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DIMENSIONS OF ICONICITY IN AMERICAN SIGN LANGUAGE^{1,2}

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

Part of de Saussure's definition of language is that the relation between the symbol and the referent is arbitrary. That is a truism among linguists with regard to oral language³, which is all that de Saussure had in mind: There is nothing doglike, say, about [ʃjɛ] or [ki] or [dɔg], and those few words which do in some way resemble their referents are considered an exceptional class, onomatopoeias. Likewise in American Sign Language (ASL), and in many other sign languages of the world, there are many signs whose formation bears no obvious relation to their meaning.⁴ But there are also many signs in these languages that are based partly on visual images that exist independently of the language. Visual imagery is in general far more important to ASL than auditory imagery is to oral languages. It is much more heavily used in the lexicon, and it can regularly be part of the structure of the sentence as well. ((See DeMatteo, in this volume.)) Icons-- those signs and constructions which are based on underlying visual images⁵ are related to those images in different ways, whose variation is reflected in their potential use in the language. I intend to describe some of the dimensions along which this relationship may vary.

One dimension that is bound to come up in any discussion of icons and imagery is metonymy ((discussed by Schlesinger et al. and by Battison)). An icon whose image is not of its referent, but of something that is in some way associated with its referent, is called metonymic, after the rhetorical figure exemplified by the use of the word "big-mouth" for someone who talks too much, or "the White House" for the President's staff. Some examples in ASL are OLD⁶ (pull the fist down from the chin), based on the image of a beard (but it is not the sign for a beard); HOSPITAL (draw a cross on the opposite upper arm), based on the red cross on a uniform sleeve; and KID (forefinger and pinky extended, wiggle side of forefinger on upper lip), based on wiping a runny nose. Metonymy is a fuzzy, uncertain characteristic both in speech and in sign?⁷ Fortunately for my purposes, metonymy does not involve the relationship between an icon and its underlying image, and so does not enter the scope

of this study. Metonymy in ASL is a relation hold-
 ing between an icon's image and its referent:
 the image 'beard' metonymically represents the ref-
 erent 'old'⁸ (relationship b in the figure), but
 the relationship between that image and the forma-
 tion of the sign OLD (a) is a direct one. The




sign-----	(a)-----	image-----	(b)-----	referent
(OLD)		(beard)		('old')



dimensions of iconicity that I will explore are
 concerned only with the sign and its underlying
 image, no matter how that image is related to the
 sign's referent.

The first of these dimensions involves the use
 of time and motion in the articulation of the icon.
 In HOUSE the signer moves his flat hands first
 diagonally down and apart, and then straight down
 parallel to each other, , tracing in the air the
 traditional simple shape  that means 'house' in
 our society, a pointed roof and a wall on each
 side.⁹ But at no time is the whole shape visible;
 it exists only in the mind of the signer as he
 thinks of and forms the sign, and in the mind of
 his addressee when he has seen the diagonal motion
 of the 'roof' and the vertical motion of the 'walls';
 and mentally assembled them into a unit. -- In TREE,
 however, the signer's upright forearm becomes the
 trunk of the tree, so to speak, and his fingers
 become its branches waving in the breeze. They
 are branches even when they are not moving (as I
 will demonstrate), and the motion that they have in
 the sign corresponds analogically (in DeMatteo's
 sense) to the motion that the branches have in the
 real tree of the image. By contrast, the motion of
 the hands in HOUSE does not correspond to any
 motion of a real house; it belongs exclusively to
 the sign, and is part of the making of the sign
 from the image. The 'house' image, existing only
 by virtue of the signer's and viewer's memory, may
 be described as "virtual", in distinction to what
 may be called the "substantive", physically present,
 image of the tree. Substantive icons are easier to
 manipulate in time. The sign TREE can be shown as
 waving in the breeze, being chopped down (no longer
 waving), and being hauled away, all without losing
 its basic shape. Nothing of the kind can be done
 with the sign HOUSE. If you want to say, for exam-
 ple, 'They moved Jack London's house from the Yukon

to Oakland', you have to do something like this (here with a sign that can be approximately glossed as PICK-UP-AND-MOVE):

THEY PICK-UP-AND-MOVE (from left; up, right, down)
 j-a-c-k l-o-n-d-o-n HOUSE (at left)
 y-u-k-o-n (at left) PICK-UP-AND-MOVE (as before)
 o-a-k-l-a-n-d (at right)

That is, the house is signed at a place in the signing space corresponding to its original location, and the verb moves from that place to the place corresponding to the new location. You can't move the house while you're forming it because the two kinds of motion, virtual  for the house and substantive  for the moving, get irrecoverably mixed . There may be some other sign language with conventions for keeping them distinct, or perhaps an invented sign language could do so; or maybe a species with different perceptual apparatus from ours could sign virtual and substantive motion simultaneously; but ASL doesn't.

This temporal limitation of virtual icons means that the image underlying a virtual icon must be a sort of snapshot, shape without motion, while the image underlying a substantive icon can be, and frequently is, like a movie covering some span of time. Every sign in ASL has a movement as one of its obligatory formational parameters ((as Stokoe, Casterline, & Croneberg [1965], Friedman [to appear], and many others have observed)), and in substantive icons this movement is often a characteristic movement of the imaged object. TREE waving is one example; others are BOOK opening (the flat hands, palm-up and fingertips pointing forward, and "hinged" along the pinky edge), AIRPLANE flying  thumb, forefinger, and pinky extended from palm-down fist, moving forward high in signing space-- about chin high or higher), and BIRD opening and closing its beak (with thumb and forefinger pointing out from the mouth or chin.) 

Virtual icons, on the other hand, have greater freedom in space than substantive icons. A substantive icon is limited to the capabilities in size and shape of the human articulators, which in ASL are just the hands and arms (with a few minor exceptions). A virtual icon is limited only by the

signer's reach and by the complexity of shape that he and his addressee can produce and perceive virtually. Virtual motion is used productively in ASL to describe shapes with much more precision than is possible in English; in fact, this is its primary synchronically productive use. One time an informant, having been asked to describe a fairly intricate colored geometric pattern, began by sketching it in the air with his forefingers (a common way of describing two-dimensional shapes) and then filled in the colors by signing them with one hand while pointing with the other to the appropriate area of the outline he had just drawn. The same informant, describing a picture of a tall, narrow house, began by signing HOUSE, but modifying the sign to the proportions of the house in the drawing. He also made it large enough so that he could fill in the windows and doors by signing them in their proper places.

Another dimension of iconicity applies only to substantive icons: What sort of physical object does the articulator represent? For instance, in TREE the articulator (in this case, the forearm and hand) represents a complete object, which does not change its location during the period of the image (the length of the movie, so to speak). In BOOK each hand represents part of such an object, one "half" of the open book. In WALK_{BB} ^{ll} the flat, palm-down hands represent a person's feet. In MEET the vertical forefingers extended from the fists each represent an entire, independently mobile person. And in WASH the hands simply represent themselves: the sign is conventionalized, but it is based on a pantomime of washing the body, the face, the hair, or other things. In fact, substantive iconicity and pantomime involve the same relation between icon and image, that of presenting to the viewer a visible representation of the object imaged (which can be the human body engaged in some activity), as opposed to the representation involved in virtual iconicity, which exists only in the signers' minds.

I think that lexicalized pantomimic signs, such as WASH, are more easily integrated with improvised pantomime than are such non-pantomimic signs as RUN (with forefingers representing running legs, but often signed in a "linked" form in which the iconicity has mostly disappeared) or MEET. For example, one can sign "I washed my hair last night" and

gradually turn the sign WASH-HAIR into a detailed pantomime of discovering a tangle and attempting, first casually and then with increasing annoyance and pain, to straighten it out.

We can construct a spectrum of object represented. At one end the body represents itself: such icons, WASH, for example, are pantomimic in origin, though they may be conventionalized or metonymic, and they may have lost their functional iconicity (see below). In the next part of this spectrum parts of the body represent other parts--often, one may suppose, because of the diachronic tendency of ASL signs to become more conventional and less pantomimic in form, and limited from the rest of the body to the hands. ((See Frishberg 1975.)) Some examples are WALKBB and YES (fist nods on wrist like head nodding on neck). And at the other end of the spectrum the articulators can represent objects that are not parts of the body at all: either the whole object, as in TREE, or part of it, as in BOOK. These objects can even be people, as in MEET or GANG-UP-ON (spread-out thumb and fingers of one hand converge on and seize vertical forefinger of the other hand). Notice that in GANG-UP-ON one articulator represents a whole group of people; such plural elements are fairly common ((see Mandel 1975, section on "markers"-- i.e., such mobile elements as the "people" in GANG-UP-ON and the AIRPLANE)). -- A single sign can span this spectrum. In COKE (cocaine or Coca-Cola, calquing English) the stiff forefinger becomes a needle shooting into the opposite arm, which represents itself. In LOOK-AWAY-IN-DISDAIN, one hand represents the eyes and their line of vision ("V-for-Victory" hand), while the other represents a person as in MEET ((Frishberg & Gough 1973)).

A third dimension of iconicity is that of scale: How big is the object or action involved in the image, and how big is the sign itself? Some signs¹² exaggerate the size of their images, such as SURPRISE, in which the index finger and thumb represent the eyes opening wide, and perhaps the eyebrows shooting upwards. Others, such as HOSPITAL and (bank) CHECK (thumbs and forefingers draw a rectangle), are pretty much life-size. Pantomimic icons, of course, are among these. And many icons reduce the image from some macroscopic scale to the size of the signing space: CAR₃ (the hand moves as the car is being said to move, with thumb

up and first two fingers pointing "forward", i.e. toward the front of the car), MEET, SIT (with fore- and middle fingers representing legs), and in general a whole open-ended, productive set of models which are a regular grammatical device for describing physical relationships. The signer can establish his referent objects as being located in different parts of the signing space, either simply to express their relative positions or to use them as reference points for the movement of one or more other referent objects or actions.¹³ Once they are so established, the signer may also refer to them grammatically, with the deictic devices that ASL uses as pronouns, as if the referents were actually in those places in the signing space. --This type of icon is also used in a purely grammatical way without reference to real spatial relationships, simply to refer pronominally to people who are not present.

DeMatteo has pointed out ((1975)) that the synchronic iconicity of a sign can be judged by its behavior, i.e., by whether and how the signers of the language manipulate it. If the meaning of a sign can be productively modified by modifications in its formation, mediated by analogical modifications in its image, then that sign's image is undeniably psychologically real and functional for the signers. For instance: The modification of WALK_Y (first and middle fingers "walk" like legs) into OBES_{EY} (thumb and pinky "waddle" forward, other fingers folded down) tells us that the image of legs in WALK_Y was productively functional for ASL signers at the time OBES_{EY} was coined. In fact, the great variety of signs in the language today using the image of the first two fingers as legs leaves no doubt that the image is still very much alive.

This feature of iconic manipulability varies from icon to icon. Some icons are so highly manipulable that no particular lexical sign can be singled out as basic; the V-legs morpheme is an example. Some have a relatively unmarked, basic form: CAR₃, compared with PARK (move the car forward and set it down on the upturned opposite palm) and TRAFFIC-JAM (hands alternate in lining up cars one behind the other). Some signs have only one or two iconic derivatives, such as MEAT (thumb and forefinger grasp fleshy pad between thumb and forefinger of opposite hand). The only other use I

know of for this image (that fleshy pad = meat) is the verb CHOP-MEAT; the verb CHOP in ASL always incorporates its object, and in CHOP-MEAT the 'chopping' is applied to the fleshy pad. There are also many signs of iconic origin which have become petrified and which have no modified forms; one such is COFFEE (imitative of the motion of the hands in grinding coffee in an old-fashioned hand coffee mill), whose image is used only in this sign and is no longer productive. Some signs are known to have had iconic origins, but have moved away from them through linguistic change in their formation. An example is TOMATO, formerly a compound of RED + a form of SLICE, but now assimilated into a unit containing neither of the original components ((Frishberg 1975)).¹⁴ And some signs look as though they should be iconic, but they have no derivatives and different signers have different etymologies for them: e.g., AMERICA (fingers laced, move joined hands in a small horizontal circle), explained both as "log cabin" and "rail fence". (Such folk-etymologies seem to be popular in the culture of American signers, possibly because of a persistent belief, correct or not, that most signs are iconic.) These last three classes of signs--petrified icons, changed icons, and might-have-been icons-- are in fact effectively no longer iconic, if indeed those of the last class ever were. Perhaps their iconicity could be revived in a special context which made the image clear, but such reiconization would probably be synchronically more like the poetic device of blending, and establishing relationships between, signs which are not historically related. An example of this process occurred in a signed version of the song "Happy Talk" that I saw performed by Lou Fant and Betsy Ford: First they made the sign sometimes



"GEARS" sign
(as seen by
signer looking
down)

called "gears": both hands in front of the signer with palms toward chest, fingers spread and relaxed and meshed like gears, with fingertips angled toward signer where they cross; hands swing up and down from wrists, in unison, staying meshed like gears. Then the hands moved together to mesh completely, with the fingers "inside"-- between the palms-- rather than "outside", as they usually are when you lace your fingers; the result was a form of the

sign SWEETHEARTS, with the thumbs "flirting" with each other like lovers' heads. But SWEETHEARTS is normally signed with the two fists pressed together rather than with fingers meshed. Making it develop in this way from the "gears" sign, which normally means something like 'cooperate' and here could be translated loosely as "we go so well together", gave SWEETHEARTS an added nuance of closeness and togetherness. ((See also Klima & Bellugi 1975.))

You may notice that I have not distinguished between synchronically productive manipulation of an iconic sign (or synchronic use of an iconic morpheme) and historical relation between a set of signs involving related underlying images. Such a distinction cannot always be drawn clearly, nor is it always necessary. JUMP-UP-AND-DOWN (first and middle fingers, as 'legs', bending and straightening while moving down to and up from the upturned opposite palm) is both an established sign and a valid derivative of the V-legs morpheme. It follows from the analogical nature of icons ((DeMatteo)) that they can in principle be subjected to a wide and subtle range of modification while still being thought of as "the same sign". It is difficult, and perhaps not even worthwhile, to attempt to determine just at what point a particular often-used form of a sign itself achieves the lexical status of a sign. But it is certain that synchronic iconic modifiability varies from sign to sign.

Notice that both substantive and virtual icons are subject to synchronic iconic modification and manipulation. Manipulation of shape is usually restricted to virtual icons, although there are exceptions (such as OBESY).¹⁵ Manipulation in time to show motion in the image is possible only with substantive icons, and in fact is probably the most important use of substantive iconicity. ^{productive}

Summary: I have presented a number of dimensions of variation among the icons of American Sign Language, i.e., those lexical signs and other elements of the language which are based on a visual image which exists independently of the language itself. Concentrating on the relation between the sign and the image, I have presented the following dimensions:

== The use of time and motion: virtual icons, such as HOUSE, in which the shape is never visible, but exists only as a mental construct of the signer

and viewer; versus substantive icons, such as TREE, in which the articulators take on the approximate shape of the image. Virtual iconicity permits the depiction of a great variety of shapes ('skinny house', the geometric pattern), while substantive icons can be manipulated in time (TREE...CHOP-DOWN ...HAUL-AWAY).¹⁶

== The relationship between the articulator in a substantive icon and the physical object it represents. This can range from self-representation (as with the hands in WASH) to representation of a separate, independent object (such as the people in MEET). The more pantomime-like signs along this range are probably easier to integrate into improvised pantomimes.

== The proportion between the size of the image and the size of the icon. This can range from the mild exaggeration of SURPRISE, through the life size of pantomimic icons and many others (such as GIVE and CHILD [hold flat hand palm-down about four feet from the ground]), to the extreme condensation possible with models such as MEET, AIRPLANE, and improvised descriptions of spatial relationships.

== Manipulability. Some icons, such as the V-legs morpheme, have an apparently open-ended range of synchronic manipulability, which is not clearly separable from the large number of lexical signs in which they appear (for V-legs: WALKy, STAIRS, JUMP-UP-AND-DOWN, FALL, DANCE, and many others). Other icons have more restricted ranges of manipulability, extending down to icons which cannot be manipulated at all, like COFFEE, and those whose iconicity is only historical, with even the possibility of iconic revivification destroyed by change in their form (TOMATO from RED + SLICE).

I have presented these dimensions of iconicity and some of their interactions with each other and with the structure of the language. I hope this analysis will prove helpful to other workers and will stimulate further linguistic study of American Sign Language.

NOTES

1. Work reported in this paper was partly supported by a Graduate Fellowship from the National Science Foundation.
2. American Sign Language is the language of the

American deaf community. It is not derived from English, and in fact has a very different structure, some aspects of which are explored in this paper and in DeMatteo (in this volume). For further information see Stokoe, Casterline, & Croneberg (1965), Friedman (to appear), or the other works in the Bibliography.

3. Or was, until Ross (in this volume) and related works.

4. For a more detailed examination of arbitrariness, see Frishberg (1975) and Mandel (1975).

5. This is my definition of the term. There is no generally agreed-on terminology among ASL linguists for analog and iconic phenomena. Perhaps "visual analogies" or something like that would be a better term semantically, but "icon" seems to be the easiest to use syntactically and morphologically.

6. The notation used for the linguistic description of ASL signs-- developed by Stokoe (1960; also with Casterline & Croneberg, 1965), and modified in Friedman (to appear)-- is cumbersome to read and write, as well as being unfamiliar to most linguists. It is customary to refer to lexical signs by completely capitalized English words or phrases (e.g., TOMORROW, WASHING-MACHINE, 2-PEOPLE-APPROACH-ONE-PERSON). These glosses are generally merely convenient approximations of part of the semantic area covered by the sign, and should be looked on as a kind of hieroglyph or ideogram. I will describe signs in prose and occasional drawings, in enough detail to make the example's iconicity clear (though not necessarily enough for a complete "phonological" description). Fingerspelled segments-- i.e., strings of the 26 forms used for some names, English words, etc.-- will appear l-i-k-e t-h-i-s. The position or direction of a sign, where relevant, will be superscript, in parentheses.

7. For instance, what is the referent of "Canada" in these examples?: "Canada has exchanged ambassadors with Communist China." "Canada covers nearly ten million square kilometers." "Canada is very friendly to tourists."

8. Which may be extended by a further metonymy, as in English, to refer to 'age' generally, as in "four years old" -- OLD FOUR.

9. That is the citation form of the sign. In conversation it is often reduced to a form of the 'roof' alone. I'm not claiming that signers are always aware of the image in this sign, only that

they can become aware of it and use it, and sometimes do.

10. "Virtual motion", used to form a virtual icon; "substantive motion", used with a substantive icon to represent motion in the image.

11. The subscripts, based on the notational description of the sign, are an ad hoc device to distinguish signs which might have the same gloss. Here the flat hands ("B-hands"), palms down and fingertips forward in front of the signer, move up and down alternately like walking feet.

12. I don't think that there are many signs that are larger than their images. But a tiny object may be blown up to a signable size to describe its shape.

13. For instance, a multi-directional verb may incorporate one or more of these points; that is, a verbal sign whose direction and/or orientation depend on its arguments. See Fant (1972), Friedman (1975, and to appear).

14. Reliable historical data on some signs is available from some old sign language manuals and other sources. Frishberg (1975) describes her sources.

15. It was pointed out in the discussion following the presentation of this paper that the productive use of virtual iconicity is mostly limited to describing the shapes of particular objects.

16. There are actually two other kinds of icon in ASL that I have not touched on at all in this paper. One simply shows a physical dimension, as with the American (spoken) sentence "He's about yea tall," or in the sign CHILD (described below). The other is based on pointing to a token of the referent, as in FACE (point index finger to your own chin and trace periphery of face-- actually just a circular motion at the wrist). But I think the dimensions of variation of virtual and substantive icons are more interesting.

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