Visual foreign accent in an emerging sign language

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In the study of sign language phonology, little attention has been paid to the phonetic detail that distinguishes one sign language from another. We approach this issue by studying the foreign accent of signers of a young sign language – Al-Sayyid Bedouin Sign Language (ABSL) – which is in contact with another sign language in the region, Israeli Sign Language (ISL). By comparing ISL signs and sentences produced by ABSL signers with those of ISL signers, we uncover language particular features at a level of detail typically overlooked in sign language research. For example, within signs we find reduced occlusion (lack of contact), and across phrases there is frequent long distance spreading of the nondominant hand. This novel study of an emerging language in a language contact environment provides a model for comparative sign language phonology, and suggests that a community's signature accent is part of the evolution of a phonological system.

Keywords: foreign accent, sign language, sociophonetics, phonology and phonetics, language emergence, language contact

1. Introduction

One of the conclusions of our research on young sign languages is that social characteristics of the community, such as size of community, the amount of shared context, and the range of communicative domains, can have a bearing on language structure (Meir et al. 2013). Another important social factor is the interaction between language contact and language form, which illuminates phonetic and phonological characteristics that would otherwise go unnoticed.

Our focus here is the particular way that a community forms words: its 'accent'. Investigating Al Sayyid Bedouin Sign Language (ABSL), we find that, even before a phonological system has fully crystallized (Sandler et al. 2011), certain phonetic features distinguish ABSL signers as a language community. While previous studies aimed to characterize broader, distinctive contrasts, we begin

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here, for the first time, to identify phonetic features at a finer level of resolution in sign language.

Al-Sayyid Bedouin Sign Language (ABSL) arose in a Bedouin village in the Negev desert of present-day Israel. The language with which it later came into contact is the predominant sign language in Israel, Israeli Sign Language (ISL). While the first and older second generations of signers had little exposure to other sign languages, younger signers of Al-Sayyid Bedouin Sign Language have a good deal of contact with Israeli Sign Language vocabulary, and borrow many items into ABSL. Some ABSL signers are bilingual in ABSL and a local version of ISL. Yet when monolingual ISL signers view ISL as signed by ABSL signers, they immediately notice that their signing 'looks different'. A wealth of research on spoken language demonstrates that even minute differences in pronunciation can have profound social implications (see Hay & Drager (2007) for an overview). It is such differences – the ABSL 'accent' or particular way of signing – that we describe here.

We begin in Section 2 by summarizing characteristics of sign language phonology in general that are relevant for the ABSL accent. Sections 3 and 4 provide context for the current study: Section 3 sketches aspects of ABSL phonology, and 4 touches on properties of accent in spoken and signed languages. In Section 5, the heart of the paper, we describe features of the ABSL accent. A summary and topics for future research are summarized in Section 6. We conclude with some words about Irit and why she believed this joint study is important.

2. Relevant phonological generalizations

William Stokoe (1960) showed that signs in American Sign Language (ASL) are not whole images, but are formed from discrete units of handshape, location on or near the body, and movement, and all subsequent models of ASL and other sign languages have retained this important taxonomy. The features of each category are distinctive, as shown for ISL in Figure 1. This pioneering demonstration became the basis for the field of sign language phonology (Sandler 2017), and, more broadly, for the linguistic study of sign languages. In what follows, the description pertains to sign languages generally, to the best of our knowledge.

Figure 1 exemplifies minimal pairs in each of the three major feature categories with examples from Israeli Sign Language (ISL). In Figure 1a, **Hand Configuration features** alone distinguish the two signs. Only the index finger is selected in an extended position for MOTHER; for NOON, all fingers are selected in a closed position. The major body area is the head, and the Setting features specify contact on either side of the mouth. In the second minimal pair, Figure 1b, it

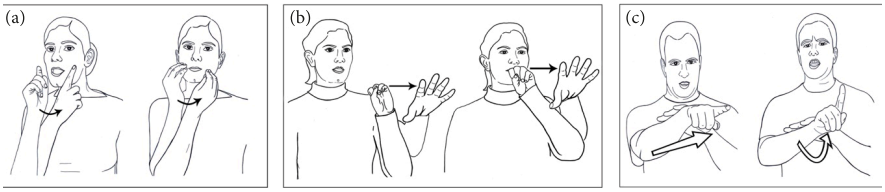


Figure 1. (a) MOTHER, NOON, distinguished only by handshape features; (b) SEND, TATTLE, distinguished by location features; (c) ESCAPE, BETRAY, distinguished by movement path shape features.

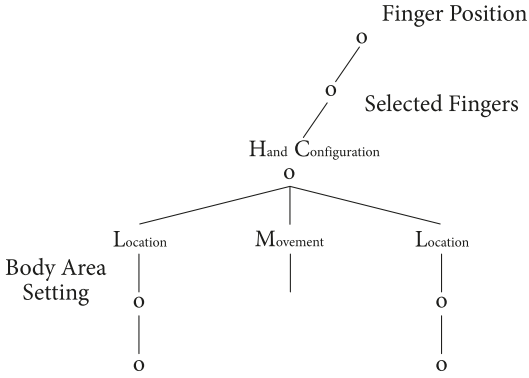
is the major body area or **Location features** that distinguish the two signs: [torso] for SEND and [head] for TATTLE; all other features are the same. **Features of Movement** involve path movement from one location setting to another, as in all the examples in Figure 1.[1] Handshape or orientation change produce internal movement (Liddell & Johnson 1989). Cooccurring path and internal movement result in a complex movement, as seen most clearly in Figure 1b, where the fingers open in an internal movement while the whole hand articulates a path movement away from the body.

In a phonological model such as the Hand Tier model (Sandler, 1989), a sign is comprised of three major categories (following Stokoe 1960): Hand Configuration, Location, and Movement. Each major category dominates subcategories in a hierarchical configuration. The **Hand Configuration** category dominates the Selected Finger category, including any finger or combination of fingers, which in turn dominates Finger Position, such as [extended] or [closed]. The Location category refers to major body areas: the Head, the Torso, or the Nondominant Hand. Location dominates the Setting category, which specifies particular places on the location, such as [ipsilateral] or [high], as well as whether the hand makes [contact] with the location. The movement category has no subcategories, directly dominating features such as [arc] or [tense]. A schematic representation is shown in (1).[2]

1. Another type of movement, internal movement (Liddell & Johnson 1989), involves either changing the finger position, as in Figure 1b, or changing the orientation of the hand. Internal movement can occur on its own or simultaneously with path movement. The combination is more sonorous than either occurring alone, as shown in (2).

2. More recent models than Stokoe's elaborate which specific features of the hand configuration, location, and movement categories are implicated in minimal pairs and other phonological phenomena. According to those models, the signs in Figure 1 are near minimal pairs rather than strictly minimal. However, it is on distinctions such as those in Figure 1 that Stokoe's work is based, and the examples suffice well for our purposes here.

(1) Schema of the Hand Tier model (Sandler 1989)



2.1 The syllable

In the canonical form of a sign, the hand/s describe a movement path from one location to another, which can be represented by a Location Movement Location (LML) template (Sandler 1989). Some researchers have proposed that the sequential structure is derived rather than underlying; readers are referred especially to van der Hulst (1993) and Brentari (1998) for this view. Assuming the LML template model here for the sake of coherence, we see that most morphological complexity – such as verb agreement and temporal aspect – involves features added simultaneously to segments of the same template (Sandler 1990). Even disyllabic combinations such as lexicalized compounds can reduce to these optimal LML monosyllables (Sandler 1999).

One characteristic regarding movement that is important for the present study, irrespective of which model is adopted, is its obligatory presence. Crucially, researchers concur that a sign syllable must have a movement in order to be well-formed, and some have suggested that some elements in the syllable are more sonorant than others (Brentari 1990, 1998; Perlmutter 1993; Sandler 1993; Wilbur 2011). Sandler (1993) argues based on ASL that the LML is comparable to CVC in spoken language, and that the LML structure reflects a sonority cycle (in the sense of Clements 1985), from least sonorous, to most sonorous. Movements form the sonorous syllable nucleus; locations that are articulated by contacting some part of the body (like the beginning and ending locations of MOTHER and NOON in Figure 1a) are the least sonorous – analogous to the stop consonants of spoken language; and movement segments with both path and internal movement (as in SEND and TATTLE in Figure 1b) are the most sonorous. Going from least to most sonorous, the sonority hierarchy is shown in example (2). We will see in Section 5 that ABSL has different sonority properties.

(2) Sonority hierarchy (adapted from Sandler 1993)
Contacting locations > non-contacting locations > internal movements > path movements > path and internal movements together.

2.2 Constraints and phonological processes

Two constraints on phonological form found across sign languages are relevant here: the selected finger constraint (and its corollary, the unselected finger constraint) and the symmetry constraint.

Certain fingers are specified in any (monomorphemic) sign. Even if their position changes, e.g., from closed to open, as in ISL SEND and TATTLE (1b), all of the selected fingers behave the same way (Mandel (1977) for ASL). This is known as the Selected Finger Constraint. The fingers that are not selected – the unselected fingers – are also constrained. According to the Unselected Finger Constraint (Corina (1993) for ASL), these fingers must be in a position which contrasts with that of the selected fingers. If the selected fingers are open (extended), the unselected fingers are closed (curled into the palm), as in MOTHER (Figure 1a) and BETRAY (Figure 1c), and vice versa, as in the ASL F -handshape (shown in Figure 5a below), in which the selected index finger is closed to the thumb-tip, and the unselected fingers are open. The contrasting position of the unselected fingers presumably enhances the perceptual salience of the selected fingers.

In his influential treatment of morpheme structure in ASL, Battison (1978) stated robust constraints on signs that use both hands (about half the signs in a sign language lexicon). In one common type of two-handed sign, the two hands both move, as in ISL DONKEY (see Figure 9a below). In such signs, Battison's Symmetry Condition states that both hands must have the same hand configuration and perform the same movement, either synchronized (at the same time) or alternating (first one hand then the other).

Triggered by its lexical specification as a two-handed sign, the nondominant hand optionally can spread (Liddell & Johnson 1986; van der Hulst 1993; Nespor & Sandler 1999).[3] The constraints on this spreading are relevant for our accent study. Spreading means that the nondominant hand, configured and located as

3. Here we discuss only prosodically/phonologically motivated spreading of the nondominant hand. Nondominant Hand Spread is a strictly phonological process triggered by a two-handed sign and applying within a prosodic domain. We do not deal here with discourse-related functions in which the nondominant hand signifies a meaningful element, or expressions in which the two hands simultaneously sign different events, all of which have different properties (Liddell 2003; Sandler 2012).

specified for the triggering two-handed sign, can appear prior to the sign that it belongs to (regressive spread) or following that sign (progressive spread).

An example from ISL is attested in a sentence meaning 'I told him to bake a tasty cake, one for me and one for my sister', glossed [I TELL-HIM] $_{\varphi}$ [**BAKE CAKE**] $_{\varphi}$ [TASTY] $_{\varphi}]_{I}$ [ONE FOR-ME] $_{\varphi}$ [ONE FOR SISTER] $_{\varphi}]_{I,}$where 'φ' stands for a weaker, phonological phrase boundary, and 'I' stands for a stronger, intonational phrase boundary (Nespor & Sandler 1999). In the example, the nondominant hand that is part of the sign BAKE retains its handshape and location throughout signing of the following, one-handed sign, CAKE, as shown in Figure 2.

Crucially, in the Nespor & Sandler data, spreading is constrained; it does not cross phonological phrase boundaries. In our example here, the nondominant hand spreads only to CAKE, within the phonological phrase, but does not spread to the preceding phrase, [TELL-HIM], or to the following phrase, [TASTY].

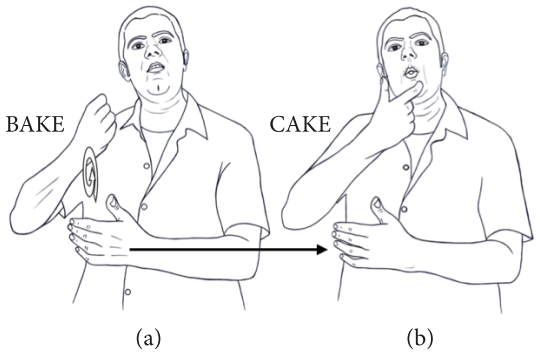


Figure 2. Nondominant Hand Spread in ISL. (a) shows the two-handed sign BAKE, and (b) shows the one-handed sign CAKE, with nondominant hand spread from the preceding sign, within the same phonological phrase, [BAKE CAKE] $_{\varphi}$.

This sort of external sandhi – assimilation across words – within the boundaries of a prosodic constituent is found in spoken languages, for example, in the process known as *liaison* in French (Nespor & Vogel 1986).

Relevant phonological phenomena are summarized in (3).

(3) Some relevant characteristics of sign language phonology
   a. The canonical form of a sign contains a path movement (conforming to a Location-Movement-Location (LML) template).
   b. Sonority profile: Syllables must have movement, and syllables with both path and internal movement (simultaneously) are more sonorant than those with only one of these two movement types.
   c. Selected and unselected fingers have opposing positions, and all fingers of each group must have the same position.

d. In two-handed signs in which both hands move, the two hands must have the same configuration and articulate the same movement/s and location/s.
e. Spreading of the nondominant hand of a two-handed sign is bounded (in ISL) by a prosodic boundary (the phonological phrase).[4]

3. Language context and the birth of Al-Sayyid Bedouin Sign Language

Israeli Sign Language (ISL) was formed as a kind of creole (Meir & Sandler 2008), beginning in the 1930s, expanding and becoming conventionalized over time. Today it is used with signing deaf children in the education system, in certified sign language interpreting, and in associations and organizations that serve deaf people. ISL is by far the most widespread sign language among deaf people in Israel, but it is not the only one.[5]

Among the five village sign languages identified in Israel, the highest percentage of deaf people is found in the Bedouin village of Al-Sayyid (Meir et al. 2013). Beginning in the 1930s, when four deaf siblings were born into a family of hearing parents and siblings in the village, today, there are approximately 130 deaf people across four generations, in a village of about 4,000 (Kisch 2008). There is no stigma against sign language, and use of sign language is widespread by hearing as well as deaf people. ABSL functions as a fully-fledged language, in which people express themselves freely and without hesitation on a wide range of topics, from life histories to nearly forgotten folk remedies, dreams, national insurance, suspicions, cooking, and wedding preparations.

A phonological system had not yet crystallized in the language of the first four age groups studied (Sandler, Aronoff et al. 2011). The investigators found no minimal pairs, and a great deal of variation. In terms of phonology, this variation extended across familiar major phonological categories in established sign languages, such as phonemically contrastive handshapes and locations (Israel &

4. Brentari & Crossley (2002) found different distribution for spreading in ASL. However, their methodology and coding conventions were different, so that it is difficult to compare the findings to those for ISL.

5. There are two other sign languages apart from ISL found among Jews in Israel. One is Algerian Jewish Sign Language (AJSL), still used by a remnant of the community of deaf Jews who emigrated to Israel in the 1950s and 1960s from the town of Ghardaia, Algeria (Lanesman & Meir 2012). The other is Russian Sign Language, brought on the wave of emigration to Israel of one million Jews from the Former Soviet Union (FSU), mainly within one decade, from 1990–2001. RSL is still used in this community, especially among older people and within deaf families. Both communities have adopted ISL, but RSL is a heritage language for FSU signers from deaf families born in Israel, a phenomenon waiting to be investigated.

Sandler 2011), in addition to minor differences that might be considered phonetic variation – implying that phonological (phonemic) categories may not have fully crystallized.

Another characteristic of ABSL is the existence of signs with no movement at all (Sandler et al. 2011; Sandler 2011). Such signs would violate well-formedness in other sign languages. All in all, the researchers concluded that phonological form had not crystallized in this language. On the whole, the team found that the phonology as well as the morphology, syntax, and discourse structure of ABSL are all in a state of flux, moving toward conventionalization very gradually, and tolerating a good deal of variation at all levels (Meir & Sandler 2020). Nevertheless, the researchers witnessed the beginnings of phonological and other levels of linguistic organization in the language, and readers are referred to publications on the language for details.

4. Accent in speech and sign

"You wuz my brotha, Chahlie, you shoulda taken care-o' me … I coulda been a contenda! …".[6] These immortal words, spoken by Iowa-born actor Marlon Brando playing boxer Terry Malloy in the 1954 movie *On the Waterfront*, identify the character's roots in the working class of New Jersey. Like accents of region and of social class, non-native foreign accents are also instantly detected by native speakers, even if the foreign language of origin is not always easily identified. Pietraszewski & Schwartz (2014) argue that different accents are a barometer of social history and identity, and claim that "the human mind contains systems for categorizing others according to their accents". When Israeli Sign Language signs appear in vocabulary tasks and in narratives, ABSL signers are unequivocally perceived by ISL signers as "signing differently" – as having an accent. The fact that this accent is so salient, even before the language has a fully-fledged phonology, shows just how basic this linguistic signature of our identity must be.

4.1 Phonological and phonetic basics of foreign accent

Foreign accents have myriad characteristics, many of them resulting from speaking L2 with aspects of the phonological and phonetic systems of L1 (Major 2001). First of all, the phoneme inventory of L1 may be different from that of L2. Hebrew

6. The phonetic transcription of the movie character's words is: [ju wʌz maj brʌðə ʧali, ju ʃʊdə $t^{h}e^{j}$kən k^{h}eəɹ ʌ mi. aj kʊdə bɪn ʌ kəntɛndʌ], and in plain English orthography: 'You was my brother Charlie, you should have taken care of me. I could have been a contender.'

but not English has the voiced uvular fricative [ʁ]; English but not Hebrew has the voiced alveolar approximant [ɹ]. L2 speakers of either language often substitute a sound from their own inventory for the alien sound. Second, stress patterns may be very different, and can carry over from L1 to L2. Phonological alternations also transfer readily to a foreign language. English speakers typically reduce unstressed vowels to schwa, as in English, when speaking a foreign language that preserves full vowel quality in the relevant environment, and the opposite is also true: a speaker of Hebrew may preserve full vowel quality in English, whether or not a vowel is stressed.

In fact, it is often possible to learn a good deal about the phonology of any language by carefully observing the accent of speakers when speaking a non-native language. In this sense, 'foreign' accent is also a signature phonetic pattern of a native language. How strong an accent a person has in a foreign language varies with proficiency and age of acquisition, as well as other variables.

An accent is felt when the 'same' sound is pronounced slightly differently in different languages (Lehiste 1988). For example, coronal stops are found in most spoken language phoneme inventories, but they are not all pronounced the same way. In English, [t, d] are pronounced with tongue tip touching the alveolar ridge (shown in Figure 3a), while in French, Hebrew, and other languages, the tongue tip touches the teeth, as shown in Figure 3b, producing different acoustic results.

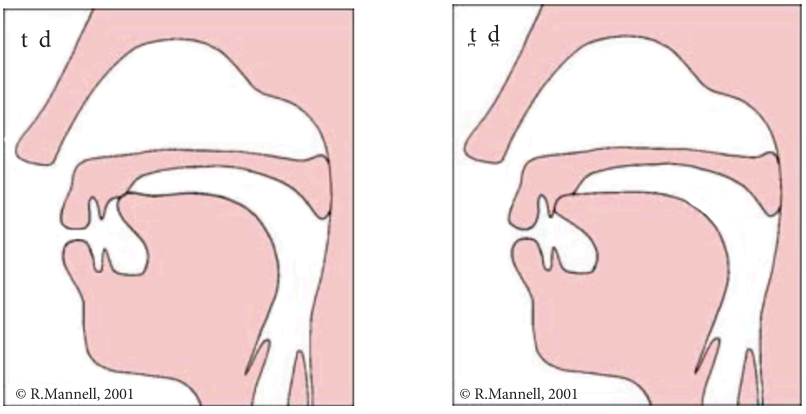


Figure 3. Different coronals in different languages: (a) alveolar and (b) dental (Figure reprinted with permission from Robert Mannell).

Such sounds are characterized by the same phonological place features, [+coronal, +anterior], although they are phonetically different. And no Hebrew speaker would misunderstand an English speaker's pronunciation of [t] in *Tel Aviv*, because the difference in pronunciation of the coronal is not contrastive

in Hebrew.[7] But s/he would perceive an accent that is 'somehow' foreign. Similarly, prosodic features such as deaccenting old information (or not) can carry over from L1, resulting in an accent in L2. Any of these properties can distinguish regional or social dialects within the same language, as illustrated by Marlon Brando as Terry Malloy. Regional, social class, and foreign accents each identify speakers as members of a language community. In Section 5, we will show what can constitute a foreign accent in a sign language.

In the case of a new language-in-the-making like ABSL, there is a good deal more variation within the community than in more established languages, so that identifying a phonological category inventory is not possible. Yet, we find consistent differences in pronunciation between these signers and ISL signers, differences that could well develop into phonological regularities over time. These features have not previously been attended to in sign language research. While more quantified studies than we were able to provide with our data are essential, our results suggest here that it is time to go beyond phonemic/phonological description, and attend to finer detail in distinguishing sign languages from each other, and in tracing the development of phonological systems. We offer the particular features we identify here as a good place to start. The phonetic/phonological system of a language can be accessed intuitively by comparing the borrowed signs of the target community with those of native signers and observing 'accent' patterns in the target community of Al-Sayyid. This study takes a first step beyond the few observations that have been made in the past, toward identifying a foreign accent in a sign language.

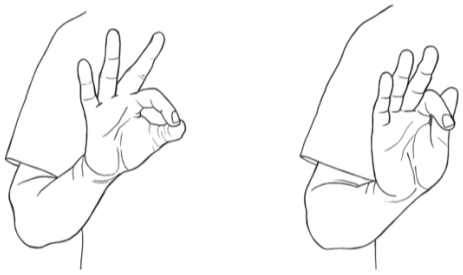
4.2 Accent in sign languages

Other researchers have noted that not all sign languages look alike. In their seminal book about ASL, Klima & Bellugi (1979) noted that the formational constraints of Chinese Sign Language (CSL) were different in some ways from those of ASL. For example, the ASL handshape commonly referred to as A consists of a closed fist, with all knuckles bent, and the thumb straight and adjacent to the radial side of the hand. In the 'same' handshape in CSL, the top knuckle is not bent. In neither language are such features contrastive, yet they allow us to distinguish the two languages. The difference seen in CSL and ASL A here apparently

7. While Hebrew speakers pronounce 'Tel' of Tel Aviv [tel], with a dental [t], the American foreign accent version [t^hɛl] has other differences besides the alveolar coronal. These differences do not make contrasts in Hebrew, and are only perceived as somehow 'American.'

involves a phonetic feature of accent, whether closed shapes involve bending at two knuckles or three.[8]

In a study of the foreign accent of signers of the sign language of Mexico (LSM) who interact with ASL signers across the U.S.-Mexico border, Quinto-Pozos identified a difference in the way the handshape commonly called F is produced (Quinto-Pozos 2008). In ASL, the index and thumb tips touch, while in LSM, contact is made at the first knuckle, as pictured in Figure 4. The description implies that languages may differ in the place of finger contact with the thumb, either fingertip contact, as in ASL, or contact at the first knuckle, as in LSM.



(a) (b)

Figure 4. The handshape F (a) in ASL and (b) Mexican SL (Quinto-Pozos 2008).

5. The ABSL signature accent

The nature of the contact situation is described in Section 5.1, followed by a description of the data in Section 5.2. We then go on to describe and exemplify six features that characterize the ISL signing of ABSL signers, both within signs (Section 5.3) and across signs (Section 5.4).

5.1 Contact with ISL

Until about a decade ago, deaf children from Al-Sayyid attended a mixed deaf school (Jewish and Bedouin children) in Beer Sheva, where ISL was used. Now, small children are schooled in special classes in the village, and from middle school on most of them go to Arab sector schools in nearby villages. As a group, their exposure to vocabulary from ISL is wide, but typically inconsistent and lacking in the grammatical structure of the language. In school, the teachers use sign-

8. See Schembri & Lucas (2015, and references therein) for a collection of articles about regionally and socially determined variation in sign languages.

supported spoken Arabic, accompanied by ISL signs, with widely varying degrees of accuracy. Some of the deaf men in Al-Sayyid did have extended exposure to ISL in their late teens when they attended a mixed vocational high school (Jewish and Arab pupils with ISL signing deaf teachers), now closed down. Some young people seem to use predominately ISL vocabulary, although this has not yet been quantified. Whether they have a kind of creole or mixed language on their hands (literally and figuratively) remains to be determined.

Part of the reason for ISL signers' observation that Al-Sayyid ISL 'looks different' is that the ABSL signers do not use grammatical constructions of ISL consistently or at all (see Aronoff et al. 2004; Padden et al. 2010). But the main reason for this impression is not **what** ABSL signers sign, but **how** they sign – their foreign accent.

5.2 The ABSL accent data

Our data come from two sources. One is a vocabulary study in the Al-Sayyid village. We compared the citation form of six ISL signs that we identified as different in form, elicited from 21 signers (7 ISL signers and 14 ABSL signers). The vocabulary results involve certain constraints as well as phonetic details shared among the ABSL signers but not by the ISL controls.

The other source consisted of two narratives by young women (each about 20 years old) who have no relation to or contact with each other.[9] We compared their narratives with the same narrative signed by a native ISL signer, aged 40. One ABSL woman, R, signed to her deaf sister in her natural language, which contains a primarily ISL lexicon. This is Narrative A. The other young woman, F, stated that she would intentionally sign ISL (to her deaf brother), which she said she prefers over ABSL, to provide Narrative B.[10] A research assistant in our lab, D, a native ISL signer from a large deaf family, viewed the stories on videotape and transcribed them in glossed form. Without explaining that we were interested in accent, we asked her to internalize the stories, and then sign them from memory

9. We do not rule out the possibility that the features we identify in these young women are typical of women's signing, and might not be found in men – especially considering traditional social separation between the sexes in the village. Future research should include more signers, including men.

10. Narrative A (of signer R) is 47 seconds long, and it contains 93 signs, and the length of Narrative B (of signer F) is 24 seconds, and it contains 73 signs.

in ISL.[11] We then compared production of the same two stories by the ABSL signers and the ISL signer, Narrative A (D) and Narrative B (D).

ABSL accent features can be grouped into two categories: (1) within signs, discussed in Section 5.3, and (2) in connected signing, discussed in Section 5.4.

5.3 The ABSL foreign accent within signs

The first feature in this category involves what we are calling **back of the hand salience**, or **dorsal salience**. This means that the back of the hand faces the addressee (and the palm faces the signer). ABSL signers are more likely to exhibit dorsal salience in signs which in ISL have fingertip, radial, or ulnar salience. This characteristic was especially apparent in the narratives, where the back of the hand was salient in 68% of the video frames of the ABSL signers, compared with 38% percent for the same narrative signed by the ISL signer. An example is the sign EXACTLY, taken from Narrative A, shown in Figure 5. It is the overall impression that is relevant here, distinguishing the 'look' of signing by members of the two communities.

(a) (b)

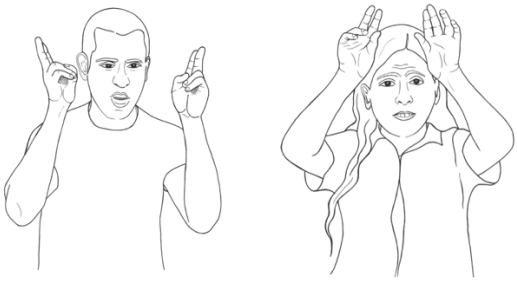
Figure 5. Dorsal hand salience. The ISL sign EXACTLY (a) in ISL and (b) signed by an ABSL signer.

An example of the sign DONKEY in Figure 6ab, illustrates two other phonetic differences between ISL and ABSL signing, The first is **hand tenseness/laxness**. ABSL signers use observably more lax handshapes than ISL signers for the same

11. The ISL signer's version of Narrative A (A(D)) is one minute and 21 seconds long, and it contains 121 signs, and her version of Narrative B (B(D)) is 39 seconds long, and it contains 68 signs.

signs. In an in-house preliminary study of the vocabulary data in our lab, Kastner (2011) developed an impressionistic three-point scale to describe how lax or tense the hand was (1 – *tense*, 3 – *lax*). The factors influencing the coding were rigidity of the fingers throughout the sign; fullness of the extension, flexion or bending of the fingers; and how much the hand configuration was preserved during movement. The results showed that if the selected fingers are extended in the ISL sign, they will be relaxed/slightly curved in Al-Sayyid signers.

In addition, ABSL signers **violate the unselected fingers constraint more than ISL signers**; while the unselected fingers in ISL are typically in an opposing position to those of the selected fingers (see constraints in (3)), in ABSL, this distinction is often much less sharp, with both finger groups lax. In the ABSL production of DONKEY, the selected fingers (index and middle fingers) are lax, compared to those of ISL, and the unselected fingers, rather than being closed, are lax as well. This example also demonstrates another characteristic of ABSL – **violation (or relaxation) of the Symmetry Constraint** (Battison 1978), since the two hands are not configured symmetrically.



(a) (b)

Figure 6. DONKEY (a) in ISL and (b) signed by an ABSL signer; violation of constraints on Selected Fingers, Unselected Fingers, and Symmetry.

Another accent feature involves differences in movement – the syllable nucleus of the sign. Unlike dorsal salience and tenseness, which are noncontrastive and presumably not part of the phonology, this movement feature is phonologically relevant. As noted, we found in our earlier study of ABSL phonology, briefly described in Section 2, that movement is not obligatory as part of a sign in ABSL, so that a sign can consist of a single location segment. And indeed, the vocabulary comparison (which included both native ABSL signs and borrowed signs for the ABSL signers) revealed that about 10% of the Al-Sayyid participants' signs had no movement, compared with no such signs for ISL signers.

In ISL, as in ASL, signs can have complex movement: both a path movement from one location to another and a simultaneously executed internal movement, consisting of a change in either Finger Position or palm Orientation. SEND and TATTLE (Figure 1b) are such signs. When movement is present in ABSL, it is simpler than in ISL. We call the phenomenon **movement simplification**.

In the vocabulary study, signs that have complex movement in ISL, such as FLOWER, with a path movement upward simultaneously with an opening of the fingers (Figure 7a), is reduced by ABSL signers to the opening movement alone at a single location, as in Figure 7b. In fact, in ABSL, we have not found path and internal movement together in any signs, either in the vocabulary or in the narratives. Such ISL signs are typically reduced by ABSL signers to an internal movement (Figure 7b), or to a path movement only.

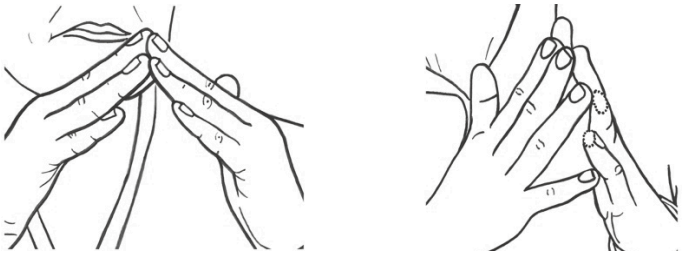
The ABSL system allows only simple movement or no movement, and this is what we see in the accent in ISL signs. This appears to be a typical example of foreign accent, in which a phonological characteristic of one language is carried over into the foreign language. In narrative B, described in the next section, we found the opposite simplification pattern. The sign ATTRACTIVE (not pictured here), signed in ISL with a path movement toward the signer and an extended-to-curved internal movement of the fingers (similar to WANT in ASL), was signed by the ABSL signer with static curved fingers, and path movement only. The point is that complex movements are simplified. This implies that movement in general is simpler for ABSL signers – with signs either lacking movement entirely or dropping internal movement in signs that in ISL have both path and internal movement.

(a) (b)

Figure 7. Movement simplification and dorsal salience in the ABSL accent. (a) ISL FLOWER; (b) ABSL production of FLOWER.

In the narrative study, we found that point of contact of the signing hand/s with another part of the body (including the nondominant hand) also differs in the ABSL accent. Signs that make contact with the tips of the fingers in ISL often have **finger pad contact** in ABSL, as shown for HOME, taken from Narrative A, in

Figures 8ab. That is, instead of making contact with the tips of the fingers, it is the finger pad – the fleshy underside of the top joint of the finger – that makes contact with some part of the body. We have not quantified this feature because there were too few potential candidates in our data, but the instances that did occur were visually striking, and offer a sign language analog to the two types of coronals shown in Figure 4.



(a) (b)

Figure 8. (a) ISL finger tip contact, signed as (b) finger pad contact by Al-Sayyid signer.

These examples illustrate three accent features. First, we see that the ISL sign has complex movement consisting of a path movement upwards from the torso to the face, with a simultaneously articulated opening internal movement of the fingers. In the ABSL pronunciation of FLOWER (Figure 7 above), there is movement simplification in which the hand remains at the chin location, executing only the internal finger-opening movement, but no path movement. Second, while the radial part of the hand is salient in ISL, exemplified in EXACTLY and FLOWER, it is the back of the hand that is salient in the ABSL signers' versions of these signs. Third, finger pad contact is used in the ABSL accent, substituted for fingertip contact. This third feature was most apparent in the narratives, to which we turn now.

5.4 The ABSL foreign accent in connected signing

In connected speech, prosodic breaks divide up the language stream into constituents, such as phrases, clauses, and utterances (e.g., Kaisse & Shaw 1985; Nespor & Vogel 1986). Sign languages are no different; in order to be interpretable, the language stream must be broken into constituents at different levels of the prosodic hierarchy. Intonational phrases in sign languages are marked by final lengthening (Sandler 1986; Perlmutter 1992; Nespor & Sandler 1999, among others), by blinks (Baker & Padden 1978; Wilbur 1994; Nespor & Sandler 1999), as well as by change of head position and change of facial 'intonation' (Nespor &

Sandler 1999; Dachkovsky & Sandler 2009; Sandler 2009; Sandler 2011).[12] ISL and ASL have similar ways of delineating prosodic constituents, although the facial intonation is different in interesting ways (Dachkovsky et al. 2013).

Nespor & Sandler (1999) established that ISL prosodic boundaries are marked by particular signals. Intonational phrase boundaries – big breaks, e.g., between *if* and *then* clauses in conditional sentences – are typically marked by word-final lengthening, amplitude, or pause, together with a change in head position and facial expression (see also Dachkovsky & Sandler 2009), while smaller constituent boundaries (e.g., phonological phrases, roughly corresponding to syntactic phrases such as the noun phrase *the new apartment*) are marked as well, but by less salient signals.

Conversely, the overall impression of connected signing in ABSL narratives is one of fluidity across signs throughout a narrative. Part of this is due to less conventionalized marking of prosodic phrase boundaries. While younger signers are more likely than older signers to mark boundaries by characteristic features of final lengthening or pause on the hands, together with face and head position changes (Sandler, Meir et al. 2011), this is still not fully conventionalized across the community. In the signing of the two young women in the present study, prosodic constituents were not marked consistently and therefore the narratives were often difficult to parse, and phrasing had to be inferred from the meaning of the signs and their combinations, or from idiosyncratic markers such as change of mouth shape. Yet, the signing does not appear choppy; instead the narratives flow.

Two characteristics in particular contribute to this sense of fluidity, both of them types of assimilation or external sandhi. The first is **frequent and unconstrained nondominant hand spread** (external sandhi) in both directions, and the second is a tendency to approximate contact rather than to fully occlude, which we call **lenition**.

In Section 2.2, we described an external sandhi process (reported in ASL and in ISL) in which the nondominant hand from a two-handed sign either appears in the signing space before the two-handed sign (regressive spread) or remains in the signing space after it (progressive spread) – in both cases, maintaining the hand configuration and location of the triggering sign. In ISL, this Nondominant Hand Spread is bounded by a phonological phrase boundary; it does not spread past the boundary (Nespor & Sandler 1999). We stress that this is a phonological process, in which the nondominant hand maintains the shape and location from the triggering sign.

12. Many other researchers have observed and analyzed such nonmanual behaviors (e.g., Wilbur 2000), but they have not always attributed them to prosody.

The nondominant hand is in fact very salient in the narratives of the ABSL signers. The impression is that the nondominant hand almost constantly anticipates or maintains the handshape and location of neighboring two-handed signs, rarely relaxing or assuming a rest position. Since ABSL prosodic boundaries are often undetectable or blurred, we compared nondominant hand spread in the narratives simply by counting the percentage of two-handed signs that triggered spread in the two ABSL narratives and the ISL versions of the same narratives.

We found that nondominant hand spread was triggered by 52.5% of the two-handed signs (22 out of 40 two-handed signs) in Narrative B of the ABSL signer, showing a strong tendency for the nondominant hand to appear in the signing space, prior to, or following the production of the lexical sign throughout a narrative. This compares with only 20% of the two-handed signs that triggered spread in the same ISL narrative (7 out of 35 two-handed signs). For the most part, the nondominant hand for the ISL signer participates in productions of two-handed signs – spreading only optionally, and not beyond a prosodic boundary.

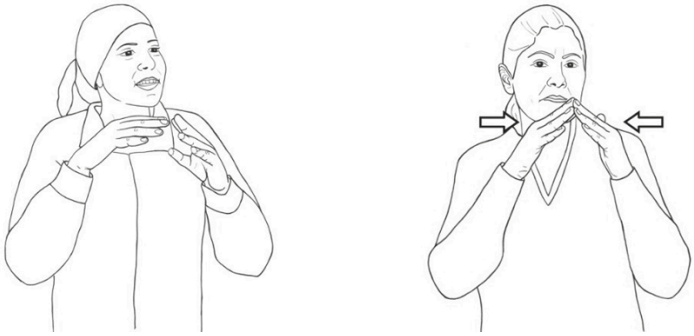
For example, in the sequence, HOME CLEAN as signed by an ABSL signer, shown in Figure 9ab, the nondominant hand maintains the shape and location of the two-handed sign HOME during the signing of the following one-handed sign, CLEAN. In the same sequence from the same part of the narrative, the ISL signer's nondominant hand does not spread; it relaxes and drops in the signing space (Figure 9cd). In both examples, there is a change in facial expression and head position between HOME and CLEAN, signaling a phonological phrase boundary, which typically blocks spreading in ISL, and indeed blocks it in the ISL example here. This frequent spread of the nondominant hand in the narratives of the two women gives an impression that might be compared to harmony in spoken language. In Figure 9, the sign HOME also shows fingertip contact in ISL and finger pad contact in ABSL, described in the previous section.

Figure 9. Nondominant hand spread across a phonological phrase boundary (a-b) in ABSL; (c-d) no spread in ISL.

The other accent feature that we discovered in connected signing is also a type of external sandhi and, like nondominant hand spread, serves to add to the impression of fluidity. It is a tendency to avoid contact with the body that is lexically specified for a sign. For example, in Narrative A, several instances of the signer's production of HOME deleted the contact between the two hands entirely, to produce a sign in which the hands approximated contact with other, without making contact, shown in Figure 10. The ISL signer, however, did not delete the contact between the two hands in any of the eight instances of her production of HOME.

We found that the ABSL signer in Narrative A avoids contact with the body in over 12% of the occurrences of signs that are lexically specified for contact with the body in ISL (four signs out of 32 signs which are specified for contact). The ISL signer avoids contact in only 2.4% of the occurrences of the same signs (one out of 41 signs). In narrative B, the results are also striking. The ABSL signer avoids contact with the body in 24.3% of the occurrences of signs that are specified for contact with the body (nine signs out of 37 signs), compared with the ISL signer, who avoids contact with the body in only 3.4% of the occurrences of the same signs (one out of 29 signs).

This appears to be akin to **lenition** in spoken language, in that the underlying segment with contact (a 'stop' or occlusion – see the sonority hierarchy in (2) above) becomes an approximant between movements when there is no pause or other boundary between them. By analogy with spoken language, these features suggest that approximants can be added to the phonetic inventory of ABSL. In some cases, a sign specified for contact is signed in neutral space with only a short movement in the direction of a specified body location, where the contact is supposed to take place. We have noticed this tendency to avoid full contact with the body in other ABSL narratives as well, by men as well as by women.



(a) (b)

Figure 10. (a) exemplar of ABSL signer's HOME, with lenition, compared to (b) the ISL sign in the same context, with full contact.

To sum up, features of the ABSL accent that we have identified and discussed here are shown in Table 1.

Table 1. Features of ABSL accent in ISL signing

Within signs	Connected signing
Dorsal salience	Frequent, unconstrained nondominant hand spread
Lax handshapes	Lenition (approximation to contact)
Movement simplification	
Finger pad contact	

6. Summary and conclusion

Only in young sign languages do we have an opportunity to see how accent, phonetics, and phonology interact in the emergence and transmission of language. In sign languages, the directly observable articulations **are** the language signal, and the differences between ISL and ABSL 'pronunciation' can be perceived directly. We do not have to glean the differences indirectly, as is the case with the motoric-acoustic disconnect in speech. Both because of this trait and because of their youth, sign languages offer unique insight into more general properties of language and its emergence.

To date, phonological differences across sign languages have been limited to a few relatively peripheral divergences in handshape inventories. Our treatment of accent identifies several within- and across-word characteristics, illustrating what is 'different' about ABSL signing of ISL. Future research on more data in this and in other language contact situations will help to make the study of accent in sign languages more rigorous. Beyond accent, the previously unnoticed details of utterances in different sign languages identified here can be a starting point for more fine-grained analyses of phonetic and phonological form in sign languages in general.

The existence of a phonological **system** for conveying words and utterances is a hallmark of human language, identified as one of its basic design features (Hockett 1960). The work on ABSL suggests, first of all, that phonology is not 'given', but emerges gradually (Sandler et al. 2011). Here we have added another piece to the puzzle of language emergence by showing that any language community will develop an in-group way of talking or signing that identifies them as a group.

One might ask whether we can attribute accent features to the language, in a community with much more phonological variation than we usually find in a more established language setting.[13] Our response is twofold.

First, we point out that it is now believed by many that there is a good deal of variation among speakers of established languages. While variation could sometimes be attributed to phonetic 'implementation', the line between phonological and phonetic features is constantly being challenged. While structuralist and later generative models of phonology assume (overtly or tacitly) that the distinction between phonological and phonetic features is clear, there is now a general understanding that the distinction should not be taken to be absolute, and that the relation between phonetic details and phonological forms and rules should be explored in order to understand phonological systems. The phonetic basis of phonological generalizations was supported quite early on (Archangeli & Pullyblank 1994), and a large body of research suggests much phonetic variation in what had often been described as categorial phonological distinctions and processes (e.g,, Browman & Goldstein 1992; Bybee 2001; Pierrehumbert 2001, among many others).

Second, while spoken language linguists have had the luxury of working with well-established languages, and assuming fully organized phonological systems in those languages, it is actually unknown which comes first in language: phonetic 'styles' or phonological organization. Here, we throw caution to the wind and study the phonetic style, which we call 'accent', before we can know whether any of these tendencies will eventually be phonologized in ABSL. It is reasonable to assume that phonological organization in a new language begins with what look like phonetic tendencies, and that these tendencies eventually can conventionalize into more systematic organization. This study raises the important question of which specific tendencies will conventionalize and provides some starting points for answering it.

As Docherty and Foulkes wrote, the 'indexical' function of accent interacts with phonological and phonetic processes:

> Systematic properties of speech production are determined not simply by the need to achieve lexical contrast [...] [S]peakers not only produce lexical items in sufficiently distinct form that their message can be successfully conveyed to listeners, but in doing so [...] [they] signal aspects of their social identity.
>
> (Docherty & Foulkes 2000: 111)

It is fitting for this paper to appear in a special issue of *Sign Language & Linguistics*, dedicated to the memory of co-author Irit Meir. We began working on accent

13. We thank handling editor Diane Lillo-Martin for astutely raising this important issue.

some time ago, and Irit was especially enthusiastic about it. She recognized that an accent – or particular style of producing language – reflects the centrality of the social group in the development and use of human language, and that social factors make crucial contributions to the process of language emergence.

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