Primary movement is the result of shoulder and/or elbow articulation.

A. In ASL and other SLs, signing a shape involves tracing it in the air. Some are traced with one moving hand (“Method 1”), and others with two (“Method 2”).

B. Students are taught to sign shapes via categories, such as those in this figure. However, the criteria given are often contradictory and imprecise.

C. We assembled a set of both “canonical” and “novel” shapes to identify the relevant geometric principles, and recorded signers producing them.

D. The best predictors of Method choice (1 vs 2) were whether a shape had Y-axis symmetry and whether it had any curved edges.

E. We then analyzed ASL signs that are iconic of an entity’s shape and found that the same predictors surfaced, as seen in the sign for HOUSE.

**Discussion - Why bother with two hands?**

Handshape did not impact Method choice in the shapes survey **but** we might expect it to in the dictionary survey (handshape can convey more than just the outline).

**Dictionary Survey**

We analyzed 120 signs in an ASL online dictionary whose movement draws the shape of the entity.

- **surface-drawing** (Flat-R, B, claw, 5, C, O); used with thick entities (a noticeable third dimension)
- **edge-drawing** (1, I, h, baby-C, 4, v, 1-l); used with flat entities (two-dimensional)

**Consistency with Lexical Drawing Principle for Edge- vs. Surface-Drawing Handshapes**

**Dimension Principle:** If path movement is iconic in that it draws (part of) the signified entity, then edge-drawing handshapes should be used for two-dimensional entities, whereas surface-drawing handshapes should be used for three-dimensional entities.

**Lexical Drawing Principle** holds more strongly with signs that use edge-drawing handshapes than with signs that use surface-drawing handshapes.

**What role does handshape play?**

Handshape did not impact Method choice in the shapes survey **but** we might expect it to in the dictionary survey (handshape can convey more than just the outline).

**Dictionary Survey**

One online ASL dictionary was analyzed, along with samplings across three others to find entries with concrete sense whose movement draws the outline of (part of) the object. This yielded a set of 137 distinct signs. Signs fell into one of three categories:

+ **+YSym - Curve** (HOUSE)
+ **+Curve** (ELEPHANT)
+ **-YSym - Curve** (RHINO)

112/137 signs are consistent with the predictions of the shapes survey.

**Lexical Drawing Principle**: If the primary movement path of a lexical item is iconic of an entity’s shape, and if that path is +YSym and –Curve, the lexical item is more likely to involve two moving hands; otherwise it is more likely that only one hand will move.

**Box plots of the use of Method 2**

**References**

2. Figure taken from Smith, Loret, & Maku, 1998, p. 162; reprinted with permission of Dawn Sign Press
3. www.aslpro.com

*Primary movement is the result of shoulder and/or elbow articulation.*