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Irit Meir, Carol Padden, Mark Aronoff and Wendy Sandler

Competing iconicities in the structure of languages

Abstract: The paper examines the role that iconicity plays in the structuring of grammars. Two main points are argued for: (a) Grammar does not necessarily suppress iconicity; rather, iconicity and grammar can enjoy a congenial relation in that iconicity can play an active role in the structuring of grammars. (b) Iconicity is not monolithic. There are different types of iconicity and languages take advantage of the possibilities afforded by them. We examine the interaction between iconicity and grammar by focusing on the ways in which sign languages employ the physical body of the signer as a rich iconic resource for encoding a variety of grammatical notions. We show that the body can play three different roles in iconic forms in sign languages: it can be used as a naming device where body parts represent body parts; it can represent the subject argument of verbal signs, and it can stand for first person. These strategies interact and sometimes compete in the languages under study. Each language resolves these competitions differently, which results in different grammars and grammatical structures. The investigation of the ways in which grammar and iconicity interact in these languages provides insight into the nature of both systems.

Keywords: Iconicity, Body, Subject, Grammatical person, Sign languages

Irit Meir: Department of Hebrew Language, University of Haifa, Mt. Carmel, Haifa, 31905 Israel. Phone: +972-4-8249965. E-mail: imeir@univ.haifa.ac.il
Carol Padden: Department of Communication, University of California San Diego, La Jolla, CA 92093-0503. E-mail: cpadden@ucsd.edu
Mark Aronoff: Department of Linguistics, SUNY Stony Brook, Stony Brook, NY 11794-4376. E-mail: mark.aronoff@stonybrook.edu
Wendy Sandler: Department of English Language and Literature, University of Haifa, 31905 Haifa, Israel. E-mail: wsandler@research.haifa.ac.il

1 Introduction

Many researchers have emphasized the importance of iconicity in human language and communication (see e.g., Perniss et al. 2010 for a review). This line of work tends to emphasize two major points: the way in which iconicity is

grounded in human experience (sometimes called embodiment) and the competition between iconicity and grammar. Iconicity is often depicted as a more basic representational device, while grammar supports the arbitrariness that comes with higher levels of symbolic processing.[1]

Iconicity and grammar, however, need not compete with each other. In this article we join a large body of research showing that iconicity and grammar can enjoy a congenial relation and that iconicity can play an active role in the structuring of grammars.[2] Furthermore, we show that iconicity is not monolithic. Instead of a single type of iconicity, there are different types and languages take advantage of the possibilities afforded by them. We combine these two points and argue that in some cases the effects of iconicity on the grammar of a language is the result of *the competition between different types of iconicity* that languages exploit in order to organize their grammars and the need to resolve this competition.

The object of our study is the set of three sign languages that we have studied first-hand: American Sign Language (ASL), Israeli Sign Language (ISL) and Al-Sayyid Bedouin Sign Language (ABSL). Because the visual medium and the manual and corporeal nature of sign languages afford a richer environment for the exploitation of iconicity than does the medium of speech, sign languages provide an excellent proving ground for the study of iconicity and its roles in language, as has been pointed out by many (e.g., Mandel 1977; Klima and Bellugi 1979; Brennan 1990; Taub 2001; Dudis 2004; Wilcox 2004; Aronoff et al. 2005; Sandler and Lillo-Martin 2006; Perniss 2007; Meir 2010 among others). There are many ways in which sign languages can exploit iconicity. Iconicity is exploited for the creation of words; although sign languages have many signs which are arbitrary, their lexicons nevertheless are rich with words whose form is built on iconicity. Iconicity is also exploited in some grammatical structures of sign languages, e.g., verb agreement (Friedman 1975; Johnston 1991; Taub 2001; Meir 2002; Aronoff et al. 2005), classifier constructions (Emmorey 2003 and references there, Dudis 2004; Wilcox 2004), some verbal and adjectival aspectual modulations (Klima and Bellugi 1979; Wilcox 2004), and in the structuring of sign lan-

1 Pierce ([1894] 1998), for example, regards icons (that is, iconic signs, "... which serve to convey ideas of the things they represent simply by imitating them") as more basic than symbols, which involve a conventional association of form and meaning, and develop from more basic signs, such as icons ([1894] 1998: 5–10). Deacon (1997) builds on Peirce's ideas and analyzes iconic representations as more basic from an evolutionary point of view.

2 Pietrandrea and Russo (2007) present a comprehensive survey of various iconic effects on the grammar of both spoken and sign languages. Wilcox (2004) analyzes iconicity effects in certain grammatical structures in sign languages.

guage discourse (Russo 2004). Sign languages exploit many iconic devices and strategies (Taub 2001). For example, body parts can represent themselves, or they can represent a referent with similar visual properties; the movement of the hands can represent the movement of a referent or the dimensions of a referent; locations in the signing space can represent locations of referents or the referents themselves. And all these devices can be used to create metaphoric expressions in a sign language.

Most of the iconic devices and strategies discussed to date in the sign language literature refer to the hands. The hands provide a rich resource for iconic representations because they are versatile: the fingers can assume different shapes, and the hands can move in different ways in space, with respect to each other or with respect to the body. The wide array of handshapes and types of movements can be used very creatively for creating iconic representations. However, in this paper our focus is not on the hands, but rather on another central resource for creating iconic representations: the body. We show how sign languages use the actual physical body of the signer to encode a variety of grammatical notions that are grounded in the conceptualization and construal of events, space, and other notional domains. We show further how sign languages use the iconicity of the physical body as a device for partitioning the grammar and how the construction of grammatical categories from experience is mediated by the body in a very concrete way.

The body offers rich signaling possibilities, as it contains the face in all its complexity, other points on the body, body parts, posture, etc. Accordingly, it can be used selectively to highlight a multitude of distinct properties associated with the body: body parts can represent themselves; by moving the hands with respect to the body, we can signal things and actions that we use the body for; the body can also represent the person in the body, that is, the addressor. Finally, the body serves as a metaphor for many concepts, particularly spatial concepts such as "head of," or "front of/behind". Languages exploit these possibilities. But since the set of our physical resources is always smaller than the set of our communicative needs, we must make multiple use of the same resources for different functions. For example, the mouth can be used to represent a mouth, but it can also represent things we do with the mouth: eat, drink, speak, shout, ask, answer, gasp etc. If a situation arises in which we need to use one body part for two different functions *within the same sign*, a competition arises. As we show, languages devise different strategies to deal with such competition. It is the need to resolve this competition that provides a window into the nature of grammar.

The idea that our body shapes grammatical structures in languages locates this study within the notion of *embodiment* or *embodied cognition*. The idea of embodied cognition is that the body plays a role in shaping the mind and cogni-

tive systems. More particularly, the human mind (both structure and procedures), and hence human cognition, is argued to be deeply rooted in both the human body and its interaction with its environment. There has been a great deal of literature on embodied cognition and there are as many definitions of embodiment as there are people working on the topic. Rohrer (2007) presents twelve dimensions or senses in which the term *embodiment* is used in the cognitive science literature. The one most relevant to our work here is that of perspective, that is, "the particular vantage point from which a particular perspective is taken, as opposed to the tradition of the all-seeing, all-knowing, objective and panoptic vantage point" (2007: 9). In language, that would mean construing an event from one perspective rather than another. For example, a motion event can be described as if the speaker is the object in motion, or as if the speaker has a bird's eye view of the event. We often project properties of our body onto objects, such as fronts and backs, tops and bottoms, as in '*I'll meet you in front of the city hall*', and positions of our body in space are used to describe positions of objects – cups stand upright while mattresses lie. In the study presented here, we show that an event can be construed from different perspectives having to do with the role of the body in it: it can be viewed from the perspective of the body as a human body, the perspective of a particular argument participating in the event, and the perspective of the speaker, 1st person. All these different perspectives are rooted in our body, and they help shape different verb classes in the languages we discuss. In other words, the structure of our body on all its part, and the way we use our body to act and interact in different events contribute directly to the structuring of grammatical categories and classes in sign languages.

In what follows we will discuss the interaction among three iconic roles of the body in the grammars of sign languages: body parts representing body parts, body as subject and body as first person. After providing the background relevant for explaining iconicity in sign languages, we describe each of these iconic strategies in some detail and then go on to show how they interact and compete differently in the three sign languages – ASL, ISL and ABSL. Each language resolves these competitions differently, which results in different grammars and grammatical structures. We conclude by suggesting that the investigation of the ways in which grammar and iconicity interact provides insight into the nature of both systems.

2 Iconicity in sign languages

Iconicity is a relationship of resemblance or similarity between two domains: form (phonology) and meaning (semantics). 'Form' can refer to phonological

segments that comprise the sign (imagic iconicity), but also to the way linguistic elements are organized with respect to each other (diagrammatic iconicity).[3] 'Meaning' refers to lexical meaning as well as to more abstract and grammatical functions, such as plurality, anteriority and others. In spoken languages, diagrammatic iconicity is often invoked to explain properties of grammatical structures (see Haspelmath 2008 for a review), while imagic iconicity is usually confined to the lexical level. In sign languages, while diagrammatic iconicity can certainly be applied to explain the structure of grammatical elements, imagic iconicity is not restricted to the lexical level; the phonological form of some grammatical morphemes resembles its meaning or function, as we discuss below (Pietrandrea and Russo 2007).

Within the cognitive linguistic framework, Wilcox (2004) has developed a model of iconicity that captures this similarity between the two domains as a "distance relation between the phonological and the semantic poles of symbolic structures" (2004: 122). In iconic signs, the phonological and semantic poles of the symbol reside in the same region of conceptual space; in arbitrary symbols, the two poles are distant from each other within the conceptual domain. Wilcox points out (2004: 125) that because in sign languages the articulators are the hands moving in space and time, the same theoretical constructs that describe semantic structures involving space and time (which underlie many grammatical categories) can be employed to describe the motion of the hands within the signing space. Grammatical notions such as intensity, inchoativity, grammatical aspects and others are iconically represented by the quality of the movement of the signs, the direction of movement and the type of movement.

Another way of capturing the resemblance between the two domains – phonology and semantics – is as a mapping between formational elements of an expression and components of its meaning (Taub 2001; Russo 2004). We will rely on the model developed by Taub (2001) to analyze the different types of iconicities of the body in signs. This model involves a detailed phonological analysis of signs, and the establishment of a set of correspondences between the phonological units and components of the meaning of that word. Since the form of words in the signed modality is very different from that of words in the spoken modality, we start with a brief description of the formational properties of signs, and then examine how these formational elements function in iconic signs.

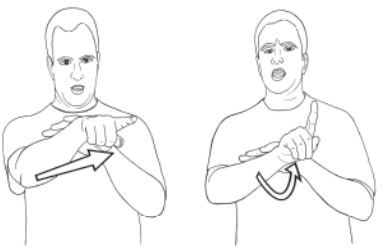
3 The terms 'imagic iconcity' and 'diagrammatic iconcity' go back to Peirce's taxonomy of signs (Peirce 1931–1958).

2.1 Phonological structure of the sign

From a phonological perspective, signs are comprised of three major formational categories: Hand Configuration,[4] Location, and Movement (Stokoe 1960). Using ISL as an example, Figure 1 exemplifies the fact that each of these categories is made up of a list of contrastive features, just as the consonant and vowel

(a) MOTHER, NOON, distinguished by handshape features

(b) WELL-BEING, CURIOUSITY, distinguished by location features



(c) ESCAPE, BETRAY, distinguished by movement features

Fig. 1: Phonologically distinguished minimal pairs in ISL

4 The Hand Configuration category has two main subcategories: Selected Fingers and Palm Orientation (Sandler 1989; Sandler and Lillo-Martin 2006).

categories of spoken languages each have contrastive phonological features. In ISL, the signs MOTHER and NOON (Figure 1.a) are distinguished by features of the two handshapes  and  . This is a minimal pair, because the locations and movements are the same in the two signs, which are distinguished by handshape alone. The ISL signs WELL-BEING and CURIOSITY (Figure 1.b) are minimally distinguished by features of location (chest vs. nose respectively), while ESCAPE and BETRAY are distinguished by movement alone, straight for ESCAPE, and arc for BETRAY (Figure 1.c).

The important observation here is that, in the signs of the ISL lexicon, the different handshapes, locations, and movements function as meaningless building blocks, in the same way that phonemes like [t], [k], and [a] do in spoken language. There is internal structure to the major categories, as well as constraints on the combination of phonological units in sign languages as in spoken languages, and their form may change in different (morpho-)phonological contexts (Sandler and Lillo-Martin 2006).

2.2 Iconicity in signs

The formational elements described above constitute the basic building blocks of lexical items (signs) in the language. In many instances, these elements are meaningless, and the form of the sign is arbitrary. However, sign languages are much better than spoken languages in conveying concepts in a more transparent, iconic way, because of the manual-spatial-visual modality they are transmitted in, as pointed out above. Iconic signs, like arbitrary signs, make use of the same building blocks – hand configuration, movement and location. Yet what makes signs iconic (or partially iconic, as we discuss below) is that these formational elements are mapped onto specific meaning components of the concept conveyed.[5]

This mapping can be demonstrated by showing the correspondence between formational elements and meaning components (Taub 2001). Take for example the verb EAT in ISL, illustrated in Figure 2. As is obvious, the sign EAT is iconic in that it resembles in some way the concept it stands for, the action of eating. But how can we account for the global impression of this resemblance? Obviously the

5 This is comparable to what we find in iconic words in spoken languages as well. Taub (2001: 24) analyzes the English word *ding* ([dɪŋ]), showing that each of its phonemes corresponds to each of the three acoustic components in the sound of a bell (sharp onset, initial loud tone and long gradual fade of the signal). That is, the phonological formational elements of a spoken language may also be mapped onto specific meaning components to create iconic forms.

Fig. 2: The verb EAT in ISL

Table 1: Iconic mapping for EAT

Iconic mapping for EAT	
FORM	**MEANING**
-handshape	Holding an object (food)
Mouth of signer	Mouth of eater, agent
Inward Movement	Putting an object into mouth
Double movement	A process

action and the sign are not identical. The sign does not involve food, activating the jaws or swallowing. What makes this sign iconic is the fact that each formational component (hand configuration, location and movement) resembles in some way the meaning component it represents. An explicit mapping between form and meaning as a set of correspondences has the advantage of showing which of the various formational elements correspond to which aspects of meaning. Such a mapping is illustrated in Table 1.

Iconicity is not an 'all or nothing' property. Some signs are only partly iconic in that not all of their formational components correspond to meaning components. The ISL sign ASK is partly iconic. The hand, in a handshape, is oriented toward the mouth and moves in an arc path movement outward from the mouth (illustrated in Figure 3). Table 2 shows that the set of correspondences between formational and meaning components is incomplete, in that some of the formational elements (such as the specific handshape and the arc movement) do not correspond to any meaning components.

Iconicity, then, is a mapping procedure between two domains, form and meaning. What makes a sign iconic is similarity or resemblance between a formational element and the meaning component it represents. As Table 1 shows, one

Fig. 3: The partly iconic sign ASK (ISL)

Table 2: Iconic mapping for ASK

Iconic mapping for ASK	
FORM	**MEANING**
Outward movement	Something coming from the mouth
 handshape	----------
Inward orientation	----------
Arc movement	----------
----------	Words
----------	An asking speech act

of the formational elements of a sign is its location. Location can involve space or some point on the signer's body. As the signs MOTHER, NOON, WELL-BEING and CURIOSITY in Figure 1 above show, the body is a formal location for the articulation of signs. However, as the signs EAT and ASK show, it is not necessarily meaningless. Instead, the body is a very rich resource for creating iconic representations. We explore three major iconic functions of the body in the following section.

3 The different roles of the signer's body

3.1 The signer's body represents a human body

The most direct way in which the body can be used as an iconic representational device is that it may stand for a human body and all its various parts: the mouth,

eyes, ears, forehead, chest, arms etc.[6] Since the body of the signer is always present in a signing communicative event, it is a useful resource for referring to parts of the body and states of affairs related to them. Pointing to or touching a specific body part can have the function of referring to it. And indeed, not surprisingly, in many sign languages the signs for eyes, nose, mouth, heart, arms and other body parts are often deictic signs, pointing to the relevant part. Signs for verbs denoting actions performed on body parts, such as BRUSH-HAIR, BRUSH-TEETH, WASH-FACE, PUT-ON-GLASSES, PUT-ON-RING, are signed on the respective body part. Signs referring to actions performed on various body parts may be modulated to express the specific part of body involved in the event. The signer can use his/her body to indicate where on the body s/he was hit in an event expressed by the following sentence – '*He hit me on the arm*.' Depending on where on the arm the signing hand makes contact with the body, for example, the upper or lower part of the arm, the signer can specifically mark where on the arm the event took place. Or, in an event such as '*The surgeon cut open my chest*,' the sign OPERATE involves a contacting movement tracing the area of the incision down the signer's own sternum. The signer can contrast this location with surgery elsewhere on the body, such as brain surgery (contact on some part of the head) or a caesarean section (on the abdomen). In these forms, the upper torso, hands, arms and head are available as a detailed map, used for signs that refer to specific points on the body. In other words, the body in all of its parts serves as a naming device. As far as we know, all sign languages make use of this basic iconic device. However, they build on this device to encode more intricate and sophisticated aspects of our bodies and how we use them, to which we turn in the next two subsections.

3.2 'Body-as-subject': The signer's body represents the subject argument of a verb

We use our body to interact with the world, to perform actions on other entities and to experience mental, emotional and physical states. We suggest that this aspect of the use of our body is evident in the structure of signs in sign languages. Specifically, we argue in detail in Meir et al. (2007) that in iconic or partly iconic verbs articulated on the body, the so called 'body-anchored verbs', the body represents the subject argument participating in the event.

The sign EAT above demonstrates this claim. This sign is iconic, since the form of each of its building blocks directly resembles the meaning component it

6 Taub (2001: 67–68) points out that a very basic type of iconicity is when body parts represent themselves.

represents. Crucial to our point here is the correspondence between the location of the sign (the mouth) and the mouth of the eater, the agent argument in the event. The mouth, which is part of the body and constitutes one of the formational components of the sign, represents one particular argument in the event, the agent. It is important to note that the body does not represent 1st person in this sign. The sign EAT is signed on the mouth of the signer whether the subject in a particular event of eating is 1st, 2nd or 3rd person. In other words, the sign EAT has one form in all three sentences 'I eat', 'you eat' or 's/he eats'. This form is signed on the signer's mouth, which represents the agent argument in the event.

Examining a wide variety of body-anchored verbs shows that in iconic signs, the body corresponds to an argument participating in the event.[7] The following examples are from ISL, but similar lists of words can be found in other sign languages as well.

(a) Psych verbs (Location: chest): HAPPY, LOVE, SUFFER, UPSET, BE-FED-UP-WITH, HURT: Chest corresponds to the location of emotions of the experiencer argument.
(b) Verbs of mental activities (Location: temple and forehead): KNOW, REMEMBER, FORGET, LEARN, WORRY, THINK, DREAM, UNDERSTAND, GRASP, INFORM (an idea): Temple or forehead represents the site of the mental activity of the experiencer.
(c) Verbs of perception (Location: sense parts): SEE, LOOK, HEAR, LISTEN, SMELL: Eyes, ear or nose represents the site of the activity of the experiencer.
(d) Verbs of saying (Location: mouth): TALK, SAY, ASK, ANSWER, EXPLAIN, SHOUT, WHISPER: The mouth represents the relevant part of the body of the agent argument.
(e) Change-of-state verbs (Location: face, chest, eyes): BLUSH, GET-WELL, WAKE-UP: Face, chest, eyes represent the relevant part of the body of the patient (undergoer) argument.

7 An anonymous reviewer pointed out that, strictly speaking, in these verbs it is not the entire body that corresponds to an argument, but rather a specific part of the body (mouth, eye, chest etc.). It is this body part that is mapped metonymically to a human participant in the event, which in turn is mapped onto a specific syntactic role in the lexical structure of the predicate. This is reminiscent of Langacker's (1999) concept of *active zone*, the specific body part which is most relevant to a specific predicate. For example, in the sentence '*Your dog bit my cat*', certain portions of the dog (the teeth and jaws) are actively involved in the biting event (1999: 62). In the signs we discuss here, the active zone is explicitly represented by the body part constituting the location specifications of the sign.

As the above list shows, the argument represented by the body part and corresponding to specific features of the body can be associated with a variety of thematic roles: agent, patient, experiencer, recipient. However, the choice of the particular argument to be represented by the signer's body is not random. In case of a one-place predicate, the body naturally is associated with the sole argument of the predicate. In case of transitive events, we find that the argument associated with body features is the highest ranking argument: the agent in <agent, patient> verbs (e.g., EAT, DRINK, LOOK) or <agent, patient, recipient> verbs (such as ASK, INFORM, EXPLAIN), and the experiencer or perceiver in <experiencer, theme> verbs (e.g., SEE, HEAR, LOVE).[8] According to general principles of mapping between thematic structure and syntactic structure (e.g., Fillmore 1968; Jackendoff 1990; Grimshaw 1990; Falk 2006 and others), the argument associated with the highest ranking thematic role is the *subject* argument. The correct generalization, then, is that the body is associated with the subject argument of the verb rather than with a particular thematic role. An implication of our analysis is that the basic lexicalization pattern when representing a state of affairs in sign languages is BODY AS SUBJECT (Meir et al. 2007).[9]

In other words, the body represents or corresponds to some property of the subject argument (that it has feelings, is sentient, has a mouth etc.). In spoken languages, properties of the arguments are inferred from or are part of the meaning of verbs. For example, the verb *sneeze* implies that the subject has a nose; the subject of *lick* has a tongue; the subject of *faint* is animate, and the subject of *angry* is sentient. In signed languages, such properties can be represented directly by aspects of the form of the sign, in particular, parts of the body. If the sign denoting an event is signed on some part of the body, then that body part is interpreted as associated with properties of the subject argument.[10]

8 Psych verbs of the '*frighten*'-type, whose arguments are a causer and an experiencer, and exhibit a different thematic-syntactic mapping, are not attested in ASL or ISL. In order to express an event of frightening, ISL uses a periphrastic light verb construction 'GIVE FRIGHT', whereas in ASL one would use a paraphrase such as 'I was frightened because of. . . .'.

9 Importantly, we use the term 'subject' here in its *lexical* sense, following Williams (1984), who distinguishes between a lexical notion of subject (which he terms 'external argument'), and a syntactic notion of the term. The lexical notion of subject refers to the argument of a predicate that is assigned under predication. Crucial to the point we make in this paper, Williams points out that there are no thematic restrictions on external arguments, and that 'any theta role is eligible to be an external argument' (1984: 642).

10 Kegl (1986) also suggests that the body is associated with the subject argument. While her analysis is not incompatible with the one presented here, it differs in several important ways, as discussed in Meir et al. (2007).

The strategy of 'body as subject' characterizes sign languages generally, although each language has its own vocabulary. The sign for 'dream', for example, takes different forms in ASL, ISL and ABSL (see Figure 4), but they share the location, the temple, which represents the site of the mental activities of the subject. As these forms show, signs denoting the same event may be signed on the same part of the body in the three languages. Similarly, the signs for EAT, DRINK, SAY in the three languages are signed near the mouth, which corresponds to the mouth of the subject, though the handshapes and movements are different. The signs KNOW and FORGET are signed on the forehead/temple, representing the site of the mental activity of the subject. But in other cases, similar concepts are signed on different body parts: ANGRY is signed on the chest in ABSL and ISL and on the face in ASL (Figure 5). In the ABSL and ISL signs the body location represents the metaphorical site of feelings (the heart) of the subject, while in the ASL sign for 'angry' it is the face as a location that is associated with anger.[11] But

Fig. 4: The sign DREAM in ASL, ISL and ABSL

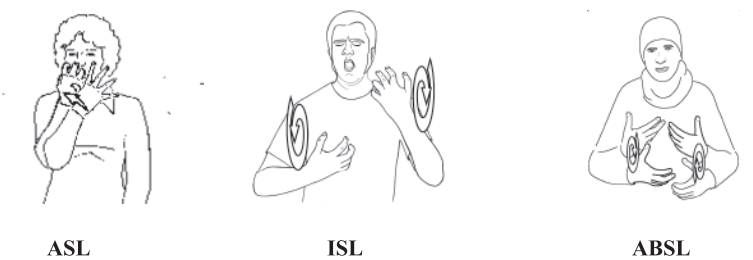


Fig. 5: The sign ANGRY in ASL, ISL and ABSL

11 ASL has another sign that is glossed as ANGRY/FURIOUS which is signed on the chest. The two ASL signs build on a different mental image: anger as an inner explosion, and anger as expressed by 'exploding' face. Yet both signs use the 'body as subject' strategy.

the basic strategy is nonetheless the same: in all three languages the body represents properties of the subject.

If the body is associated with the subject, what do the hands encode? The iconic mapping for the sign EAT points to a basic asymmetry between the body and the hands. The body represents one aspect of the event, its subject argument. The hands, in contrast, have more degrees of freedom. They have a specific shape in a specific orientation and they move in a specific manner and a specific direction. As a consequence, the hands may represent many more aspects of the sign's meaning components. Aspects of the movement can correspond to temporal aspects of the event (such as telicity); direction of motion often encodes spatial thematic roles of the arguments such as source and goal; and the final location of the sign is associated with the recipient argument. The handshape often represents the argument in motion (the theme) or the manipulation of the (patient) argument by the subject.[12] In EAT, for example, the inward movement of the verb represents putting something into somebody's mouth; the specific handshape represents holding or manipulating a solid object, food in the case of 'eat'; and the double movement denotes an action, or an atelic event. In other words, the hands are associated with the event itself, to the exclusion of the subject argument. They are associated with the *predicate*.

The hands, then, may encode many more aspects of the event than the body. This is to be expected. The hands are much more versatile than the body: first, they can move in space; second, they can take different shapes; third, they come in pairs, making it possible to express relations between objects or concepts. The movement component in itself is complex, as it includes both manner of movement and direction. The body, on the other hand, does not show any of these properties. It does not move in the same way that the hands can, and there is only one body. In this sense, it can encode considerably fewer aspects of the event. Interestingly, it encodes one particular aspect of the event, an argument – the subject. This argument is in a sense privileged, since it is set apart formationally from the other meaning components of the event. We find then, that a basic lexicalization pattern in sign languages provides support for the primacy of subject in language (Meir et al. 2007): it is the argument represented by the signer's body, to the exclusion of all other aspects of the event.

12 See Wilbur (2008) for a detailed analysis of the various manual components of the signs and their semantic correlates. Wilcox (2004) describes the role of the hands in a few iconic grammatical constructions in ASL.

3.3 The signer's body as 1st person: Pronouns and agreement verbs

The body that is used for signing is necessarily the body of the signer, the addressor in the communicative event. Therefore, the body can also be used to represent the addressor, that is, the entity conveying the message in a communicative act. Signaling the role of the participants in a communicative event takes us to a different domain of the grammar, namely the category of person. The grammatical domain that most obviously builds on the category of person is the pronominal system. In this system, the signer's body has an entirely different role from its use in naming (body as body) and in predication (body as subject). In the pronominal system of ASL and ISL, and all other sign languages known to us, the signer's body represents 1st person. The body stands in opposition with locations in the signing space; these are associated with non-1st-person referents (Meier 1990; Aronoff and Padden 2011). Pronominal signs take the form of pointing: pointing to the signer's body indicates a 1st person referent. Pointing to the addressee indicates a 2nd person referent. And pointing to any other referent present in the communication scene indicates a 3rd person referent.

Yet 3rd person referents need not be present in the communication scene, and sign languages have various devices to refer to non-present referents. In ASL and ISL this may be done by establishing an association between a referent and a location in the signing space. The association is often achieved by signing the sign for that referent and then pointing to or directing the gaze towards a specific point in space (see Figure 6). Subsequent pointing towards that location in space (often called a R[eferential] locus, cf. Lillo-Martin and Klima 1990) has the function of pronominal reference. Pointing towards an R-locus already established in the signing space denotes pronominal reference to the referent associated with the given R-locus.[13]

In ASL and ISL, one particular class of verbs builds on this system of R-loci, the class of *agreement verbs* (Padden 1988). The use of the term *agreement* expresses the fact that these verbs encode person and number features of their subject and (indirect) object arguments. Semantically, agreement verbs denote transfer events, the transfer of an entity (concrete or abstract) from one possessor to another (Meir 2002). Morphologically inflected forms of agreement verbs build on the system of R-loci, in that the initial and final locations of the sign are associated with R-loci which encode the pronominal features of the arguments. The

13 ABSL has a different device. In order to refer to non-present human referents, signers often point to the location of their houses in the village (Meir et al. 2013).

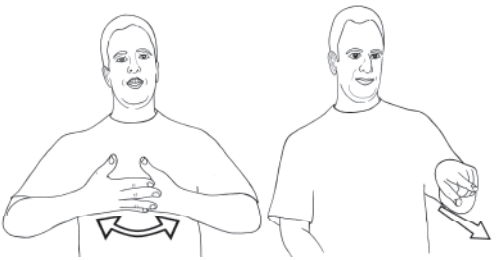


Fig. 6: Associating a referent with a location in space (ISL): BABY $INDEX_a$

$_1GIVE_2$ ('I gave to you') $_2GIVE_1$ ('You gave to me') $_2GIVE_3$ ('You gave to him/her')

Fig. 7: ASL verb forms of the agreement verb GIVE

hands move between the R-loci associated with the subject and (indirect) object arguments of the verb in a systematic way.[14] The result is that any given agreement verb may have numerous forms much like verbs of a highly inflected spoken language.

Inflected forms of agreement verbs, then, incorporate the grammatical category of person encoded in the pronominal system of the language. Since the body in the pronominal system represents 1st person, it has the same role in the inflected forms of agreement verbs. We illustrate this point by the following ASL verb forms (Figure 7): $_1GIVE_2$ ('I gave to you'), $_2GIVE_1$ ('You gave to me'), $_2GIVE_3$ ('You gave to him/her'). In all of these forms, the hands move from the subject R-locus to the object R-locus. If subject is 1st person and object 2nd person (as in $_1GIVE_2$), the hands move from the body towards the direction of the addressee. If subject is 2nd

14 In particular, the linear order of the R-loci encodes the spatial semantic role of the arguments: the hands move from the source argument to the goal, or recipient argument. The syntactic roles of the arguments (subject or object) are encoded by the facing of the hands, that is, the direction towards which the palm or fingertips are oriented: the hands face the syntactic indirect object (Meir 1998, 2002).

person and object is 1st person, then the direction of movement is reversed, moving from the direction of the addressee towards the signer's body. In case both arguments are non-1st person, the body is not involved in the form, and the hands move from the R-locus associated with the addressee towards another locus in space, associated with the 3rd person referent.

As these forms illustrate, in inflected forms of agreement verbs, body is 1st person. If the verb has a 1st person argument, then the verb will move towards or from the body, depending on the thematic role of that argument (as in (a) and (b)). If no argument is 1st person, then the body is not part of the verb form (as in (c)).

3.4 Interim summary: Three roles of the body

Sign languages, then, may have three different types of verbs, each type building upon a different role of the body in the form of the sign. In one type of verbs, described in section 2.1 above, the body represents the human body, and serves as a convenient map for referring to actions performed on different body parts. In a second type of verbs, described in 2.2, the body represents the subject argument. And in yet a third type, described in 2.3, the body stands for 1st person. Notice that the last two types are directly related to grammatical categories: argument roles and grammatical person. These different roles are summarized in Table 3. Each class contains many verbs, which differ from each other in their form; the ISL signs EAT and DREAM, for example, differ in all of their formational features: handshape, location and movement. It is not the form that makes them a class, but rather an iconic strategy related to the role of the body in the form of the signs. In EAT and DREAM, the body is subject; in HIT-ON-SHOULDER and BRUSH-HAIR

Table 3: The roles of the body in three verb classes

Verb class	**Verbs denoting body involvement**	**'Body-anchored verbs'**	**'Agreement verbs'**
Role of body:	Body parts represent themselves	Body as subject	Body as 1st person
Stands in opposition to:	Other body parts ('brush hair' vs. 'brush teeth')	Hands and space, which represent the predicate	Locations in space, associated with non-1st person
Grammatical category involved:	Adverbial function	Argument roles	Grammatical person

the body is used as a map for characterizing actions; and in GIVE and SHOW the body is 1st person. The use of different iconic strategies creates different verb classes, thus organizing the structures of these sign languages into distinct lexical and grammatical domains. Iconicity, then, does not interfere with grammar; rather, it serves as a resource for organizing sign languages. Iconicity is interwoven into their grammars.

We now turn to a consequence of this state of affairs. Since these different iconic strategies are part of the grammar of a language and since they all make use of the same resource – the human body – there will inevitably be clashes and competition between the strategies. In the next section we describe several such clashes, and explore different ways in which three sign languages deal with them.

4 Competing iconicities

To illustrate how these different domains can clash and compete for the use of the body, consider the following sentences: (a) *I combed my hair,* (b) *I combed her hair,* (c) *My mother combed my hair.* How can these sentences be conveyed in a sign language? Which verb forms would be used in each sentence?

The first sentence does not involve a conflict. The verb form to be used is shown in Figure 8, where the signer's head is the location of the verbal sign COMB. Since the subject of the sentence is 1st person, the signer's body may represent the subject of the sentence, 1st person, and the location on the body where the action takes place without any conflict among the three functions.

In sentence (b) the body that is being acted on is not the body of the subject or the body of the signer. The verb form used in (a) seems problematic in this case, because this verbal form is more likely to be interpreted as the subject's hair rather than somebody else's. But if the signer's hands are oriented outwards to indicate that the action is not performed on the signer's body, then the verb loses

Fig. 8: The verb COMB (ISL)

its specificity with respect to the part of the body involved (combing hair or combing chest hair, for example).

Sentence (c) presents another challenge: the subject of the verb is not 1st person; rather, the object is. If the sign is signed on the body (as in Figure 8), how does the signer indicate that the subject is not 1st person? If it is signed in space rather than on the body, again, the specificity with respect to the part of the body is lost. In addition, this verbal form does not convey the information that the object of the sentence is 1st person.

In general, when the categories of subject, 1st person, and the signer's body do not coincide, there is a competition over the formational resource expressing them: the signer's body. In this section we examine two cases of such competition and the solutions that different languages come up with. The first concerns transitive verbs denoting body activities, in which the affected argument is not 1st person. The second concerns verbs of transfer that have location specifications on the body.

4.1 Transitive verbs denoting body activities

As described in section 2.1 above, signs for verbs denoting actions performed on body parts, such as BRUSH-HAIR vs. BRUSH-TEETH, HIT-ON-SHOULDER vs. HIT-ON-FACE, are signed on the part of the body referred to. Such forms take advantage of the fact that the body of the signer is always present in the discourse event, and reference to body parts can be made simply by pointing to or signing near the relevant part. In such forms, the body is not necessarily associated with the subject argument or with 1st person, but rather it is a real-world entity that is being employed in the signing discourse as a naming device. However, the default interpretation of such forms is that the body is also subject. The unmarked interpretation of a form such as BRUSH-HAIR (Figure 8), then, is a reflexive interpretation 'X brushed X's own hair'. Such an interpretation resolves the competition over the role of the subject in the most trivial way: if the body is both the agent and the patient, and it is also used to refer to a specific part of the body, then there is no clash at all.

But how can one involve a non-reflexive action involving body parts, as in 'I brushed her hair?' Performing the sign on the signer's head cannot specify whose hair is being brushed, while performing the sign in neutral space, in the direction of the R-locus associated with the 3rd person referent, would lose the specification with respect to the hair. Such forms are problematic, and different languages exhibit different strategies to meet such a challenge.

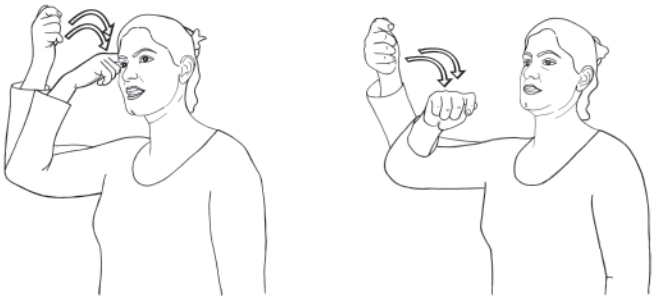


Fig. 9: Verb forms of COMB: (a) *self* (b) *other*

In order to study how languages meet this challenge, we elicited depictions of three actions involving body parts in two languages: ISL and ABSL. These clips showed: a girl feeding her mother, a girl brushing her mother's hair, and a man tapping a girl's shoulder. Responses from 16 ABSL signers (age range 4–~40) and 17 ISL signers (age range 30–90) were coded and analyzed. Of the 63 ABSL responses (some signers produced more than one signed description of certain clips), 22 (35%) involved verbs performed on the signer's body (*self*-forms, see Figure 9a), 12 (19%) were signed towards a location in space (*other*-forms, Figure 9b), 20 forms involved signing the sign on the signer's body and then signing it towards a location in space (*self-other*) and 7 were signed in the reverse order (*other-self*). Two forms involved three verb forms: *other-self-other*. It seems, then, that ABSL prefers body anchored signs (35%), or body anchored signs first and then directing the verb away from the body (32%).

In ISL we find a different pattern: of the 74 responses, only 15 were body anchored (about 20%), whereas 39 verb forms were directed towards a location in space (53%). 20 forms were complex: *self-other* (15, 20%), *other-self-other* (4, 6%), and *self-other-self* (1, 1%). In other words, about 60% of the productions started with a sign directing the verb towards a location in space. The results are summarized in Table 4.

These results indicate that in both languages there is no single consistent form for expressing such events. Yet each of the two languages has developed a preference for a certain strategy. In ABSL body anchored signs are preferred, including complex forms starting with body anchored signs. In ISL, signs directed towards locations in space are preferred, and the ordering of the signs in the complex forms varies. In both languages, about one third of the responses contained more than one sign. This strategy allows for specifying the body part while also

Table 4: Strategies used by signers of ISL and ABSL to convey non-reflexive actions involving the body

	ABSL	ISL
self-forms	35%	20%
other-forms	19%	53%
self-other	32%	20%
other-self	11%	0%
other-self-other	3%	6%
self-other-self	0%	1%

indicating which argument is the affected argument in the event. Thus no information is left unexpressed, but the forms are more complex. The difference in preference between the two languages shows that similar challenges may result in different solutions, or at least different tendencies, in different sign languages.

4.2 Agreement verbs with body specifications

Canonical agreement verbs, as described in section 2.3 above, are not anchored to the body. They move in space, between R-loci. The body is not part of the lexical form of these verbs, and is used for other purposes, namely for representing 1st person. Yet some agreement verbs are specified for specific locations on the body. This happens in verbs that denote an event of transfer involving a specific part of the body. The sign TELEPHONE(-somebody) in both ASL and ISL is an example. The meaning of the verb *to telephone* involves the transfer of a message from one person to another by using the phone.[15] The phone is held near the ear/cheek. When conveying an event of one person calling another by phone, the sign moves in space between the R-loci associated with the interlocutors, representing the transfer of the message, but it also has to be signed near the ear/cheek, the part of the body which interacts with the instrument of transfer, the phone. Two different iconic strategies are involved here – 'body-as-subject' (the ear/cheek indicating the subject's ear/cheek), and 'body-as-1st person' which is part of the

15 This sign has been extended in ASL to include calling through video-phones or cell-phones.

Table 5: Possible clashes between two iconic strategies

	Example	Person value of argument	Canonical Mapping	Resulting Clashes
(a)	'*I phoned him*'	***Subject:*** 1st person ***Object:*** Non-1st person	***Subject:*** Body = subject = 1st P ***Object:*** Body ≠ object ≠ non-1st P	No clash
(b)	'*You phoned her*'	***Subject:*** Non-1st person ***Object:*** Non-1st person	***Subject:*** Body = **subject = 1st P** ***Object:*** Body ≠ object ≠ non-1st P	👎 Body = subject ≠ 1st P
(c)	'*He phoned me*'	***Subject:*** Non-1st person (≠ body) ***Object:*** 1st person (= body)	***Subject:*** Body = **subject = 1st P** ***Object:*** Body ≠ **object ≠ non-1st P**	👎👎 Body = subject ≠ 1st P Body = object = 1st P

person- marking system in the language incorporated by agreement verbs. How do languages combine the two types of iconicity in these verb forms?

We need to distinguish among three different cases here, since each case poses different challenges and involves different solutions. These cases have to do with the person specifications of the subject and the (indirect) object involved in the transfer event, as is shown in Table 5. The table indicates whether the specified value in each case involves the body or not. The canonical mapping for the 'body-as-subject' strategy is for the subject to be associated with the body (subject = body) and the object not to be associated with the body (object ≠ body). The canonical mapping for person is for 1st person to correspond to the body and non-1st person not to correspond to the body. Conflicting specifications with respect to the body and space are indicated by the thumb-down symbol 👎. The ways in which ISL and ASL resolve the conflicts are discussed below.

In case (a), as in 'I phoned him' (Figure 10), there is no clash: the subject is 1st person. The body simultaneously represents the body part specified for the event (the ear/check in the case of TELEPHONE) and 1st person. The verb starts at the ear/cheek and then moves towards the locus in space that is associated with the object argument. The path movement of this verb is like other verbs of transfer, such as GIVE (in Figure 7), in that it moves towards the locus of the object. The only difference is that verbs like TELEPHONE must start close to a specified part of the body, and cannot start in the neutral space around the signer's body.

Case (b) involves an event where both subject and object are non-1st person, as in 'you phone her'. It is the encoding of the subject argument that presents a

(a) ASL: PHONE$_3$ (b) ISL: PHONE$_3$

Fig. 10: 'I phoned him' in (a) ASL and (b) ISL

(a) ISL: YOU PHONE$_3$ (b) ASL: $_{0\text{-}2}$PHONE$_3$

Fig. 11: 'You phoned her' in (a) ISL and (b) ASL

problem. Since the subject is non-1st person, it is associated with a location in space that is not on the body. However, the lexical specifications of the verb require that the verb start close to the specific body part. Starting the sign from the signer's body conflicts with the person specification of the subject argument which is not 1st person; but starting the sign from the R-locus of the subject results in loss of the lexical identity of the body part involved in the action. How do languages resolve this conflict?

ISL and ASL present different solutions. ISL makes do without the person specifications of the subject argument. The sign starts from the specific body part, and moves towards the R-locus of the object (Figure 11a). The result is a verb form which marks agreement only with one argument, the object argument. The person specification of the subject is not encoded on the verb. In order to indicate the person value, an independent pronominal sign has to be used. The verb in Figure 11a means 'unspecified person phoned him/her'. This verb shows agreement with only one of its arguments, the object. In a sense it has a deficient agreement paradigm, since it shows agreement with only one argument, and not two (as with agreement verbs like GIVE). Examples of other single-agreement-marker verbs in ISL are: ASK, ANSWER, EXPLAIN, TELL (mouth), SEE (eye), VISIT (eye), CARE-

(for) (forehead). Single-agreement verbs have been noted in other sign languages, e.g., Danish Sign Language (Engberg-Pedersen 1993: 191), and Italian Sign Language (LIS) (Pizzuto 1986: 25–26).

ASL uses this solution in some verbs, such as SEE, TATTLE-ON, SPY-UPON, among others. But ASL also has another solution to this challenge. Some verb forms consist of three different locations. A verb form denoting 'you called her' may take the following shape: the hand starts at the ear/cheek, then moves towards the R-locus of the subject, and then to the R-locus of the object (Figure 11b). Such a form is highly marked phonologically: signs usually have two setting specifications within one major location. A sign with three different locations is unusual. These forms manage to encode agreement with both arguments while at the same time retaining the lexical specifications of the sign but they do so by articulating a third location.

Although they do so in different ways, both solution types result in forms that incorporate two iconic strategies: 'body-as-subject' and 'body-as-1st person.' In the single-agreement-marker forms, each end of the sign is built on a different iconic strategy. The initial point of the sign, the one that is signed on the body, builds on 'body-as-subject', while the end point builds on the pronominal system, in which body = 1st person, and non-1st person referents are associated with locations in space. In the triple-location forms, the initial form is built on 'body-as-subject', and the two other locations are part of the body-as-person iconicity.

Case (c) in Table 5, as in 'he/she phoned me', is the most complicated. In addition to the clash with body = subject as in case (b) above, the object argument is 1st person. According to 'body-as-subject' iconicity, the object is not associated with the body; according to person iconicity, however, the object argument is associated with the body, because it is 1st person. This case therefore involves two clashes, as seen in Table 5. Depending on the iconic strategy, the subject needs to be both on the body ('body-as-subject') and not on the body ('non-1st person is not on the body'), and the object needs to be both not on the body (since body is subject, not object) and on the body (as 1st person).

ASL again employs the triple-location solution described above to resolve the problem. A sign meaning 'he phoned me' starts at the body (the ear/cheek), then moves to a location in space associated with the referent of 'he' and then moves to the signer's chest, which is associated with 1st person (see Figure 12b). ISL also uses triple-location forms, but the order of locations is different: the verb starts at the location in space associated with the referent 'he', moves towards the ear/cheek, and then to the signer's chest (Figure 12a).

Both languages resort to highly marked forms in order to meet the challenge of the competition over the body by two different grammatical categories: argument roles and grammatical person. ASL and ISL differ with respect to the order

Fig. 12: 'S/he phoned me' in (a) ASL and (b) ISL

of the three locations within a sign. The differences between ASL and ISL show that solutions to similar linguistic challenges can take different forms. The similarities show that these languages can sustain forms that combine two types of iconicity within one sign. Finally, the fact that the lexical specifications (those that are associated with 'body-as-subject') of the sign are retained in all the forms points to the strength of the 'body-as-subject' strategy. We now explore further evidence for this strength.

5 Is one strategy more basic than the other?

ASL and ISL have two different verb classes, which can be distinguished by the grammatical notions encoded by the body: in one class the body encodes the subject argument (e.g., LOVE), in the other – the body encodes 1st person (e.g., GIVE). We saw that in some cases (e.g., TELEPHONE) the two strategies may compete, and different languages offer different resolution to such competitions. A question that arises in this context is whether one strategy is more basic than the others. This question can be examined from comparative, diachronic and developmental perspectives. We expect a more basic strategy to appear in more languages than a non-basic strategy, earlier in the history of a language, and earlier in the development of the individual. A priori, there is no reason to assume that one strategy will be basic from all of these perspectives; it might very well be that one strategy is more basic in the evolution of a language, but when examining language development in individuals we might find that another strategy is basic. A review of our previous studies, which we present in this section, shows that the 'body as subject' strategy is more basic than the 'body as 1st person' strategy in verbal systems of sign languages from both comparative and diachronic

perspectives. We find further support for our hypothesis from a developmental study examining the sensitivity of children to iconic forms (Tolar et al. 2008).

Our claim that the 'body as subject' strategy is more basic is based on the following findings: (a) there are sign languages that have 'body-as-subject' verbs (that is, the so-called 'plain verbs', verbs which are signed on the body and do not mark agreement) but not 'body-as-1st person' verbs (that is, agreement verbs); ABSL is one such language. But no sign language has been reported to have 'body-as-1st person' verbs and not 'body-as-subject' verbs. (b) From a diachronic perspective, the appearance of 'body as subject' verbs precedes that of agreement verbs. That is, a sign language may have only 'body as subject' verbs in earlier stages of the language, and develop the class of agreement verbs only in later stages.[16] ISL provides an example for such a diachronic development.

These findings are based on a series of studies of argument structure in ABSL and ISL. In these studies, we used an elicitation task geared towards eliciting basic clause structure in different types of events in the two languages. The task consists of a set of 30 short video clips (Aronoff et al. 2004; Sandler et al. 2005). Each clip depicts a single action carried out by either a human or an inanimate entity by itself or involving another entity. The events presented in the clips vary with respect to the number of arguments (intransitive, transitive and di-transitive) and animacy. For our purposes here, the relevant clips are nine clips denoting transitive and di-transitive events, involving two human participants (and in the case of the di-transitive clips, also an inanimate argument): GIVE, TAKE, SHOW, THROW, FEED, LOOK-AT, TAP-ON, PUSH and PULL. These verbs usually mark person agreement with their arguments in sign languages that have verb agreement system. In the study described in section 5.1 we also used video-clips showing a transfer event developed by the Max Planck Institute for Psycholinguistics in Nijmegen. Signers are asked to view the clips and describe the event in each clip to another signer of their sign language. To check for comprehension, the addressee is asked to identify one of three pictures best corresponding to the action just described. One of the three pictures correctly depicts the action and entities involved, the second has a different subject but the same action, and the third shows the same subject performing a different action from that shown in the video. If the viewer chooses an incorrect picture, the signer is asked to repeat the description. The video-taped responses obtained from the signers in each language constitute the data on which the studies reported here are based.

16 We do not claim, however, that all sign languages must develop verb agreement as they grow older. Our claim is that if a sign language develops verb agreement, we expect such a development to follow a stage when the language had only 'body-as-subject' verbs.

5.1 ABSL: a language with body-as-subject verbs and no body-as-1st person verbs

In a study analyzing the depictions of 9 ABSL signers (age range 28–~45) of clips involving an event of transfer (Aronoff et al. 2004), we did not find verbs that behaved like agreement verbs. Verbs denoting transfer, which constitute the class of agreement verbs in ASL and ISL, behaved like plain verbs in ABSL. In 201 responses that described clips denoting an event of transfer (e.g., events of giving, showing, throwing and taking) 176 involved movement with respect to the body: center-out movement when the subject is the source (as in GIVE, THROW and FEED), or center-in if the subject is the goal (as in the backwards verbs TAKE and CATCH). There was little or no shifting of the movement to the side, as we find in ISL and ASL when a verb form does not have a 1st person argument (as in Figure 7 above); instead the movement was either center-out or center-in. The center-out/in movement appeared despite the fact that the action clips showed the actors as transferring an object from one side of the screen to the other. Signers did not mimic the direction of motion in the action clip; they used movement along their own central plane. Figure 13 shows a picture from an action clip in which a woman gives a ball to a man.[17] In her response, the ABSL signer indicates that the woman is to her right on the screen, and the man to her left, but her verb form did not make use of either of these locations; instead the movement of the verb GIVE was center-out, indicating that the signer's body represents the giver, the subject of the giving event. The signer's response is shown in Figure 14 below.

Fig. 13: A woman gives a ball to a man

17 We are grateful to the Language and Cognition Group at the Max Planck Institute for Psycholinguistics in Nijmegen, The Netherlands, for providing the video-clip depicted in this figure, as well as some other video-clips used in the work reported here.

Fig. 14: 'He's standing here; she's standing there. She gave (the ball) to him.'

In a smaller number of responses (25 of 201), signers used a form with path movement not from the body, but from one side to the other. On closer analysis, we noticed that these responses involved holding or manipulating an object and moving it to another *spatial location* (rather than an R-locus). For example, five of these responses came from an action clip in which a man picks up a scarf lying on the floor and moves it in front of the woman who then accepts the scarf. This action is less like one of transfer than of picking up the scarf from its initial position on the floor and moving it to the woman's location. The scarf was not initially in the possession of the man, but on the floor in front of him. We analyze these verb productions as involving spatial depictions rather than transfer per se. The spatial locations (the initial and final location of the verbs) do not encode person features of the subject and object arguments; rather they represent the locations in which the theme argument is found.

ABSL, then, does not have the type of verb agreement system seen in ASL and ISL. Crucial to our point here is the lexical strategy of 'body-as-subject' that verbs of transfer in ABSL show. In these verbs, the body represents the subject argument and does not encode person distinctions, hence giving support to the basic 'body-as-subject' pattern.

ABSL is not the only sign language that is characterized by having only 'body-as-subject' verbs. In the town of Kafr Qasem in central Israel, a sign language has emerged and developed within some extended families with deaf members. From interviews with people in the community we have learned that the language, which we call Kafr Qasem Sign Language (KQSL) is estimated to be 85 years old, and emerged and developed independently from ABSL and ISL. We administered the same set of video clips to 6 first and second generation signers of KQSL. When analyzing their responses it was clear that they do not modify their verbal form to

encode person distinctions; Rather, all their verbal forms exhibited the 'body-as-subject' strategy.

5.2 Israeli Sign Language: The diachronic perspective

We administered the same task to 33 ISL signers, divided into three age groups: ***Group 1***: thirteen signers aged 65 years and older; ***Group 2***: ten signers aged 45–65; ***Group 3***: eight signers aged 26–44.

The analysis of the responses showed a marked difference between the two older groups and the younger group. Group 3 signers have a class of agreement verbs; out of the 76 responses they produced, 45% of the verb forms marked agreement with both subject and object. Since the events in the clips involve only 3rd person referents, these verb forms are not signed with respect to the body. In the two older groups, there are very few forms that mark agreement with both subject and object: 9 forms in the first group (5%, N = 170) and 6 forms in the second group (6%, N = 100) (Meir 2012). In other words, in these groups almost all the verb forms are signed to or from the body, building on the 'body-as-subject' iconic strategy.

Assuming the apparent time construct of Labov (1994, 2001), we deduce that the differences between the age groups reflect different stages of the development of the language. The responses of the older signers represent an earlier stage of the language, and those of the younger groups, later stages of the language. The scarcity of agreeing forms in the two older groups indicates that ISL did not have a verb agreement system to begin with; verbs of transfer were built on the 'body-as-subject' strategy, not encoding person distinctions (very much as in ABSL). It is only in its third generation of users that a conventionalized system of verb agreement appeared in the language. ISL, then, is an example of a language which started off by having basically 'body-as-subject' verbs, but eventually developed the mechanism for marking person distinctions on its verbal forms, a mechanism built on 'body-is-1st person' strategy.

The findings from the ABSL and ISL studies both support the idea that 'body-as-subject' is more basic. In all sign languages that we know of, this strategy shows up in the lexical structures of many verbal signs. Not all sign languages incorporate 'body-as-1st person' into its verbal system; ABSL is an example of one such language. In the ABSL verbal system, the body represents the subject argument; person features are by-and-large not encoded in the verb forms. ISL is an example of a language that did incorporate the person system into its verbs of transfer, creating the class of agreement verbs. But this class of verbs appeared only in the third generation of language users; the two first generations

constructed verbal forms only on the 'body-as-subject' strategy. Moreover, 'body-as-subject' keeps surfacing when there is a need to refer to an action by specifying a body part; the single-agreement-marker verbs and the triple-location verbs described in section 4.2 show that even within the system of agreement verbs in both ISL and ASL, the 'body-as-subject' strategy still needs to be referred to.

As a final piece of evidence for the strength of 'body-as-subject', we refer to a study by Tolar et al. (2008). This study represents the developmental angle. Tolar et al. (2008) studied the ability of young hearing children (ages 2.5–5.0 years, divided into five age groups) to interpret the meaning of iconic signs. Children were shown 30 iconic ASL signs, one at a time, and were asked to match the iconic signs to pictures of referents by pointing to one picture out of a set of four. The signs varied in terms of the type of iconicity they are built on: pantomimic signs depict actions associated with the referent, such as *baby, eat, write* and *hammer*, while perceptual signs depict static features of a referent, such as *house, vase, tiger* and *tornado*. A third group of signs involved both action features and static features of the referent (such as *bike, telephone, banana* and *ice cream*). Tolar et al. (2008) found that children of all age groups performed significantly better on pantomime signs than on either perceptual or both-type signs. Tolar et al. (2008) point out that these results are consistent with observations about the gestures produced by hearing toddlers by Acredolo and Goodwyn (1988), indicating that children have a clear preference for the imitation of actions performed on objects over indicating gesturally a perceptual quality of that object.

Notice that action signs or gestures are built on 'body-as-subject' iconicity, in that the gesturer uses his/her body to enact the action. The second type of signs, those showing a perceptual quality of an object, is built on different kinds of iconicity not discussed in this paper. However, these studies show that from a developmental point of view, 'body-as-subject' signs or gestures are easier to interpret and produce. We take this as further support to the primacy of the 'body-as-subject' iconic strategy.

6 Conclusion

By studying the interplay between iconicity and grammar, we gain insight about both. Iconicity is a strategy for the creation of representations, which builds on the identification of similarities between the signified and signifier. In language, it is manifested at various levels, and employed in various structures and processes. It is extensively used in sign languages, since the manual-visual modality of these languages provides fertile ground for iconic expressions.

The analysis of the roles of the body in the verbal system of the languages under study here shows first that iconicity is not monolithic. There are different types of iconic representations, building on different strategies. That iconicity is not deterministic has been pointed out before. Klima and Bellugi (1979: 21) shows that different sign languages may offer different iconic representations for the notion 'tree': the ASL sign represents the shape of the trunk and branches; in Danish Sign Languages the hands show the contour of the tree top and trunk; and in Chinese Sign Language, the two hands in a bC  handshape move upwards, representing the dimensions of the trunk. Similarly, the sign for 'bird' in ISL represents the flapping of the wings and in ASL the beak of the bird (Meir and Sandler 2008). All these signs are iconic, yet they are different since they highlight different properties of the same referent in different languages. Wilcox (2004) points out that the selection of the feature profiled is arbitrary, and therefore there is always some arbitrary element in iconic signs. But what we have shown here is that there are different iconic *strategies* for languages to employ. These strategies do not involve resemblance in form, but rather resemblance on a more abstract level, where iconicity meets grammar. A form, the body, is exploited to represent different grammatical notions, such as subject or 1st person. At this junction, languages exploit iconicity to create grammatical categories.

This leads to the second point about the relationship between iconicity and grammar. Although iconicity is often contrasted with grammar, the relationship between the two is not necessarily an adversarial one. Our study shows that while iconic forms can be characterized as more analogical, less conventionalized and therefore less grammatical than arbitrary forms, they do not have to be so. Rather, they can be an integral part of a grammatical system, and moreover, they can constitute a central core upon which a grammatical category can be constructed.

Different iconic strategies may not only co-exist in one language, but they may compete with each other. We have shown that such competitions are resolved grammatically in different ways in different languages. Proponents of the centrality of iconicity in language have made the claim that languages are the way they are because they are iconic. For example, Haiman (1985: 1) argues that "linguistic forms are frequently the way they are because, like diagrams, they resemble the conceptual structures they are used to convey". Our study indicates that sometimes languages are the way they are not only because they use iconicity, but because they resolve in a specific way the competition between different types of iconicity.

The interaction between iconicity and language also sheds light on the nature of language. First, languages are opportunistic; they take advantage of whatever resources are available to them. The body is such a handy resource because it is there in a communicative event, providing a rich array of possibilities for representational purposes, and knowledge of these referential correspondences is part

of our cognitive endowment as humans with bodies. As we have demonstrated, sign languages exploit these possibilities to an impressive degree. Second, languages create patterns. This is evidenced both in the ways languages use different iconic strategies to organize their grammars, and in the principled solutions the languages under study found for cases of competing iconicities. Third, in language evolution, as in biological evolution, newer structures are built on older structures. Older structures do not disappear. Rather, newer structures are integrated into existing structures, so that the present contains traces of the past. In the case at hand, 'body-is-subject' is not dispensed with once 'body-is-1st person' is introduced into the verbal system; rather, it survives in the domain of plain verbs, and surfaces whenever a verb is lexically specified for a particular body part.

Finally, our study may have some implications for our understanding of language evolution. We have shown that 'body-as-subject' is a basic and strong iconic strategy using evidence from a variety of perspectives: diachronic, comparative and developmental. These findings dovetail with other studies suggesting that gestures depicting an action by and or on a referent are more basic than other types of iconicity in the sense that are easier to understand (Tolar et al. 2008) and are produced by children at a younger age than other types of iconic signs (Acredolo et al. 1999; Werner and Kaplan 1963). Interestingly, these are the only type of symbolic gestures found in apes. Most of the gestures (apart from attention-getting activities) described in Tomasello and Call's (1997) partial survey of intentional communicative behavior among apes use the body to imitate some activity, such as raising the arm to initiate grooming under the arm. 'Body-as-subject' signs are not always identical to pantomiming an action, since in the latter one may use body parts other than the hands as the main articulator. For example, in a pantomimic representation of an eating event, a person may move his/her jaws to indicate eating. In signing, this is usually not the case. However, both action pantomime and 'body-as-subject' signs use the body to represent features of the salient participant in the action. They are built on the same iconic strategy. It may be hypothesized that this kind of iconic strategy appeared earlier in human communication, and may have paved the way to other iconic strategies later in the development of human language.

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