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Signed Languages and Cognitive Grammar: Towards Theoretical Convergence

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Wilcox, Sherman. 2025. Signed Languages and Cognitive Grammar: Towards Theoretical Convergence. ***Sign Languages and Linguistics Convergence Research,*** *2*(2), 225-259. Theoretical convergence has played an important role in signed language research. Stokoe pioneered linguistic convergence of signed and spoken language by demonstrating that signed languages possess phonology. Certain problems have arisen, however, concerning the basic elements of sign phonology, specifically location. Whereas location has been defined as the location of the hand, signers refer to entities in the environment and to discourse entities outside the reach of the hand. An example of the latter is agreement or indicating verbs, where the locations at which the hands are directed have been treated as gesture. I offer a cognitive grammar account of sign phonology, focusing on the status of location. The elements of sign phonology are shown to be conceptual entities. I introduce the concept of Place, a symbolic structure consisting of a semantic pole and a phonological pole, which is a spatial location. The use of Place in discourse and in grammatical constructions such as indicating verbs is demonstrated with data from Argentine Sign Language. Implications of this approach for a more natural theoretical convergence are discussed.

Key Words: Cognitive Grammar, Sign Phonology, Gesture, Iconicity

1. Theoretical convergence

The title of this journal, *Sign Languages and Linguistics Convergence Research*, points to the central goal of all science: convergence, or theoretical unification. In physics, Einstein (1950: 63) wrote of the struggle to arrive "at a system of the greatest conceivable unity." Here the goal is manifest in the challenge to unify the two most successful theories in the history of science: quantum mechanics and Einstein's theory of general relativity, which offer explanations of the smallest elements of reality, subatomic particles, and the most expansive aspect of reality, gravity. Both theories have been with us for more than a century, and yet no one has managed to successfully unify them. Convergence is not easy.

Linguists also have a goal of theoretical unification. We search for similarities among apparently disparate patterns in language, and seek an account that offers theoretical unification. One such example is the unification of plural vs. mass nouns, perfective vs. imperfective processes, and generics vs. habituals in terms of higher level conceptualizations (Langacker, 1997). As sign linguists, we have been driven from the start by an urgent desire to unify. For centuries, and continuing into the 21st century, scholars declared that signs are not language, they are simply pictorial gestures. At the infamous Milan conference of 1880, hearing teachers proclaimed that deaf students should only be taught and allowed to speak, and that signs should not be permitted. Marius Magnat, the director of an oral school in Geneva, insisted that signed languages lack any features of language: "Sign cannot convey number, gender, person, time, nouns, verbs, adverbs, adjectives" (Lane, 1984, p. 388).

William Stokoe's pioneering achievement was to show that the same linguistic principles used to describe and explain how spoken languages work can be applied to signed languages. His remarkable demonstration of this was his proof that even the analytical tools used to describe the phonology of spoken words — the word 'phonology' itself referring to sound — could be used to describe the phonological structure of signs, words without sound.

Einstein called the realization that led to his theory of gravity the equivalence principle: gravity and acceleration are locally indistinguishable. This means that if

you are in a sealed, unmoving room on Earth, you feel pressed again the floor, and a ball let go of will fall to the floor. If you are in space and the room is an accelerating rocket, you feel the same pressure of your feet on the floor, and a ball let go of will appear to "fall" to the floor. The experiences are equivalent, and so gravity and acceleration are equivalent. Einstein described the equivalence principle "the happiest thought of my life." Stokoe's discovery was a similar equivalence principle: signed languages are in all relevant respects the equivalent of spoken languages. Sign linguists have now shown that Magnat was spectacularly wrong. While Stokoe never said this realization was the happiest thought of his life, he did say his understanding of language "confirmed my belief that when people are interacting with each other constantly, their interaction is nothing other than language" (Stokoe, 1994: 378).

In this paper, I offer a preliminary proposal for extending the theoretical convergence of signed and spoken languages. But we must be careful. There is danger in seeking convergence without due caution; we should not force signed languages into a spoken language Procrustean bed. Convergence is not easy. My proposal is based on the theory of cognitive grammar. Developed over the course of more than 50 years, early development of cognitive grammar had very little input from signed language data. Even to this date, the vast majority of analyses used to provide support for cognitive grammar comes from spoken languages. And yet, from my perspective as a sign linguist, cognitive grammar provides the most natural framework in which to understand how signed languages work. In this way, cognitive grammar offers not only the potential for a more powerful theoretical convergence, but the possibility of a refreshed account of signed languages that lets their unique properties blossom. I can certainly say that applying cognitive grammar to signed language data has given me the happiest thoughts of my life.

2. The first convergence

This is of course a well-known story. In the late 1950s William Stokoe had begun teaching deaf students at Gallaudet College (now Gallaudet University).

He was told that the signing he saw his students using was not a true language, it was just poor English and depictive gestures. He didn't believe a word of it. He convinced his boss at Gallaudet to allow him to study at a Linguistic Institute in Buffalo, New York, with well-respected linguists of the time, Henry Smith and George Trager. Stokoe was interested in describing the fundamental structure of signs, their phonology. He took the structuralist principles and tools of Trager and Smith — contrastive analysis, phonemes, phones and allophones, segments — and applied them to signs. I like to think of this as taking *mouth stuff* and applying the principles of its analysis to *hand stuff*. The result was the phonological elements that all sign linguists now know and use: handshape, movement, and location. Orientation was added later by Battison (1974).

While this approach was initially a successful convergence, Stokoe immediately saw issues and began modifying his approach. He renamed phonemes to cheremes, and he framed his analysis in terms of what he called *aspects* (Stokoe, 1980: 369):

> Signs cannot be performed one aspect at a time, as speakers can utter one segment of sound at a time. Signers can of course display handshapes of manual signs ad libitum, but they cannot demonstrate any significant sign action without using something to make that action somewhere. By an act of the imagination, however, it is possible to "look at" a sign as if one could see its action only or its active element only or its location only. In this way three aspects of a manual sign of sign language are distinguished, not by segmentation, it must be reemphasized, but by imagination...

Stokoe's pioneering research led to an explosion of research on sign phonology and signed language linguistics by scholars around the world. But problems remain. The face is an important means of expressing meaningful elements of signed languages (Dachkovsky, 2004; Reilly & Bellugi, 1996; Siyavoshi, 2019; Siyavoshi & Wilcox, 2021), but the aspects analysis does not work for analyzing the face. The body and its location and orientation in space is also used grammatically (Lackner, 2018; Meir et al., 2007; Wilbur & Patschke, 1998),

but again we must ask how to describe the phonological elements and processes that are involved. Stokoe continued to refine his view, simplifying his original analysis of three aspects to two elements, saying "one needs only to think of a sign as something that acts together with its action" (Stokoe, 1991: 111). This analysis, he suggested, could resolve the problem with faces, welcoming nonmanual as well as manual actors and their actions. Yet to this date, we do not have a unified phonological framework that encompasses all articulators used by signers.

2.1. Rethinking location

Although a unified model that applies to all articulators is a much needed goal, the problem I want to focus on here is the three elements of sign phonology, with special attention to location. Handshape is definitely hand stuff. Movement pertains to the movement of hands and arms. Location is defined as where the hand is — and herein lies the problem. Signed languages use many locations in space that are not the place of articulation of the hand. Signers point to all kinds of places, not only to locations on their bodies (noses, eyes, mouth, etc.) but to entities in the environment: the light switch on the wall, the fan on the ceiling, the bug crawling on the floor, the cup of coffee sitting on the table between me and my friend as we chat at a local coffee shop. Signers use more distant locations too: the tree in the yard, a cloud in the sky, the full moon. We point to things that are present but not seen, "Santa Fe is over there on the other side of the Sandia mountains," and we even point to things that are no longer there, "this is where the piano used to be." Signers also direct signs to locations. Whether we call them directional verbs, agreement verbs, or indicating verbs, the locations of referents are integral to the grammatical structure of the expression.

The distinction between mouth stuff and hand stuff is important here. We can think about the situation this way. When speakers refer to entities in spatial locations, for example with deictic words such as *there*, the articulators used to produce those words are mouth stuff — they stay firmly in the mouth. Whether we use *there* to refer to a location of some entity across the room, "That cute

cat over there," or something further away not present in the discourse situation, "My friend called, I need to go over there tonight," the word *there* is mouth stuff. The same is true when referring anaphorically to antecedent referents; even if the referents are present in the environment, words such as *he/she* or *they* used to refer to them are mouth stuff; again, whether they refer to "Mary" or "the 2026 voters" the anaphoric words are *she* and *they*.

But it's different for signs. The spatial location of the referent is a location in the environment. A signer must use that location in pointing and directing signs to the referent. What is the status of these locations? If we continue to follow the dictum that hand stuff must abide by the same rules of the game as mouth stuff, and that location must only be about where the hand is, then these locations are not phonological, and may not even be elements of the grammar of signed languages.

The situation is more complex, of course. In some cases, signers use locations where the articulators can reach — locations on the body, or in a constrained area sign linguists call signing space. In other cases, however, they use locations that are not reachable. Signers may look at, point to, and describe some property of the moon, or they may compare the glow on their lover's face to the light of the moon. In ASL, the sign COMPARE is two-handed. In making the comparison, a poetically inclined signer may direct one hand to the lover and the other to the moon. In this case, signers use conceptualizations of these distant locations as "reachable" locations.

A problem long recognized by sign linguists is that while the reachable locations may be listed in a phonological inventory, the unreachable locations are uncountable. This has led to what Pfau and his colleagues (Pfau et al., 2018) call the "listability problem" — there are an unlistable number of spatial locations at which signs can be directed. If a language consists of a limited phonological inventory, what are we to make of these unlistable, uncountable locations? The solution often offered was to banish these locations from the system of language: they are gestures. Liddell (2003) and others (Brentari, 2019; Sandler, 2009) use gradience to distinguish these gestural locations from linguistic elements. Özyurek (2012: 637) posits blends of "linguistic and gestural elements co-produced within a single sign." Schembri et al. (2018) suggest that indicating

or agreement verbs are typologically unique fusions of signs and pointing gestures. Meier and Lillo-Martin (2013: 121) claim that "actual real-world locations of referents are not part of the grammar, so in order for a linguistic object to 'point to' such locations, language must interface closely with the gestural system."

Liddell and Johnson (Liddell & Johnson, 2019; Johnson & Liddell, 2021) have since taken a different approach. They start from the position that "referential loci fail to provide unambiguous reference when restricted to articulatory space and referential loci located outside articulatory space have no phonetic value as places of articulation because the hands cannot move beyond articulatory space" (Liddell & Johnson, 2019: 167). Tacking away from meaningful spatial loci, they propose a system of phonetic hand bearings that focuses strictly on hand stuff.

The hand bearing proposal gives rise to two distinct phonetic systems, one for indicating signs and one for nonindicating signs. The hand bearings for nonindicating signs "come from a phonetic inventory of lexically fixed bearings" (Liddell & Johnson, 2019: 167). In the production of an indicating sign, "the signer must conceptualize a bearing that points in a specific direction" (Liddell & Johnson, 2019: 163). Indicating signs require "a different conception of phonetics, one that includes nonlistable phonetic features (i.e., placement bearings and displacement bearings that point at people and things)." They go on to state, "It is important to note that we are proposing an uncountable number of ways an indicating verb can point, not an uncountable number of meaningful spatial loci or an uncountable number of grammatical elements" (Liddell & Johnson, 2019: 145). Thus, while the listability problem of spatial loci is avoided, the problem remains in the nonlistable phonetic features of indicating signs and in the uncountable number of ways indicating verbs can point. Whether or not the countability problem is a real problem, and I have come to believe it is a false problem created by current theories of sign phonology, the purpose of phonetic hand bearings is to permit signers to point at people and things — real, remembered, or imagined — that occupy locations. The locations are meaningful because they host referents. Hand bearings may prove to be a satisfactory account of *how* the hand points, but they are silent on *what* the hand is

pointing or directed to. Thus, the approach keeps the bearing of the hand firmly within the domain of hand stuff, as a compass needle is safely encased in the compass housing. But just as the purpose of a compass is to give its users bearings to a meaningful destination, the signer points or directs the hand to a meaningful location.

These problems require a rethinking of location within a more natural model of sign phonology, one that does not force signed languages to conform to prior theories based on spoken languages. When locations, like the occupants of Procrustes' bed, don't fit, we should not be so quick to surrender core grammatical functions of signed languages such as nominal reference and identifying verb arguments to gesture. If gesture can tell the signer where to point, where to direct signs, and how to locate referents, why can't the grammars of signed languages? What we need is a new model to guide the convergence.

3. A cognitive grammar approach

What I describe here is a proposal for a cognitive approach to signed language phonology. For now it is focused only on a conceptual account of location. Although my colleagues and I have used cognitive grammar to analyze grammatical constructions in several signed languages, its application to phonology is still very much in a preliminary stage. I also must emphasize that this is a cognitive phonology of signed languages. It is not intended to be a general cognitive theory of phonology applicable to both spoken and signed languages. If such an abstract beast exists, this higher level of convergence requires an account of both signed and spoken language phonology based on cognitive principles.

Liddell and Johnson (2019: 137-138) cite Meier and Lillo-Martin's position on locations and then offer their critique:

> "Our abstract conceptualization of the R-locus used to refer to Billy's mother is the location occupied by the shape representing Billy's mother, which we will call R-locusMot" (Lillo-Martin & Meier, 2011: 239).

> This conception introduces a new type of *grammatical element* — the location occupied by the shape representing a person or thing. But people and things can be located anywhere, even at a great distance from the signer. For example, the locus for a sign directed toward the moon would use "the location occupied by the shape representing the moon" as an element of the grammar. As a result, everything on planet Earth and beyond has the potential to be an element of the grammar of ASL and other signed languages. This conception deviates markedly from an ordinary understanding of a grammatical element, the set of which would be finite and would include fewer elements than the shapes of everything that exists.

What Liddell and Johnson do not consider is a basic concept of cognitive grammar: a schematic characterization of a grammatical element valid for all members of a class (Langacker, 2008: 103):

> CG advances the controversial (if not outrageous) proposal that essential grammatical notions can be characterized semantically, not just at the prototype level but also at the schema level. Their prototypes consist of experientially grounded conceptual archetypes. Their schematic characterizations (valid for all instances) make reference to basic cognitive abilities initially manifested in those archetypes and later extended to other cases.

A schematic characterization of a grammatical element is instantiated by any number of more specific ones, each serving to elaborate its coarse-grained specifications. There is no need to accept Liddell and Johnson's extravagant claim that each instantiation requires an entirely new grammatical element. By applying the concepts and principles of cognitive grammar, we can provide a single schematic characterization of meaningful locations valid for all instances. First, allow me to review some basic concepts of cognitive grammar.

Cognitive grammar is a comprehensive and yet austere usage-based theory of language, positing only three basic structures: semantic, phonological, and symbolic. Semantic structures are conceptualizations exploited for linguistic

purposes, notably as the meanings of expressions. Phonological structures include not only sounds but also gestures[1] and orthographic representations. Their essential feature is that of being overtly manifested. Symbolic structures are not independent, but reside in associative links between a semantic structure and a phonological structure such that either is able to evoke the other. In cognitive grammar, we often refer to semantic and phonological structures as the semantic and phonological poles of a symbolic structure.

Several cognitive processes independent of language are recruited in the cognitive approach (Langacker, 2008: 16-17). Two that will play an important role in cognitive phonology are schematization and categorization. Schematization is the process of extracting the commonality in multiple experiences to arrive at a conception at a higher level of abstraction. Schematic structures are said to be elaborated by more specific structures, which constitute their instantiations. Categorization is the interpretation of an experience with respect to previously existing structures. In categorizing, "an individual may treat nonidentical objects or events as equivalent" (Edelman, 1987: 26). A category is a set of elements that are judged to be the same for some purpose. Schematization and categorization apply to both the semantic and the phonological poles of symbolic structures. Cognitive grammar holds that lexicon and grammar form a continuum consisting solely of assemblies of symbolic structures (Langacker, 2008). An essential claim of cognitive grammar is that grammar is meaningful, including grammatical classes such as noun.

3.1. The elements of signed language phonology are conceptual entities

In taking a cognitive approach to signed language phonological structures, the first step is to recognize that phonological elements are conceptual entities.

1) We lack the necessary terminology to describe the physical manifestation of signs parallel to 'sounds'. When referring to signs, it is best to interpret 'gesture' in the sense of articulatory gestures. This is still not parallel, because 'sounds' refers to an acoustic signal, while 'gesture' refers to the articulatory production of an optical signal. There is a lexical gap: we have no English word parallel to 'sound' that refers to the optical signal, resulting in widespread and pernicious confusion when talking about signed languages.

One way in which phonological elements have conceptual significance is in terms of conceptual archetypes. Conceptual archetypes are experientially grounded concepts, fundamental aspects of basic human experience. Conceptual archetypes range in complexity from simple concepts such as that of a physical object, an object in a location, an object moving through space; the human body, the human face; seeing something, handing something to someone (Langacker, 2008: 33-34); to more complex scenes. An example of a more complex conceptual archetype involves participants interacting in a scene (Langacker, 2008: 355):

> One archetype is the organization of a scene into a global setting and any number of smaller, more mobile participants. ⋯ Participants—the most typical being people and discrete physical objects—are so called because they participate in actions and interactions. ⋯ At a given instant, each participant is found at some location. A location is part of the setting (any point or area within it). Accordingly, we think of locations as hosting participants rather than interacting with them—simply being in a place does not, in and of itself, amount to an interaction with it. In short, participants interact with one another but merely occupy locations.

Conceptual archetypes are in essence pre-linguistic structures derived from our experience with the world. They are archetypal *symbolic* structures because they have conceptual content that is overtly manifested. In describing grammar, the focus is on the conceptual or semantic pole of a symbolic structure. Their conceptual content is the basis for their grammatical meaning. An object in a location, an object moving through space, the human body and face are the overt manifestations of conceptual archetypes.

When looked at through the lens of signed languages, we see that conceptual archetypes also have phonological import. The basic phonological aspects of sign phonology reflect conceptual archetypes: a physical object (handshape), an object in a location (location), and objects moving through space (movement). Further examination of the conceptual import of phonological elements reveals the following:

- Hands are substantive entities, directly perceptible, and manipulable. Hands and their actions and interactions are phonological participants that occupy locations.
- Motion is a change in location over time. We do not perceive motion as such, we perceive things that move relative to other things. Motion is an elaborative operation on a more substantive element.
- On their own, locations are neither perceptible nor conceptually accessible. Locations become conceptually accessible when they host some *thing*, however schematic that thing might be. Locations host participants; conversely, participants occupy locations in conceptual and physical space.

Signs thus have a fractal nature: at least potentially, they are symbolic structures all the way down. This has been observed and described for handshape (Studdert Kennedy & Lane, 1980; Lepic & Padden, 2017; Lepic & Occhino, 2018; Occhino, 2017). The same analysis also pertains to sign movement. Movement is an event. The conception of events is the basis of grammatical relations and semantic roles as characterized by another conceptual archetype, the canonical event model, which represents the observation of a prototypical action (Langacker, 1991). This conception of events can be extended to signing as an event, with the implication that elements of sign phonology manifest schematic semantic roles, yet another area in which Stokoe had prescient insight (Stokoe, 1991).

My focus here is on objects in locations as a conceptual archetype which are ubiquitous in the spatial and perceptual environment and exist independently of the hands. They are pre-linguistic conceptions that must be brought into the domain of signed languages because, whether real or imagined, they are the referents in grammatical expressions. A cognitive approach allows us to bring these entities into the linguistic system with symbolic structures I call Places.[2)]

2) I capitalize the term when applied to signed languages to indicate that it is the name of a symbolic structure consisting of both a semantic and a phonological pole (the latter is called location).

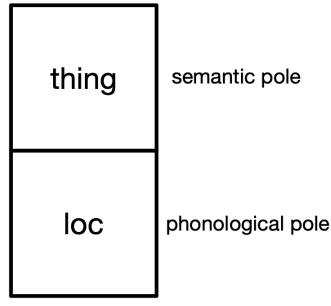
4. Place as a symbolic structure

While handshape, movement, and location can be considered simply as *phonological* primes of a sign, it is important to recognize that they have *conceptual* import. Location of the hand can be meaningful, for example, in signs such as THINK and KNOW which are located at the head — evoking a conception of the head as the location of thought and knowledge (at least in western culture). Locations in space independent of the hand are also meaningful. As Engberg-Pedersen (1993: 77) demonstrates with wonderful data, "Space is semantically loaded."

I often find it useful to look at how scholars in other disciplines approach problems similar to those we face as sign linguists. Space and the use of meaningful space is one such area. Spoken language phonology has very little to say about space in the larger sense; mouth stuff articulators cannot interact with objects and locations in the spatial environment. Signed language articulators, on the other hand, certainly do project out not only into signing space; they touch, sometimes physically but always conceptually, objects and their locations in visible and even imagined space. One discipline that addresses the meaning of space is geography. Geographers study the meaningful interaction between humans and their physical environment. In doing so, they posit concepts such as space, location, and place (Cresswell, 2004; Tuan, 1979). For geographers, location refers to an absolute point in space with a specific set of coordinates. Place is a meaningful location (Cresswell, 2004). Location refers to the 'where' of a place, but not its meaning. Human geography, Cresswell writes (2004: 1), is the study of places. Places are "locations that carry some meaning to the user and to which the user can potentially attach some (meaningful) semantics" (Nurmi & Koolwaaij, 2006: 1). Places are the intersection of abstract space and the meaningful interaction of humans with that space.

These concepts prove similar to those required for a cognitive phonology of signs grounded in our experience as creatures who interact with their surroundings. Location alone is only part of the story. As conceptual entities, locations host things. We require this entire symbolic structure to provide a full cognitive account of locations in signed languages. My colleagues and I have

proposed the notion of meaningful locations as symbolic structures called Places (Wilcox & Occhino, 2016; Martínez & Wilcox, 2019; Wilcox & Martínez, 2020; Wilcox et al., 2022). Places are fundamentally different from abstract constructs such as spatial loci or phonetic bearings which have no inherent semantic value. Places are symbolic structures with a phonological pole and a semantic pole. In diagrams such as Figure 1, the semantic pole of a symbolic structure is typically shown on top and the phonological pole at the bottom. The schematic Place applicable to all instances consists of a thing as its semantic pole. A thing is defined in cognitive grammar as any product of grouping and reification conceived as a single entity (Langacker, 2019). The phonological pole is some location in space. Importantly, the location is not limited to where the hand is located. In the broader context of our conceptualization of space, locations need not be restricted to where the hand can go.



[Figure 1] Place as a symbolic structure with 'thing' as the schematic semantic pole and a spatial location as the schematic phonological pole

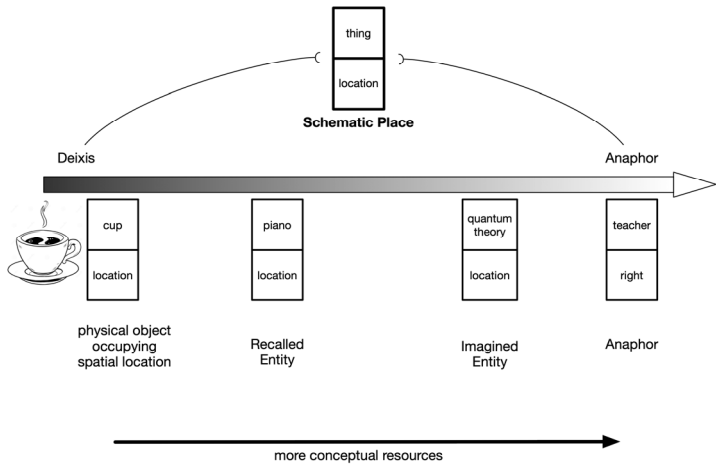
Places arise through schematization of the perceived environment. As signers perceive and produce usage events in which signs for entities are signed at or refer to meaningful locations, they abstract away from the meaning and spatial location of any particular entity, extracting what is common across multiple experiences to arrive at a schematic Place symbolic structure. The term arche*type* gives a clue to how we should think about Places. A type is a schema immanent in any particular instance. The type dog, for example, is immanent or "contained

within" the instance *my dog Bonita*. When I point to Bonita, am I pointing to "my dog Bonita" or to dog? The answer is I am doing both. In the same way, Place is immanent in particular instances. The general principle is that schemas are immanent in their varied instantiations (Langacker, 2008: 56).

Places fall along a conceptual continuum from fully elaborated to highly schematic. They also appear along another continuum that subsumes the distinction made between deixis and anaphora (Figure 2). Talmy (2020: 1) writes that, "Broadly, an anaphoric referent is an element of the current discourse, whereas a deictic referent is outside the discourse in the spatiotemporal surroundings. This is a distinction made between the lexical and the physical, one that has traditionally led to distinct theoretical treatments of the corresponding referents." Talmy proposes an alternative: "language engages the same cognitive system to single out a referent whether it is speech-internal or speech-external." Places engage not only the same cognitive system but also the same linguistic devices for language-internal and language-external reference. In Section 5.2 I will describe a cognitive account of pointing in more detail. Here I note that a signer can point to a cup that is physically present to establish it as a referential Place in the current discourse; she can talk about a remembered location, pointing to where a piano used to be located; she can establish a location in signing space where 'quantum theory' resides; and in the same way, she can create a location in signing space for her teacher who is not physically present, pointing anaphorically to this location in subsequent discourse (Martínez & Wilcox, 2019).

Linguistic convention of a particular signed language provides an inventory of Place symbolic structures at differing levels of semantic and phonological schematicity. Places may be used referentially in nominal grounding (Martínez & Wilcox, 2019), in signed list constructions (Wilcox et al., 2023), and in reported and narrative discourse (Wilcox & Martínez, 2020; Wilcox et al., 2022). They are also used to express extended meanings, for example to instantiate metaphorical expressions such as CONCEPTUAL DISTANCE IS SPATIAL DISTANCE (Janzen et al., 2023).[3)]

3) Although the Janzen et al. study does not use Places, I suggest that Places are grammatical structures recruited to express spatial metaphors in signed languages.



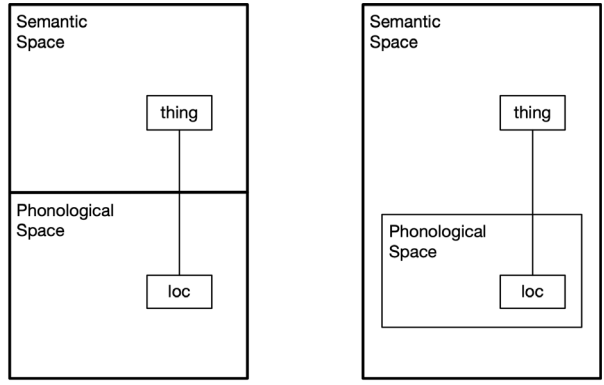
[Figure 2] Continuum of Places

In summary, Places are abstracted from linguistic and extralinguistic usage events. A Place is a thing-in-a-location. In signing, the signer directs attention to the phonological pole of the Place, thereby focusing intersubjective attention on the thing hosted by the location — the intended referent. In use, the schematic semantic pole and phonological pole of a Place are elaborated by some external content and a specific spatial location.

Finally, I note that it is convenient and in most cases adequate to depict semantic and phonological poles as in Figure 1. However, this diagrammatic notation makes it appear as if semantic and phonological poles are distinct areas of cognitive potential. A more accurate description is that a semantic pole resides within a broadly defined semantic space, defined as "the multifaceted field of conceptual potential within which thought and conceptualization unfold" (Langacker, 1987: 76; see also Gärdenfors, 2014). What this means is semantic and phonological space are not disjoint fields of cognitive potential. Phonological elements are conceptual entities, and so phonological space is a subregion of semantic space (Langacker, 1987: 79).

This characterization of semantic and phonological space is critical for understanding Places as symbolic structures in signed languages. Conceptual space consists of regions of entities, shapes, colors, movements (e.g., dance),

sounds — both conceptualizations of sounds in general and the sounds of languages — and more. Conceptual space includes the location of entities, whether real entities manifest in space or virtual entities such as those in Figure 2. For signed languages, the location of entities has phonological significance. As I have noted, while speakers may indicate location with locative and deictic words such as *here, there, this,* and *that*, signers incorporate the location into the form of signs in pointing and placing. In signing, when I say that I give a cup to a person on my right, my left, or standing on a balcony above me, the sign is directed at three different phonological locations.



[Figure 3] Two characterizations of semantic and phonological space for Place. In (a) semantic space and phonological space are conceived as distinct. The more accurate representation in (b) shows phonological space as a subregion of semantic space.

In summary, Figure 3(a) depicts the semantic pole and phonological pole of Place as distinct (note the line in (a) separating semantic from phonological space). Although this depiction is acceptable for rhetorical purposes, a more accurate representation is Figure 3(b), where phonological space and the phonological location of a Place reside in a subregion of semantic or conceptual space. Place is a linguistic symbol that associates two structures, both occurring in a broadly conceived semantic or conceptual space, one also residing in the

phonological subregion. The implication is that the phonological pole of a Place is a conceived location. I will discuss significance of this in Section 5.4.

5. How are Places used in discourse and grammar?

Place has relevance for many aspects of signed language grammar. In this section I briefly describe the use of Places in placing and pointing constructions; in tracking referents in discourse; and as components in so-called agreement.

5.1. Placing constructions create and recruit Places

Places are components in placing constructions. In a placing, a sign is produced at a certain spatial location. Martínez and Wilcox (2019) identified two types of placing: create-placing, in which a new Place is created, and recruit-placing, in which the signer recruits an existing Place. In Figure 4, an Argentine Sign Language (LSA) signer places PERSON, creating a Place and describing certain facts about this as yet unnamed person. He then directs the sign RENOWNED at this Place. Only later in the discourse is the person associated with the Place identified as San Martín, a famous figure in the history of Argentine independence and the participant of the adjectival relation 'renowned'. Later in the discourse, he points to the Place, anaphorically referring to and reactivating San Martín.



[Figure 4] Create-placing in Argentine Sign Language (from Martínez & Wilcox, 2019)

5.2. Pointing to Places

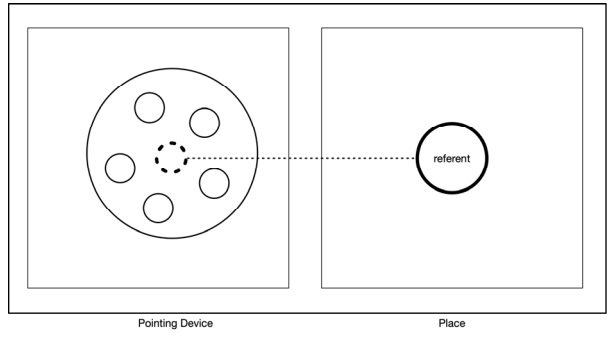
There is an ancient Chinese saying often attributed to the Buddhist monk Huineng: “When the wise man points at the moon, the fool looks at the finger.” We see here the two components of pointing: the moon, which is the focus of attention, and the finger, which directs attention but is not the focus of attention (unless one is a fool). The finger of course is in a location; this is hand stuff. Its ability to direct attention lies in its capacity to orient or move towards the focus of attention, the referent. Perhaps models such as Johnson and Liddell’s hand bearings can help us to understand this function of the hand to direct attention, but they say little about the focus of that attention: the referent and its location, the moon, which is a Place. How can this most important component, which is surely the purpose of pointing, be brought into the domain of language?

Pointing is ubiquitous in signed languages and gesture. In signed languages, pointing functions as “deictic and anaphoric pronouns, possessive and reflexive pronouns, demonstratives, locatives, determiners, body part labels, and verb agreement” (Meier & Lillo-Martin, 2013: 151). However, the linguistic status of pointing is much debated. In sign linguistics, pointing is often regarded as gesture and goes largely unanalyzed. For example, in making lists signers direct attention, typically with an index finger of the dominant hand, to the fingers of a list buoy (Liddell, 2003); this pointing finger receives little attention and is typically just labelled a pointing gesture. My colleagues and I have shown, however, that the pointing hand in list constructions is rich with semantic function, for example, creating higher-order entities consisting of groups of list fingers (Wilcox et al., 2023).

In pointing, a conceptualizer selects a particular but non-specified entity from a pool of conceived candidates and directs the addressee’s attention to that entity, the referent. Within cognitive grammar a construction is an assembly of symbolic structures. My colleagues and I thus analyze pointing as a construction consisting of two component symbolic structures: the first component directs attention to the second component, the focus of attention (Wilcox & Occhino, 2016; Martínez & Wilcox, 2019). We call the first component the pointing device. The prototypical means of directing attention in pointing is the index finger, but signers (and gesturers) have many other ways to direct attention, such as eye gaze direction,

body orientation, and more (Cooperrider et al., 2018). The second component of a pointing construction is a Place. I emphasize that both components, the pointing device and the Place, are symbolic structures consisting of form and meaning.

Figure 5 shows the semantic poles of the pointing device and the Place. The semantic pole of the pointing device includes the pool of candidate entities in our mental universe, shown as a circle containing the pool of candidates. The candidate that is selected as the focus of attention is schematic (represented as a dashed circle in Figure 5): a pointing finger on its own does not specify *what* it is pointing at — a pointing finger does not say, for example, 'look at that moon' or 'look at that cow' — it only specifies that it is directing attention at something that must be elaborated. The selected schematic candidate corresponds to and is elaborated by the second component, a Place (the dotted line in Figure 5 indicates correspondence; the bold circle indicates the referent is profiled as the focus of attention). The semantic pole of the Place is the intended referent; the semantic pole of the Place is possibly also initially schematic and elaborated in prior or subsequent discourse. The phonological pole of the Place is the conceptualized location of the referent. The pointing device and its directive force instruct the addressee to mentally follow its direction, so that both participants in the communicative event focus their conceptual attention on the same entity, the nominal referent symbolized by the Place.



(a) (b)

[Figure 5] Pointing construction showing the semantics of the pointing device (a) as one component with Place (b) as the second component

5.3. Using Places in discourse

Places have several grammatical uses in discourse. One use of Places is to introduce and track referents and their interactions. We saw this use in Figure 4. The signer introduced a referent with a placed sign that created a Place. That Place was then used in an adjectival construction, and only subsequently was the referent identified by name.

Another example is given in Figures 6-8. In an extended discourse an LSA signer describes the dangers of the human papillomavirus (HPV).[4] She begins by explaining that the virus is sexually transmitted, spreads quickly, and it is important to share information about HPV. She then signs GROUP-SPLIT TWO, GROUP-left GROUP-right (Figure 6).[5] These two placing constructions create two Places; the sign that is placed elaborates the semantic pole of the Places — they are two groups.



GROUP-SPLIT TWO GROUP-left GROUP-right

[Figure 6] Creating two Places in Argentine Sign Language discourse

Next, she places LOW, WARTS, and TREATMENT at the left Place (Figure 7), associating their semantic content with the left group Place. She also signs RISK, a body-anchored sign that cannot be placed. We now know that the left Place refers to low risk, warts, and the need for treatment.

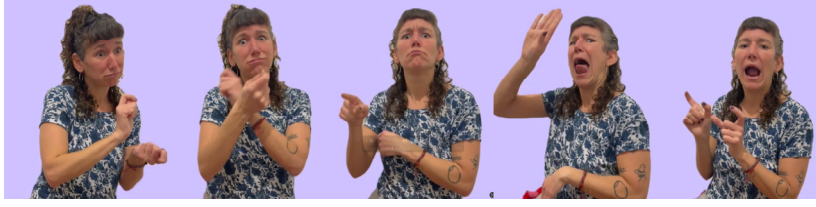
4) This example is analyzed in more detail in Wilcox et al., Forthcoming.
5) Left and right locations are from the signer's perspective.



LOW WARTS TREATMENT

[Figure 7] Low risk group in Argentine Sign Language discourse

She goes on to explain that if the virus is not treated, it can turn into cancer. She signs TURN-INTO, beginning at the left, low risk Place and moving it to the right Place (Figure 8). She again signs RISK, directs attention to the Place with a pointing construction POINT, and places HIGH, CANCER, and VIRUS (the latter not depicted in Figure 8) at the Place, associating the right Place with high risk and cancer.



TURN-INTO POINT HIGH CANCER

[Figure 8] Low risk turns into high risk

The verb TURN-INTO has two arguments: X turns into Y. These two arguments conceptually correspond to and are elaborated as low risk virus (X) and high risk cancer (Y), respectively. The two arguments also correspond phonologically to the left, low risk Place and the right high risk cancer: TURN-INTO begins at the left Place and moves to the right Place.[6] Wilcox et

6) It is not easy to see this in still image screen captures of dynamically produced signs displayed sequentially, as in Figure 8.

al. (Forthcoming) analyze the former as conceptual overlap, and the latter as phonological overlap. Conceptual overlap is the correspondence between separately symbolized chunks of conceptual content understood to be the same entity. Phonological overlap is the expression of two or more symbolic structures at the same location. Together, TURN-INTO appears to be a case of grammatical agreement. I turn to the use of Places as elements of grammatical constructions such as agreement in the next section.

5.4. Agreement: Places as components of grammar

One of the more hotly debated areas of sign grammar is the status of agreement. This is not surprising, since Kibrik (2019: 76) has observed that even in the analysis of spoken languages, "'agreement' has developed into an entangled and incoherent notion." Indeed, attempts to develop accounts of indicating or agreement verbs in signed languages have given rise to the proposals for language-gesture fusions and interfaces described in Section 2.

I can provide only a brief description of how a Place analysis might offer a solution (however, see Wilcox et al., 2025; Wilcox et al., Forthcoming). Agreement in cognitive grammar is treated as multiple symbolization, "a special case of conceptual overlap, which is characteristic of all grammatical constructions" (Langacker, 2008: 347). In this approach to agreement, "information about some entity is symbolized by more than one component structure within the same symbolic assembly and thus has multiple manifestations in a single complex expression. The representations of that entity … correspond to one another and map onto the same element in the composite conception" (Langacker, 2008: 188). We analyze such phenomena in signed languages as multiple symbolization, with Places as the site of symbolization.

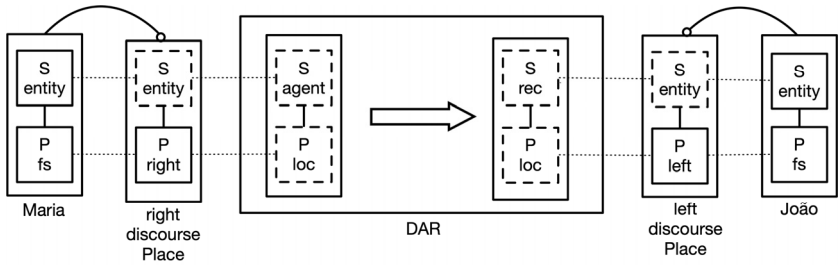
The cognitive account is again based on experientially grounded conceptual archetypes. Consider verbs of giving, which are prototypical agreement or indicating verbs. A prototypical event of giving involves the transfer of some physical object between two participants at specific locations in space. These two locations host the two participants of the act, the agent and the recipient. These participants occupy Places, and the event of transfer moves an object between

these two locations. In many signed languages, these external Places are incorporated into the verb of transfer as internal Places, the corresponding initial and final locations of the verb of transfer. One way to think about this process of incorporation is by analogy to cellular mitochondria. It is generally accepted that mitochondria evolved from engulfed prokaryote cells that once lived as independent organisms (Sagan, 1967). A eukaryotic cell engulfed a prokaryote, which developed into a mitochondrion. Analogously, we could say that certain signed forms, including but not limited to indicating verbs, engulfed external independent Places, which developed into schematic internal Places. Cognitive grammar similarly characterizes this as a special type of overlap in which "it is common for one structure to be wholly included in another. As a special case, the included structure can be schematic for the other, abstracting away from its fine-grained details" (Langacker, 2023: 110).

The phonological poles of the embedded Places are specified only as the initial and final location of the hand's path movement. The semantic poles are also schematic; the semantic pole of the initial Place is specified only as the agent, and the semantic pole of the final Place is specified as the recipient. The full specification of the semantic and phonological poles is elaborated in the discourse context.

An example from Brazilian Sign Language (Libras) described by Wilcox et al. (Forthcoming) shows how this analysis works. The signer says M-A-R-I-A CANETA DAR J-O-Ã-O "Maria gives a pen to João." Maria and João are fingerspelled on the signer's right and left, respectively (CANETA is not included in this analysis). DAR is a path movement verb consisting of three symbolic structures: the verb and two internal Places. The phonological poles of the internal Places are schematic, specified only as the initial and final location of the path. The semantic poles are for the most part schematic; the semantic pole of the initial Place is specified only as the agent, and the semantic pole of the final Place is specified only as the recipient. In this example, Maria and João are not present. In situations such as this, discourse participants are mapped to conventional spatial locations (Winston, 1995). We analyze these locations as the phonological poles of Places. These Places consist of specific phonological poles in left and right signing space, and schematic semantic poles specified

only as entities. Depending on the discourse context, the entities could be cities such as Chicago and San Francisco, two theories such as quantum mechanics and classical mechanics, two cars, discourse participants, and so forth. In fully contextualized discourse the semantic poles are elaborated. Here, the semantic poles are elaborated as Maria (right) and João (left).



[Figure 9] Libras verb of giving DAR showing internal Place substructures that correspond with external discourse Places and are elaborated by fingerspelled referents Maria and João.

This entire DAR construction is illustrated in Figure 9. The diagrammatic conventions are the same as prior figures. Rectangles represent symbolic structures and their semantic (S) and phonological (P) poles. Dashed lines indicate schematicity. The initial and final phonological locations of the verb DAR are two internal Place substructures, phonologically schematic and semantically specified only as agent and recipient, respectively.[7] The two conventional external right and left discourse Places are phonologically specific. They are semantically schematic and thus require elaboration. In this case, they are elaborated by fingerspelling the names of the two participants. The curved line with open-ball end connecting the two participants and the right and left discourse Places respectively indicates that the fingerspelled names are placed, phonologically superimposed on and semantically elaborating the discourse Places.

7) The verb DAR is a symbolic structure with a semantic pole meaning ‘give to’ and a phonological pole consisting of a flat-B handshape and the path movement from initial to final location. For simplicity, the semantic and phonological poles of DAR are not included in this diagram, only its two internal Place substructures.

Conceptually, Maria elaborates the semantic pole of the right discourse Place; this elaborated semantic pole in turn elaborates the schematic semantic pole of the initial internal Place of the verb DAR (the dotted correspondence lines representing conceptual overlap). Maria is the agent of giving. The same semantic and phonological relations hold for João as the recipient.

We see that in this construction, information about the two participants of the process 'give-to' is symbolized by three component symbolic structures within the same complex symbolic assembly. This multiple manifestation and conceptual overlap within a single complex expression constitutes multiple symbolization.

A unique feature of these constructions is that they exhibit both conceptual and phonological overlap. The conceptual overlap is between the schematic agent and recipient of the verb and their corresponding instantiations in an actual production. The use of the same locations for both the external Places and the Places internal to the verb constitutes phonological overlap (also indicated by correspondence lines). Of course, there is more complexity, as I hinted at in Section 2. The claim is not that phonological overlap is spatially (we would say phonetically) precisely coincident. Phonological elements are conceptual entities. Location is conceptual; phonological overlap of locations is conceptual, a matter of categorization. Just as phonetically distinct productions of a sound segment may be treated as the same, non-identical locations may be conceptualized and categorized as equivalent.[8)]

5.5. Cognitive grammar and iconicity

Iconicity is sometimes seen as a kind of external pressure on the phonological system (Brentari, 2019). Semantic or semiotic significance has been seen as something that is added on to the putative meaningless phonemes posited by traditional models of phonology. I have always thought that iconicity is symptomatic of a deeper, more fundamental cognitive connection of form and meaning (Wilcox, 2004). I believe a cognitive approach to sign phonology can lead to a deeper understanding of iconicity.

8) A fuller account of the categorization of locations is given in Wilcox et al. (Forthcoming).

In a cognitive approach phonological elements are conceptual entities — that is, they have semantic import, as shown in Figure 3 (a compatible view with relevance to iconicity is Tkachman, 2025). To the extent that phonological elements lack meaning (if they ever really do), this arises due to attrition of the semantic pole. One way that this may happen is that a certain phonological element may be used more frequently and in more varied contexts. If a phonological element is used in only one or a few contexts, its associated semantic pole is fairly predictable. As it is used in more, and more varied contexts, the semantic pole becomes less and less predictable. These two factors lead to arbitrariness. Such a cognitive account has been developed in much more detail as it pertains to handshape by Occhino (2017).

I have focused more on location as the phonological pole of a symbolic structure, Place, and here we can also see how phonological elements exhibit iconicity. For example, the capacity of signed languages to express conceptual and phonological overlap is a manifestation of Behaghel's First Law, which Slobin (1985: 228) has paraphrased as "What belongs together mentally is placed close together syntactically." This relationship between semantic and formal elements implies a type of diagrammatic iconicity.

Iconicity is readily incorporated into cognitive grammar in terms of the relationship between the semantic and phonological poles of symbolic structures. Langacker has recently expanded on the cognitive grammar view of iconicity, claiming that iconicity is a type of overlap: "structure and iconicity are actually non-distinct, in that both are manifestations of overlapping activity" (Langacker, 2023: 105). One type of overlapping activity is conceptual overlap, a mental togetherness which is characteristic of all grammatical constructions. In cognitive grammar this is a relationship between the semantic poles of symbolic structures. Syntactic togetherness is a property of the phonological poles of symbolic structures. Regarding this type of togetherness, Langacker (1987: 361) says that "The most straightforward kind of togetherness is perhaps to be identified as simple juxtaposition: one structure, A, is placed immediately adjacent to the other, B: [A B]."

What about signed languages? Signed languages differ from spoken languages in that they not only exhibit conceptual overlap, they can also

manifest phonological overlap. Whereas spoken languages only manifest phonological togetherness by linear adjacency, signed languages have an even more straightforward kind of phonological togetherness. Signed languages recruit Places, placing the elements that go together semantically at the same phonological location. In this way, signed languages exhibit a kind of Behagel's First Law on steroids (Wilcox et al., 2025).

6. Looking Forward: Convergence is possible

Signed and spoken languages have ways to refer to entities in the spatial environment. For spoken languages, the phonological mechanism is mouth stuff — spoken words. For signed languages, the phonological mechanism is hand stuff — handshape, hand movement, and location. In current theories of sign phonology location is limited to where the hand is. Signed languages are not so constrained by theory. Signed languages extend linguistic potential beyond the hand and its location. Through conceptualization and categorization, any location in the spatial environment can be brought into the linguistic system. Our job as linguists is to develop theories that account for this potential.

I have presented a preliminary proposal for a conceptual approach to signed language phonology. For now, this proposal focuses only on the status of location and introduces the concept of Place, a symbolic structure consisting of a semantic pole and a phonological pole. At its most schematic characterization valid for all instances, the semantic pole of a Place is a *thing*, the product of grouping and reification conceived as a single entity. The phonological pole is a spatial location. My central claim is that the location of a Place is not limited to where the hand is.[9] Although Places may be created or recruited by the hand(s), the specification of a Place's phonological pole is simply a location in space. Places are used in exophoric deictic expressions or in language-internal

9) This is not to say that the hand cannot instantiate a Place. Signers can recruit a hand or its parts as a Place. Examples include using the fingers as Places in list constructions (Wilcox et al., 2023), placing fingerspelling in grammatical expressions such as in Figure 9, or using the hand in a self-symbolic expression to talk about a hand.

anaphoric expressions. Places are used to refer to concrete objects in the spatial environment, to remembered objects, to present but not visible objects, to imagined objects, and to discourse antecedents and anaphors. Regarding placing, research has shown that it is not only signs that can be placed. The signer may be placed, for example, in narrative discourse to conceptually map one discourse participant onto another, virtually present participant (Wilcox et al., 2022). In all of these cases, the location of the Place, its phonological pole, is not constrained to where the hand is located. Crucially, the location of a Place is a conceptualization, just as the semantic pole is also conceptualized.

Certain implications flow from this model. For example, this cognitive approach suggests that moving along the continuum of Places shown in Figure 2 from language-external (deixis) to language-internal (anaphor) requires the signer and the addressee to use more conceptual resources, with implications for child language development. Places also play a complementary role in demonstrative expressions, mirroring the pattern described by Diessel (2006) in the development of demonstratives. Diessel observed that in exophoric use, demonstratives focus the interlocutor's attention on concrete entities in the physical world. When used in discourse, demonstratives focus attention on linguistic elements in the surrounding discourse context.

My friends and colleagues know that I enjoy studying how physicists come to grips with baffling facts about the world of quantum mechanics. One of my favorite stories comes from Freeman Dyson, who wrote about an idea suggested to him by the Nobel Laureate physicist Richard Feynman. Feynman told Dyson about his "sum over histories" version of quantum mechanics. "The electron does anything it likes," Feynman said. "It just goes in any direction at any speed, forward or backward in time, however it likes, and then you add up the amplitudes and it gives you the wave-function." Dyson later wrote, "I said to him, 'You're crazy.' But he was not." Do I understand sum over histories of the electron? Of course not! What I do understand is that Feynman was not bound by prior theoretical predilections about how electrons should behave. What I take away from this story is this: don't be afraid to think creatively about a problem. Theoretical accounts of what mouth stuff can do does not constrain what hand stuff can do.

Our colleagues from spoken language phonology have moved ahead. They have proposed new ideas, such as exemplar models of phonology (Bybee, 2001; Johnson, 2007); articulatory phonology based on task dynamics (Browman & Goldstein, 1992); and they have even suggested that phonological structures (e.g., phones, phonemes, etc.) are the ghosts of letters (Port, 2008). While functional and cognitive approaches to language increasingly influence how linguists analyze grammar and discourse in signed languages (see for example Janzen & Shaffer, 2023), the predominant current models of sign phonology are still constrained by the assumptions of structuralist and generative linguistic theory. Questions and unresolved problems concerning core areas of grammar can be traced to problems inherent in these theories. Our current models of sign phonology are stuck in the mouths of speakers. Signed languages, unlike spoken languages, have the potential to reach out and incorporate locations beyond the body and beyond signing space as elements of grammar. The ideas I have described here are admittedly exploratory. I hope, however, they may point to a way forward. Let's stop being Procrustean linguists, stretching and chopping signed languages to fit an iron bed. If electrons can do anything they like, signers can too. Convergence is still possible.

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