowing signs from national sign languages, among others.[2] This research has significantly contributed to our understanding of the similarities and differences between IS and national signed languages. However, these studies neglected the analysis of the use of fingerspelling, mouthing, and text in IS interactions. IS is often perceived as "pure signing" and as less inclusive of elements from spoken languages, such as fingerspelling and mouthing, than national sign languages. It is commonly believed that the use of these features in IS interactions impedes people's understanding of IS, and this may have resulted in less scholarly attention on these features as well.

Most works on IS are in the form of articles and book chapters, except for Rathmann and de Quadros's (2023) book and Whynot's (2016) monograph on presentations in IS by deaf leaders at the WFD and World Association of Sign

1. Supalla and Webb (1995); Moody (2002); Best et al. (2015); Hansen (2015); Whynot (2016); Rathmann and de Quadros-Müller (2023).

2. Woll (1990); Supalla and Webb (1995); McKee and Napier (2002); Moody (2002); Rosenstock (2008).

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Language Interpreters conferences. Whynot's study involved analyzing video recordings of presentations, systematically identifying and categorizing the linguistic components of IS, such as gestures, constructed action, points, fingerspelling, and fully lexical signs. The study revealed insights into how people make sense of IS texts, highlighting the struggle to understand details while obtaining global information. While the study primarily focused on signing, fingerspelling was counted among the sign types, with Whynot noting poor comprehension of fingerspelling among her participants. However, no distinction was made between full and partial fingerspelling (i.e., fingerspelling letters versus full words/names), and different fingerspelling alphabets were not mentioned. Furthermore, Whynot's study documented the frequent use of mouthing in English but not in other languages, and it noted that the absence of English mouthing can impede comprehension.

Whynot's research provided an in-depth examination of the linguistic facets of IS within presentations. While its main emphasis was on linguistic elements and individual comprehension from IS videos, there exists a broader context. This includes the various ways presenters weave PowerPoint text into IS signing and how audiences draw upon this text, as well as interactions with fellow attendees, to achieve understanding. Whynot characterized PowerPoint slides and English captions as "visual aids . . . to fill in gaps in their understanding" (2016, 285), but there is a compelling case to be made that these components are integral, not merely supplementary, to the conveyance and comprehension of these presentations in IS. Furthermore, the collaborative way audiences interpret presentations stands as another vital component. Green's work (2014, 2015) highlighted the critical role of audience interactions in understanding IS, particularly when direct clarification from a presenter or interpreter is not readily accessible. Delving into these aspects as part of a unified, distributed practice promises to shed further light on the subject.

Similarly, Rosenstock and Napier's (2015) edited volume on IS made little to no reference to PowerPoint presentations or brokers in the audience, and there is limited discussion on mouthing and fingerspelling. While Oyserman (2015) noted the accessibility of mouthing for those who already know English, this article highlights its importance in facilitating IS communication for those who are learning English.

Research on cross-signing has paid more attention to the collaborative process of meaning-making. Cross-signing refers to ad hoc and emergent communication between individuals "who do not have any language in common" (Zeshan 2015, 211), that is, unconventionalized IS or calibration. Zeshan's (2015)

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study focused on dyadic interactions in an experimental setting, where participants used a range of semiotic means, including sign languages, gestures, pointing, and representations of writing with their fingers, such as drawing numbers in the air (as no pens or technology were available). This study was groundbreaking in that Zeshan (2015) pinpointed a range of processes of calibration.

Zeshan's study was undertaken in a room where two interlocutors sat opposite each other and could not make use of instruments or technologies. In nonexperimental environments, people's use of cross-signing draws from a more extensive semiotic repertoire that includes tools like writing instruments (e.g., pen and paper, blackboards) and technologies such as projectors, laptops and mobile phones. Also, contrary to the idea of "no shared language" (Zeshan 2015), communicators often lean on a foundational set of mutual resources. This shared semiotic repertoire might encompass some knowledge of conventionalized IS, ASL, or English, enabling connections over divergent linguistic backgrounds. In contexts like the classroom studied in this article, the collective involvement of different individuals in the calibration, together with a suite of tools like blackboards and phones, adds layers to the semiotic repertoire shaping these interactions.

Linguistic Ethnography at the Frontrunners Course

The Frontrunners course is an annual nine-month international deaf education program taught in IS at the Castberggaard Højskole (folk high school) in Denmark. The program, which has been accepting participants since 2005, is aimed at deaf youth and focuses on advocacy, sign language work, and media, among other themes. The course's language policy mandates the use of IS and written English, although many students have limited proficiency in them. The program relies on immersive, experiential learning rather than explicit instruction to develop students' skills in these languages. The program attracts participants from various countries. Three of the four deaf teachers were non-Danish, hailing from Belgium, Finland, and New Zealand.

I studied the use of IS within this program in 2017–18. I conducted linguistic ethnography, with participant observation as a central method (Rampton, Maybin and Roberts 2015). As a deaf researcher interested in language ideologies and multilingualism, I have had extensive experience with IS in international events, trips, and informal interactions. I have also given presentations and taught classes using IS. My husband is a former Frontrunner, and my initial visits to Castberggaard, in 2007, were to visit him. In the subsequent years, I taught Frontrunners as guest teacher several times. I have also cowritten a book chapter on internships and study visits for Frontrunners with some of the teachers

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(Kusters et al. 2015). These experiences led me to identify Frontrunners as a compelling case study within my multisited research on IS. My familiarity with the program, the setting and the teachers allowed me to gain access.

During the first and last weeks of the program, I took notes on my observations and directed two deaf Belgian camera operators to record everyday interactions. Filmmaker Jorn Rijckaert, who had previously worked with me on the film *Ishaare: Gestures and Signs in Mumbai*,[3] which focused on the semiotic repertoire in deaf-hearing interactions in Mumbai, was particularly attuned to the goals of this study. He frequently identified noteworthy interactions using the semiotic repertoire lens (such as people mixing multiple languages, utilizing multimodal communication, and remediating misunderstandings) and directed his camera accordingly. The second camera operator would often record the same interaction from a different angle. I also conducted case studies that focused on seven students to explore their experiences with IS and English. The case study participants ranged in age from nineteen to thirty-four years and were from various countries, including South Korea, Spain, Ireland, the United States, Jordan, the Netherlands, and Brazil.

Within the Frontrunners program, IS is used in diverse ways. The teachers use conventionalized IS; and while their lexicon is widely used in European international settings, they also use terminology specific to the Frontrunners course. The teachers are also highly experienced in calibrating their signing for international students. In addition to IS, they use English in PowerPoint presentations and in writing. The students in the Frontrunners program varied in their prior experience with IS. Some students pointed out that teachers signed too quickly because of their habitual use of conventional IS. Typically, these students had also less experience in English. Other students, mostly Europeans, had prior experience with IS from international deaf camps and sporting events, such as Deaflympics. Some of these students had also received education in English.

Filmmaker Jorn and I produced an eighty-eight-minute ethnographic film about IS use in the Frontrunners program, titled *This Is IS: International Sign Unpacked*,[4] based on recordings of everyday interactions in addition to interviews, focus groups, and fragments of lessons. This is the first episode in a series of six films on IS that are specifically focused on metalinguistic discourse on IS. The examples presented in this article are drawn from the film, with additional information added that is visible on the original recordings but not included in

3. See https://vimeo.com/142245339.
4. See https://mobiledeaf.org.uk/film/thisisis/.

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the condensed version presented in the film. The scenes in the film are also supplemented with interview excerpts to provide context for specific language choices.

The examples discussed below were recorded by two separate cameras: one focused primarily on the teacher(s) and occasionally on the blackboard and students who responded to the teacher, while the other focused on the students to capture moments of interaction among them. In the classroom, the seventeen students sat in a half-circle, and the student-focused cameraman aimed to capture where the action happened, such as students asking the teachers something, reacting visibly to something, or interacting with each other. Consequently, there were frequent camera switches in the original recordings, which caused some elements of interactions to be missed, such as the first second of an interaction or the teacher pointing to something off camera. While this means that not every aspect of the interactions was captured, the benefit of having close-up recordings is that it provides a clear view of details of interactions.

Distribution in the Frontrunners Classroom

The examples discussed in this section were recorded in one of the induction sessions during the first week of the program. Teachers shared practical information about accommodation, food arrangements, interpreters, and healthcare. During this session, Filip, the teacher from Belgium, explained that visits to the doctor needed to be arranged by phone call (*This Is IS*, episode 1, 00:24:40,[5]). Outi, from Finland, added information on healthcare culture in Denmark. In Denmark, people are not supposed to visit the doctor for a minor issue, such as the common cold. She explains (not visible in the film episode but in the original data):

> If you do not feel better after 2 or 3 days, with a rising fever and without improvement, then you can go to the doctor. In Denmark, medications are not prescribed quickly, such as for a cold. In Denmark, it is common to wait and rest if you feel unwell. Here, we do not take too many medications, as they disrupt the immune system. You need to build up your resistance. Denmark is different.

Expanding on the original text, Outi's repeated use of the phrase "in Denmark" not only situates cultural norms in a specific geographical location but also positions the teachers as experts (even if they are not Danish themselves) and

5. See https://vimeo.com/686852215#t = 24m40s; click CC to enable captions.

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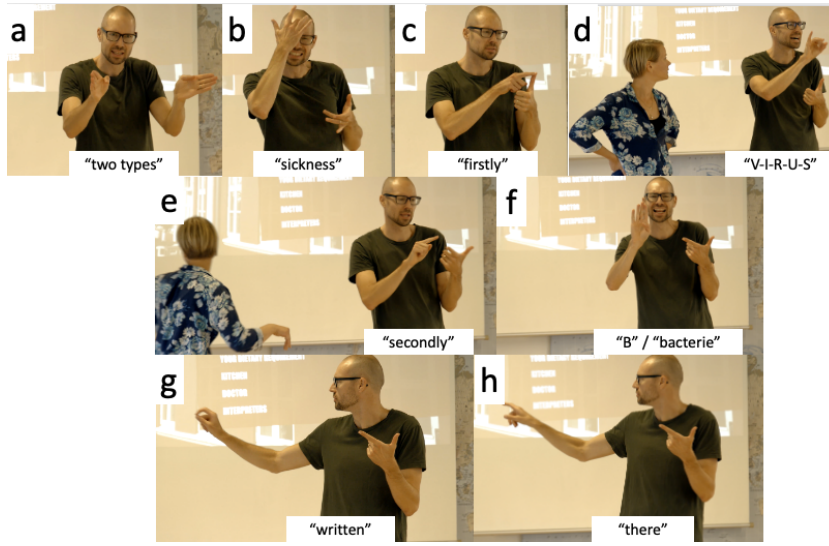


Figure 2. Screenshots from the film *This Is IS*, episode 1 (https://vimeo.com/686852215#t=24m40s).

emphasizes the need for visitors to follow established practices in Denmark. By highlighting the importance of following these practices, the teachers sought to facilitate a smooth transition for the Frontrunners and ensure that they could navigate the healthcare system effectively.

While Filip stood next to Outi, he glanced at a student who appeared to have said or asked something, but unfortunately this interaction was not captured by the recording. In any case, Filip proceeded to address the entire group in response to the student's input, signing (*This Is IS*, episode 1, 00:25:17[6]): "there are two types of sickness" (mouthing "sick"; fig. 2*a* and *b*), "the first one is V-I-R-U-S" (fig. 2 *c* and *d*). While slowly spelling "virus," he simultaneously mouthed it in Dutch, which is the spoken language he learned growing up in Belgium. The word *virus* is spelled the same in English and Dutch but pronounced differently.

There is variation in the use of mouthings across different sign languages, and in interviews and group discussions in the context of my research, the majority of the Frontrunners suggested that mouthings are less crucial in IS than in national sign languages. They argued that IS should be able to function independently, without relying heavily on connections to spoken languages, thus echoing the abovementioned metalinguistic idea that IS could be "purely signing." Despite this, a wide variety of mouthings could still be observed in their uses

6. See https://vimeo.com/686852215#t=25m17s.

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of IS. In the Frontrunners course, English mouthing was used, but even these mouthings varied, with English words often pronounced in ways that reflected the pronunciation patterns of spoken languages used in the Frontrunners' own countries. This is similar to the above discussed research by Tapio (2019) and Duggan et al. (2023), which showed that a Finnish or Swedish signer may mouth English words in a way that mirrors Finnish or Swedish phonetics. This phenomenon, common among deaf people, reflects their first spoken language's influence on English mouthings. Most deaf people have received intensive speech training in one spoken language; and when they learn other spoken languages, this learning is typically more focused on the written modality. In addition to the use of English mouthing, I observed the Frontrunners incorporating mouthings from other languages into IS, such as mouthings in French or Portuguese, whether habitually (because they use these mouthings in their national sign languages) or intentionally (because they expect the interlocutor to understand mouthings in these languages). This further highlights the diversity and adaptability of IS.

This is the wider context in which Filip sometimes used Dutch mouthing in IS. In IS, it is common for people to use mouthings that others do not recognize, yet they may still understand the signing and/or fingerspelling. Someone who knows only English might recognize the word *virus* through fingerspelling, and those familiar with Dutch and/or English may also recognize the mouthing through lipreading.

Outi, the other teacher, had been standing next to Filip, watching his signing. After Filip fingerspelled "virus" and started signing "secondly," she moved toward the blackboard to write the word *virus* down, creating a third representation of the term (fig. 2*e*). This joins the mouthing, fingerspelling, and written word in a chain and shows how different forms of representation can complement and reinforce each other. The teachers explained to me that this was a habit of teaching previous groups of Frontrunners. They knew from experience that writing a word is more accessible to many people than is fingerspelling. There are several reasons why it works better to (also) write down words in addition to (or instead of) fingerspelling. Fingerspelling is evanescent and requires people to read words produced letter by letter in real time, which can be challenging for some. Writing a word can make it more accessible, particularly when different fingerspelling alphabets are involved. In this part of the film, Esther, a Spanish student, discusses the challenges of reading IS fingerspelling due to differences in the fingerspelling alphabet used in her country, which can make it difficult for her to read IS fingerspelling.

Filip then moved on to explain the second type of illness, caused by bacteria. He did not fully fingerspell the word but instead showed the letter *B* (fig. 2*f*).

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While doing so, he simultaneously chained by mouthing the full word in Dutch: "bacterie." As before, the Dutch word for "bacteria" is very similar to its English counterpart, with only a minimal difference in pronunciation. Filip began to spell out the word more fully: "B-A-C," but abruptly stopped and turned to the blackboard, where Outi had been writing. Although the recording does not show what Outi wrote, Filip pointed to the board, signing, "It's written there" (fig. 2*g* and *h*), linking the fingerspelled letter, the Dutch mouthed word, and the English written word in a chain. He then elaborated by signing in more conventional IS: "For a virus, you cannot take medication. You just have to wait, and it will run its course. For a bacterial infection, you can take medication. You only will know by waiting a few days." Doing so, Filip chained the written word with a longer explanation to convey his message more effectively. People may not understand either representation of the word *virus* and benefit from the explanation.

One of the students, Roy from Ireland, then pointed out that light medication can be bought over the counter, and Filip agreed but noted that antibiotics are needed in cases of bacterial infections. When mentioning *antibiotics*, Filip spelled out A-N-T-I-B and mouthed "antibiotica" in Dutch, holding the *B* while mouthing "biotica." At that moment, Mark walked behind Filip as he finished spelling and wrote down the word, which completed the chain. Thus, both Outi and Mark engaged in writing on the blackboard while Filip was signing. Writing on the blackboard was a shared activity between the teachers, as the teacher who was signing did not usually write on the board. Thus, the activity of talking about healthcare was distributed across various modalities, technologies, and people. People used mouthing while fingerspelling and wrote in simultaneous actions of chaining (such as one teacher signing while the other was writing).

While words written on the blackboard can be part of a chain of representations, they are not necessarily the endpoint. As the next example shows, some students may not recognize certain written words, such as "antibiotics" (fig. 3*a*). As mentioned above, most of the seventeen students did not use English as their main reading language and were learning new words. Thus, seeing the word in its entirety made it more accessible for translation, such as by typing it into Google Translate. When a word is written on a blackboard, it remains visible for a period of time, which makes it a more durable part of the distributed repertoire. This allows further chaining through these translation apps, even after the original utterance has ended.

In the film, the camera turns to the students, and we observe Hyemi taking her phone out of her pocket while Josefine from Denmark spells the word *antibiotics*

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Figure 3. Screenshots from the film *This Is IS*, episode 1 (https://vimeo.com/686852215#t=25m17s)

for her (fig. 3*b*). It is unclear why Josefine did this, but it may have been to help Hyemi see the word more clearly, or because reading idiosyncratic handwriting is challenging, as handwriting can vary significantly depending on the writer's style. While spelling, Josefine simultaneously mouthed the full word in English, which helped Hyemi align the fingerspelling with the formation of the letters.

As Hyemi looked at the fingerspelling and lipread Josefine (fig. 3*c*), she tried to take in the word letter by letter as her mouth moved with Josefine's, but she dropped out around the second *T*. As the word *antibiotics* neared its end, Josefine turned her gaze from the blackboard to Hyemi, and at the same time, Hyemi turned to her phone to translate the word into Korean using Google Translate (fig. 3*d*). It is possible that Hyemi interpreted Josefine's gaze shift as a cue indicating that the end of the word was approaching. Moreover, longer new words like "antibiotics" may be more challenging to remember and understand in their entirety when fingerspelled (Patrie and Johnson 2011). This difficulty is shown by another example in the film (*This Is IS*, episode 1, 00:12:10).[7]

7. See https://vimeo.com/686852215#t=12m10s.

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In this example, a Frontrunner attempts to spell "Czech Republic," but Hyemi struggles and drops out at the letter *B*. In response, the other Frontrunner shifted tactics and provided an explanation of the Czech Republic's location within Europe. This interaction includes an interview quote from Hyemi that demonstrates the differences between Korean and IS fingerspelling alphabets to explain why she struggles with fingerspelling with the Frontrunners.

Because Hyemi had to train her gaze at Josefine to memorize the word before typing it in, and the word was difficult to memorize, Hyemi leaned over toward Josefine and tapped on her phone before handing it to Josefine, expecting that it would be quicker or easier for Josefine to type the word. Although the camera provided a close-up view of the two, the phone screen was not visible. Hyemi later revealed that they were using Google Translate. Josefine typed the English word *antibiotics* into the app (fig. 3*e*). After reading the translation on the phone, Hyemi understood (fig. 3*f*) and turned back to the teacher, and Josefine handed the phone back to her. In an interview in the film, Hyemi explained that focusing on translating single words unfortunately means that she misses what the teacher is saying while looking at her phone; as a deaf person she had to choose where to focus her gaze.

Hyemi therefore suggested an alternative method to keep up: taking a picture of slides or blackboards during class and translating the words later during self-study, thus extending the chain over time. Later on, Hyemi also discovered that she could use Google Translate to directly translate from written text by hovering it over the text, without the extra step of typing in the word. Through these methods, Hyemi learned different ways to chain while also minimizing the amount of missed content in class. As a Korean learner of English, she had to work harder toward understanding and employ more chains than some of her peers. Duggan et al. (2023) and Aldersson (2023) have also documented the use of mobile phone dictionaries to translate new words into languages known by deaf migrant students. They noted that this approach assumes that individuals already possess a good understanding of written language vocabulary. It is worth noting that Majdi, a Frontrunner student from Jordan, reported struggling with English learning because of weak Arabic skills. For Majdi, improving his Arabic proficiency was the first step in improving his English, highlighting the limitations of this method for students like him, who may not be as comfortable with written language.

Returning to the interaction, we observed that the practice was distributed across various languages, modalities, and people. Josefine used both fingerspelling and mouthing to refer to the word written on the blackboard, while Hyemi simultaneously mouthed while reading Josefine's fingerspelling. The use of a mobile

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phone shared by Hyemi and Josefine adds another form of English (typed rather than handwritten, fingerspelled, or mouthed), and another written language (Korean) to the chain. As a result, the word *antibiotics* appeared in Dutch in mouthings by Filip, in English in Mark's handwriting on the blackboard, in English on Josefine's and Hyemi's lips, in English in Josefine's fingerspelling, in typed English on Hyemi's phone, and then translated into Korean on this phone. Four different people were involved in the chaining of a word using various modalities such as signing, mouthing, fingerspelling, and writing. The blackboard and the phone were two key objects that played a significant role in the unfolding semiotic repertoire. Three spoken languages were used, in the form of mouthing or written communication. This example demonstrated both simultaneous and sequential chaining as well as the linking of the word to a longer explanation by Filip. In her study of similar interactions in classrooms, Tapio concluded that "these multimodal, multilingual practices are habitual practices learned culturally within visually oriented communities of practice" (2019, 9), so it is no wonder that these practices are applied within IS.

Conclusion

This article delved into International Sign as a distributed practice, yielding the following insights. First, IS exemplifies a coordinated interplay between standardized and adaptive signing, encompassing both conventional IS and calibration. This duality in IS underscores its intrinsic fluidity. The seamless transitions people make between standardized IS and IS as a more adaptive and distributed practice, coupled with the readiness of diverse actors to get involved in the calibration process emphasizes IS's ethos of cooperation.

Second, viewing IS through the lens of distributed practice unveils a more complex relationship with spoken languages than previously recognized. Teachers and students confidently wove in elements from diverse spoken languages, without tying themselves exclusively to any single one, even though mostly English is used in mouthings, fingerspelling, and written forms. This kind of integration demonstrates a versatility that resonates with other studies on distributed language in sign language using classrooms. However, in the interactions highlighted here, the focus was specifically on discrete words or signs employed within IS. A concentrated emphasis on individual words or signs became evident in the prevalent chaining practices.

Third, the observed distributed language use within the classroom is not exclusive to the current activity. The teachers' accumulated experience from previous years led them to write terms on the blackboard. Such practices have become an

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integral part of IS within this context. Further reinforcing this, my research, as showcased in the *This Is IS* film series,[8] elucidates the diverse ways IS is a distributed practice across various settings. While the classroom underscores the importance of the blackboard, conference presentations incorporate PowerPoint slides or posters (episode 3), and in informal conversations, people showcase images on their phones for communication (episode 1), write in fresh snow during a winter sports event to communicate with fellow deaf athletes (episode 6), and touch objects, such as a plant in a hotel bar to signify the concept of "green" (episode 4). Together, these varied instances underscore a key insight: IS emerges as a richly layered and distributed practice, leveraging a myriad of modalities and mediums tailored to the specific context and setting at hand.

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8. See https://mobiledeaf.org.uk/film/thisisis/.

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