

FORSKNING OM TECKENSPRÅK

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Brita Bergman

SIGN TYPOLOGY *

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For a fuller treatment, see Bergman, B. (1975): Tecken-
språkets lingvistiska status III. Stockholms universi-
tet, Institutionen för lingvistik.

Sign typology

The description of the structure of the sign in the chapter of that name was concerned only with how the form of a sign can be analysed into distinctive units, thus stressing the structural similarity of signs and words. A description of that kind tells us nothing about what is the most striking feature of many signs, namely that they have obvious similarities with the phenomena of which they are symbols. A description based on cheremic analysis, which describes the sign EGG (see figure 14, page 37) as

A-hand (forwards, up)

N-hand (left, down)

iterative contact

gives no indication that the form of the sign imitates a knife or spoon (articulator) tapping (articulation) the egg (left hand as place of articulation). If signs had been arbitrary (see further page 109) in the sense that their form was independent of what they refer to, then a cheremic description would have been adequate. But it is impossible to ignore the fact that a great number of signs are clearly motivated by what they stand for. This information must supplement the cheremic description, which, for these signs, tells only half the story, so to speak, about their form.

The symbols of an oral language are not normally influenced by the phenomena they stand for—they are arbitrary. By arbitrary is meant that there is no natural connection between the form of a word and what it signifies. A *chair* has no quality that justifies the sound sequence /fɛə/. The Swedish *stol* or the French *chaise* function equally efficiently for the four-legged objects we sit on.

The only possible exception to the rule about the arbitrariness of words are the onomatopœic (sound-imitating) words. Examples from Swedish are *kuckeliku* (*cock-a-doodle-doo*), *bingbång* (*ding-dong*), *vovov* (*bow-wow*), and *krasch* (*crash*). In an oral language, an auditory impression can be the starting-point in the formation of words, so that they resemble the sounds they represent or the phenomena characterised by these sounds. That it is not a case of pure imitation is demonstrated by the fact that the phonemic structure of a language in-

fluences the selection of the sounds and decides which sound sequences are permitted.

Sign language, of course, has no onomatopœic linguistic symbols, but it does have a parallel to them. Sign language can take visual impressions as the starting-point for the creation of signs in which the hands and their movements illustrate or imitate shapes and movements perceived by the eye. Signs which in some respect resemble what they represent will be called **iconic** (depictive).

Whereas oral languages have only a small vocabulary of onomatopœic words, sign language has a very large set of iconic signs. In fact, the iconic signs are one of the characteristic features of sign language, and these so-called natural signs have contributed to its often being called a natural language. It is not surprising that more signs than words are marked by what they represent, if we accept that the number of phenomena perceived by the eye (which can be illustrated or imitated by the hands and their movements) is much larger than of those perceived by the ear (which can be imitated by the speech organs). How important visual impressions are to us can be seen in the different effects of being afflicted by deafness and by blindness.

Sign typology, as this chapter is called, aims at describing the connection between the form of a sign and what the sign refers to; how the forms of signs are motivated (or not) by extra-linguistic reality. It enables us to arrive at a number of different types of signs and a more systematic description of them than the traditional division into natural and conventional signs.—The terms natural and conventional are often used in the scant literature on sign language that exists in Swedish. They are used with various meanings and, as a rule, leave the reader in doubt as to what characteristics of the signs the division is based on. The terms will not be used here.

SIGN—FORM—REFERENT

A linguistic symbol (be it a word or a manual sign) is a combination of a form and a meaning. (Even when the form and meaning of words are referred to, the expression *linguistic sign* is sometimes used in the literature, but to avoid misunderstandings in this particular context, the term *linguistic symbol* will be used below.) By that definition, *splink* and *furte*, for instance, are neither Swedish nor English words—they are only acceptable word **forms**, to which no meanings have been attached. There is no agreement between the users of those languages that these word forms are the carriers of certain meanings: they have not been **conventionalised**.

Neither form nor meaning is identical with what the word as a whole refers to (or represents or denotes). On hearing the request *Fetch a chair!*, I can react by getting one of the objects to which the word refers and in that way show that I know the word, i.e. am familiar with the form and the meaning. The object chair is the **referent** of the word (what is represented or denoted).

The referent is something extra-linguistic, in the example above a concrete object even. In this case, it is easy to see that the referent cannot be the same thing as the meaning. Chairs are directly observable by our senses: they have shape and colour; they are hard or soft; they have a smell and presumably also a taste—all these are qualities that **meanings** do not have.

The referents of the words (or the signs) *walk*, *red*, *on*, which denote activity, quality and relationship, respectively, are also directly observable by our senses, even if they are not objects. Words like *democracy*, *wickedness*, *angry* and *(in) love* refer to various states and qualities, however, which are not observable by our senses. We must not be confused by the fact that we can observe certain outward signs that someone is in love or angry.

Figure 45 (page 99) shows how the relationship between these basic terms is usually illustrated with the aid of a triangle. The dotted line at the base of the triangle illustrates the indirect relationship between form and referent. The form is not motivated by any quality of the referent but is related to the referent via the mediating meaning, the concept.

Arbitrary can refer to several different phenomena, but here arbitrary will be used only about the relationship between form and referent. The form is arbitrary when it has no similarity with what it denotes and cannot be explained by reference to any quality of the referent. The reverse is termed **motivated**.

Thus, as regards the relationship between form and referent, we can distinguish two different types of linguistic symbol. The triangle in figure 45 depicts only the arbitrary symbol. The motivated symbol is best illustrated with an unbroken base line (see figure 46, page 99). The unbroken line represents the direct connection in symbols where there is similarity (or some other motivated connection) between form and referent. Onomatopœic words can thus be seen as a kind of motivated word form and iconic signs as motivated sign forms.

The connection between form and referent does not necessarily have to be similarity. If the referent can always be assumed to be present in the communication situation (e.g. nose, I), it is perfectly natural to refer to it by pointing. These **deictic** (indicating) signs constitute a second type of motivated sign form. Pointing to the nose and depicting its form both result in signs motivated by the referent, but motivated in different ways.

TYPES OF MOTIVATED SIGN

Directly and indirectly motivated signs

Motivated signs do not always have the direct connection between form and referent that the illustration (figure 46) leads us to believe. An iconic sign like BALL is directly motivated by the referent. It is the **shape of the ball** that is depicted. Another iconic sign is ELEPHANT, but there the sign does not describe the shape of the elephant but that of the

trunk. Both BALL and ELEPHANT are clearly motivated by their referents, but the relationship between form and referent is different. The difference can be described by introducing a distinction between directly and indirectly motivated forms. BALL is then a directly motivated (iconic) sign and ELEPHANT an indirectly motivated (iconic) sign. The shape of an elephant is not reproduced in the form of a sign as easily as that of a ball, and in ELEPHANT, only a characteristic part of the referent has been chosen. ELEPHANT is a sign formed with the help of a **base**¹. In this example, the trunk is the base of the sign, the starting-point for the creation of the sign.

The illustration of the relationship between form and referent in the motivated symbol (figure 46) is only valid for the directly motivated form. The indirectly motivated form, making use of a base, is illustrated in figure 47 (page 99). The unbroken line in the base of this triangle represents the direct connection between form and base. The relationship between base and referent (broken line) can be of several kinds, but is never arbitrary. ELEPHANT, for instance, can hardly have a writing movement as sign form, since the form (or the base) cannot then be related to the referent. The relationship between base and referent in ELEPHANT is a part of a whole, a very common type. Through the non-arbitrary connection between the base and the referent, the form of the sign is motivated by the referent, indirectly, via the base.

Instead of describing BALL as a directly motivated (iconic) sign, as above, it can now be expressed more briefly: BALL is a **referent-iconic** sign. ELEPHANT is then a **base-iconic** sign, since the form of the sign is iconic in relation to the base.

For the sake of simplicity, the examples chosen here were iconic signs. The other type of motivated sign, the deictic type, can of course also have a direct or an indirect connection with the referent, and is then called **referent-deictic** or **base-deictic**.

Iconic signs

As outlined in the preceding section, iconic signs can be iconic in relation to either the referent or the base. Irrespective of whether we are dealing with referent or base iconicity, we can distinguish different types of iconicity, if we examine how the articulation aspect of the sign is influenced by the base/referent. If the articulation of a sign is iconic in relation to a shape, the sign is called **shape-reproducing**. If it imitates a movement, it is called **movement-reproducing**. A third type is made up of signs whose articulation is **relationship-reproducing**. (See figure 48, page 101).

1. The concept of base was introduced by I.M. Schlesinger. He discusses it, for instance, in *Introduction to the Israel Sign Language Handbook*. (*Smaabladet for surdofrenologer—Papers for surdophrenologists*—published by Nordisk selskab for forskning af døves mentale helse—Scandinavian Society for Research into the Mental Health of the Deaf—undated but probably circa 1971.)

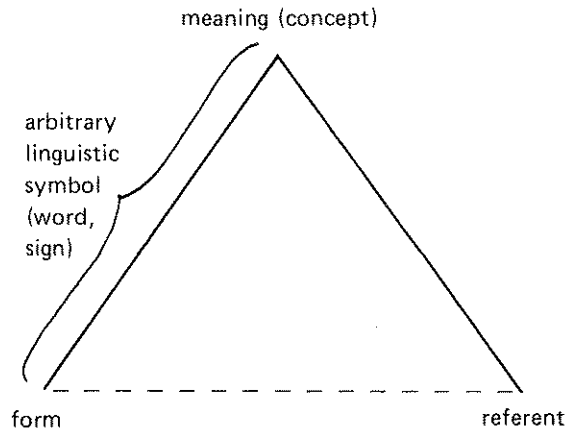


Figure 45

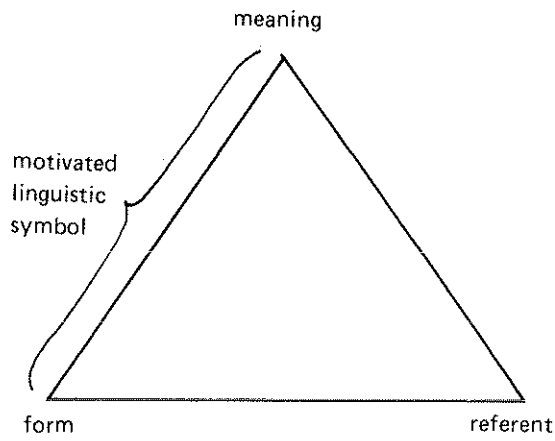


Figure 46

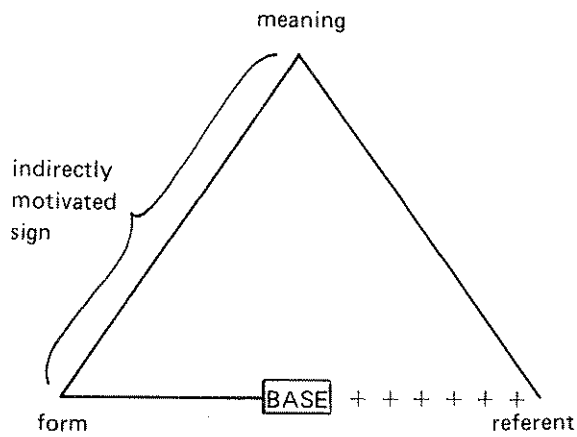


Figure 47

the relationship form – BASE
is iconic or deictic

the base is motivated by the
referent, the form indirectly motivated

Shape-reproducing signs

When the articulation of a sign describes a shape, it is called shape-reproducing. Österberg (1916) observed this type: "The most characteristic thing about the signing of shapes is that the hands are moved as if their palms were touching the object talked about." This type of sign still exists, of course, as signs like HOUSE, EARTH and FAT show. The shape of the articulator is not arbitrary—it is influenced by the shape or the size of the object signed. In the above examples, the hands are flat or lightly bent as they are moved along imaginary large, flat surfaces. When the object is round and has a small circumference, the S-hand is the common articulator: JAR, BOTTLE, OAR. The measure hand, used in CAKE, CASH-TILL and FRAME, is similar.

All the signs mentioned above are examples of the hands following a surface of the object or being moved along its sides. These signs are three-dimensional, because not only the height and breadth but also the depth of the referent are reproduced in the shape of the sign. Another way of reproducing shapes is to sketch in their contours, as in WINDOW, FORM, etc. In these, the shape of the articulator is usually the index finger, and the signs are flat sketches of the referent (two-dimensional).

All the above signs are referent-iconic. A sign like WOMAN, however, is base-iconic, because the sign depicts the shape of the breast, not of the woman. A simple question, *What is depicted in the sign?*, reveals whether it is a base-iconic or referent-iconic sign:

sign	what is depicted?	iconicity
HOUSE	shape of house	referent-iconic
WOMAN	shape of breast	base-iconic
ELEPHANT	shape of trunk	base-iconic
BALL	shape of ball	referent-iconic
GIRAFFE	shape of neck	base-iconic
CHURCH	shape of spire	base-iconic

In Signed Swedish, it is of no great linguistic importance whether a shape-reproducing sign is base-iconic or referent-iconic. In SSL, however, the type of iconicity influences the possibilities of modifying the sign, i.e. whether qualifiers can be built into the sign itself, or whether a separate sign has to be used. If the sign BALL, for instance, is used for an unusually large ball, the sign can be performed on a much larger scale than usual. This is only true, however, for referent-iconic signs. If WOMAN is performed with a larger movement than usual, it tends to be understood as a comment on the size of her bust rather than on the size of the referent of the sign, the woman.

Just as the shape of the articulator can be influenced by what the sign describes, the choice of place of articulation can also be affected by it. Most referent-iconic signs are performed in the neutral place of articulation, while the base-iconic signs are performed at some part of the body. The place of articulation is then chosen according to what

Figure 48

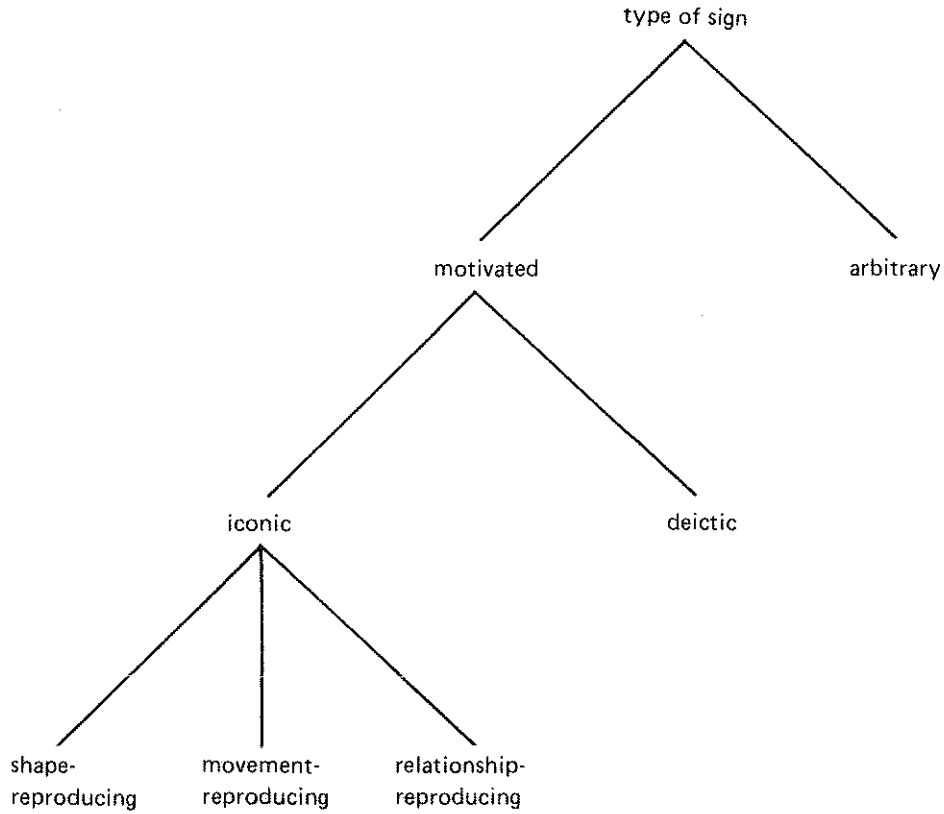


Diagram of types of sign

partial shape (base) of the referent is being depicted, and the sign is performed at the part of the body that corresponds to the position of the base in reality. That is not as complicated as it may sound—it simply means that ELEPHANT (base: the trunk) is signed at the bottom half of the face, WOMAN (base: the breast) at the right side of the chest, and GIRAFFE (base: the neck) at the neck.

The shape-reproducing signs, irrespective of whether they are base-iconic or referent-iconic, denote objects and qualities. No evidence has been found of their being able to refer to actions.

Movement-reproducing signs

The signs reproducing movements constitute the largest group of iconic signs. In this group, too, base-iconic and referent-iconic signs are found. DOG is a base-iconic sign reproducing movement (the right hand pats the

leg), whilst WALK is an example of a referent-iconic sign (two fingers "walk" on the left hand). Irrespective of whether the signs are directly or indirectly motivated, the signs reproducing movements can be subdivided into smaller groups according to the role played by the articulator. DOG and WALK will then end up in different groups, because the articulator in WALK plays the part of the legs, but in DOG it plays the part of the hand (the hand reproduces itself). It is possible to distinguish at least five different groups of movement-reproducing signs depending on what part the articulator plays (what its form has been influenced by).

I. The articulation imitates a gesture, the articulator playing the part of the hand.

This type of sign is characterised by the fact that the signs directly reproduce human gestures, as in APPLAUD or WAVE, where the signs are direct imitations of what they refer to. The vast majority of these signs are not referent-iconic, however, but base-iconic. Examples are STOP, DETEST, FULL (SATISFIED), FREEZE, THREATEN, SHY, DOG, SMELL BAD.

The gestures chosen as base are either conventionalised (and used by hearing people) or are of a more subconscious, perhaps biologically or physiologically, motivated kind. It is probably meaningless to attempt to draw up exact border-lines between them. On encountering an unpleasant smell, one might react by blocking the nostrils—in that situation a perfectly natural and sensible act with no communicative intent. But this natural gesture can also be spontaneously used (by hearing people) in order to communicate the fact that something smells bad.

A feature common to all signs reproducing gestures is that they never have the left hand as the place of articulation. In the signs where the left hand takes part, it is as articulator in signs with a double articulator like FREEZE and DETEST. As we shall see later, in other types of movement-reproducing signs, the left hand (as the place of articulation) often functions as a replacement for or marker of some object, or functions vaguely to denote some position. A gesture requires no further props than those provided by our own bodies: it can be the leg as in DOG or the nose as in SMELL BAD, and this may be the reason for the left hand not being used as the place of articulation in the signs reproducing gestures.

II. The articulation imitates our own movements as we handle an object, the articulator playing the part of the hand.

In this type of sign, the shape of the articulator is characterised by the fact that the hand is imagined as holding an object. The articulation is a direct imitation of movements performed with the objects, whilst the shape of the articulator is influenced by how the object in question is held when it is used. BRUSH, LOCK, PLANE (all verbs) all have different articulator shapes, because a brush, a key and a plane require different grips. The sign then suggests the object—the instrument—required when the act denoted is performed in reality. That means that the signs are also, quite naturally, used to denote the objects themselves: BRUSH, KEY, PLANE.

The following are examples of base-iconic signs:

CHAIRMAN—the chairman's mallet banging on the table;

TEMPERATURE—the thermometer being shaken up and down;

BREAK—the (old-fashioned) schoolbell being rung to and fro.

In signs which have a place of articulation other than the neutral place, it can also be seen how the object of the act may be represented in the sign. In SEW, for instance, the left hand (the place of articulation) "holds" the material that the right hand (the articulator)—which "holds" the needle—is "sewing". In BRUSH, the object of the action is represented by the forearm, while the articulator "holds" the instrument, the brush.

A somewhat special group is made up of TAKE, GRIP, FETCH, HOLD, LET GO and other signs with a similar meaning. The things that the articulator is imagined to be holding are not specified as they are in other signs, but rather take on the function of object of the action. (The instrument role is played by the hand itself.)

No limitations have been observed as to the types of referent that these signs can have.

III. The articulation imitates the movements of an object as we handle it, the articulator playing the part of this object.

These signs are different from type II in that the objects are not suggested by the shape of the articulator, but are instead directly represented in that the articulator in these signs plays the part of the object. In SCISSORS and CUT (WITH SCISSORS), for instance, the articulation imitates the cutting movement and the articulator (index finger and long finger) represents the blades of the scissors. If the sign had been of type II, the shape of the articulator would have shown what the hand looks like when it is holding a pair of scissors.

The object is thus represented by the articulator in an iconic way in these signs. This type should not be confused with the shape-reproducing signs (see page 100), where it is the articulation aspect that reproduces the shape of the object. The difference is not immaterial, because the shape-reproducing signs, as mentioned earlier, cannot refer to actions. The movement-reproducing signs, on the other hand, with the shape of the object in the articulator, can—and often do—refer to both actions and objects.

When the left hand is the place of articulation, its function is to mark the object that the action is directed against, as in KNIFE and (TO) SAW. The role of the articulator is mainly instrumental, but the sign does not necessarily refer to the instrument or the action. Consider, for instance, signs like FISH and EGG, where the object denoted is represented in the sign by the left hand in its capacity of place of articulation. In FISH, the articulator imitates a scaling tool working on the fish (the place of articulation), and in EGG, the articulator represents the knife or spoon and the place of articulation the egg. In the latter example, at least, a

different sign is used to denote the instrument that the articulator represents. There is no conventionalised sign for a fish-scaling tool in Signed Swedish, but in SSL there is the possibility of referring to the tool by making use of the sign for fish. If one assumes that the motivation of the sign is apparent also to the person one is signing to, one can first make the sign for fish and then, with one's left hand as articulator, point to the right hand which has retained its shape from the sign for fish. In that way, one can show that it is the articulator in FISH one is referring to, and that it is not fish but a tool used on fish that one is talking about.—This example illustrates how the feeling for the motivation of a sign, and the interpretation of the functions of the various aspects in a sign, can be exploited by the users of sign language.

The signs reproducing movement, types I—III, are all characterised by the fact that the movement imitated is directly linked to movements of the human hands. In the fourth type, we remain with human movements, but other ones than those performed by our hands.

IV. The articulation imitates the movements of a part of the body (other than the hand), the articulator playing the role of this part of the body.

The most obvious way of signing *walking* would, of course, be to walk. In Signed Swedish, mime is not used as a part of the language; one refers to what one is communicating about by using one's hands and their movements. In signs that refer to movements of parts of the body, the hands replace those parts of the body. For instance, in WALK, STAND, CURTSEY, CRAWL, STUMBLE, the V-hand plays the part of the legs and "walks", "stands", etc. on the left palm. In these signs, then, the left hand as the place of articulation plays a different role from the one it played in the preceding group, where it was often the object of the action. In the signs listed above, it marks a position or support (locus function).

Compared with other types of movement-reproducing sign, these signs are very limited in their powers of denotation. Although the hand clearly imitates a part of the body, that part of the body can never be denoted by the sign. Nor can what is denoted by the left hand be the referent of the sign. The signs are strictly limited to actions. Parts of the body are always denoted by deictic signs. Movement-reproducing signs that denote movements of parts of the body, and deictic signs that refer to parts of the body, are in this respect complementary.

It is not only the legs that can be denoted by the articulator. In BITE, the movements of the mouth are imitated and the hand represents the jaws. In this type of sign, the part of the body represented is always chosen as the place of articulation, so that BITE, TALK, etc. are signed at the mouth. Similarly, WAKE UP and GO TO SLEEP are signed close to the eye, where the thumb and index finger open and close like the eyes.

V. The articulation imitates the movement of an object, the articulator playing the part of this object.

When we sign scissors, we do it by imitating the cutting movements. The movements of the scissors are directly dependent on our handling them. In this group of signs, movements are imitated which can be said to be performed by objects independently of our immediate handling of them. In the sign FLY, AEROPLANE, the articulation reproduces the course of the plane through the air, and the shape of the articulator suggests the fuselage and wings of the plane (the flight hand). It is true that planes do not normally fly without our assistance, but the sign does not imitate the movements of the pilot at the controls but the movements of the plane itself.

Some related signs show how the articulator is really interpreted as a manifestation of the aeroplane: in LAND, the articulator is moved down onto the left hand; in TAKE OFF, the movement begins on the left hand. Different ways of flying, like looping and rolling, are easily signed by imitating the movements. There is no conventionalised sign for *air-pocket*. In Signed Swedish, it would probably be signed spontaneously by a compound of AIR and POCKET. In SSL, one would naturally start off from the basic sign FLY and let the movement of the hand towards the left be interrupted by a downward movement, then let it bounce up again. This way of forming new signs, by varying an aspect of the basic sign, can be seen as a parallel to the way oral languages form new words by derivation. This again illustrates how the signer who understands the motivation for the shape of a sign can exploit it in a productive and economical way.

Other signs of this type, where it is perhaps clearer that it is the movements of the object itself that are being imitated, are:

sign	what is imitated in the sign?
WINDMILL	movement of the sails
CLOCK	movement of the pendulum
COMPASS	movement of the needle
THERMOMETER	movement up and down of the mercury

A number of animal signs also belong quite naturally to this group. As opposed to group IV, where only actions could be the referents of the signs, imitations of the movements of parts of the animals' bodies often stand for the animals themselves, not their movements, nor the part of their bodies that is the base of the sign. SNAKE is signed with the forked tongue as the base and the mouth as the place of articulation. MONKEY is signed by an imitation of the scratching movements, while the generic term ANIMAL is symbolised by the movements of the four legs (two V-hands directed down).

Relationship-reproducing signs

Of the three types of iconic sign, shape-reproducing and movement-reproducing signs have been dealt with, and the third type now remains, signs reproducing relationships. All three types of iconic sign are de-

fined with the articulation aspect as the criterion. Thus, in signs reproducing relationships, the articulation symbolises a relationship. Some examples:

ON	articulator	on	place of articulation
BELOW	articulator	circles below	place of articulation
OVER	articulator	is moved over	place of articulation
ABOVE	articulator	circles above	place of articulation
IN FRONT OF	articulator	is moved forwards from	place of articulation
BEHIND	articulator	is moved backwards from	place of articulation

Skavlan (1875), in his description of types of sign, has a group of "*relative signs*" which correspond directly to the signs reproducing relationships.

"These signs generally require execution by both hands simultaneously. The position of the hands in relation to each other symbolises the relationship that the objects have to each other in space or in meaning."

The articulation in these signs is a direct demonstration of the relationship the sign refers to. They are referent-iconic in a way similar to the signs that represent gestures (APPLAUD, WAVE), where the shape of the sign itself can be seen as one of the referents of the signs. We can express this more simply. If we compare with the sign BRUSH, we cannot claim that the articulator here really **brushes** the left arm, its place of articulation, but in the sign ON, the articulator **is on** the left hand.

No special roles can be ascribed to the hands in the signs reproducing relationships, and the hand shape is not influenced by the referent. That is perhaps the reason why the shape of the articulator is nearly always the flat hand, which is the most common and least marked hand shape in sign language.

Deictic signs

A common way of referring to objects is to point to them. This is true not only for sign language: it is also often employed by hearing people as a complement to purely oral communication. Both hearing and deaf children use pointing very early, and it is probably a gesture that functions universally.

Among the deictic signs are the ones denoting people, the sign-language equivalents of the personal pronouns. The first person *I* is formed by the signer pointing to himself, and similarly, the person spoken to is pointed at for the second-person pronoun. The third person in Signed Swedish, corresponding to *he*, *she*, or *it*, is basically a pointing to the side (but see pages 146—147). In the plural forms, a sideways movement is added to the singular forms indicating plurality.

Parts of the body are indicated by deictic signs, often by the articulator establishing contact with the part of the body, which then becomes the place of articulation of the sign.

The shape of the articulator in deictic signs is usually the index-finger hand, but it does not have to be. The flat hand also occurs in signs like HEAD, HAND, STOMACH.

The signs mentioned so far are all referent-deictic. The typical referents of such signs are parts of the body and people. They can also be directional concepts like UP, DOWN, HERE, THERE, LEFT, RIGHT, and the points of the compass.

Activities and qualities may be denoted by base-deictic signs. RED is signed by pointing to the mouth (the base of the sign) and THINK by pointing to the forehead, behind which the thought activity is assumed to take place.

Choice of sign form

Sign typology takes the form of the sign as its starting-point and tries to relate it to the referent of the sign, either directly or with the help of a base concept. It is also possible to look at the connection from the opposite direction, i.e. take the referent as the starting-point and see how a form can be created. It is in that direction one works when constructing new signs. The referent is, of course, only a referent in its relation to a sign, but we can imagine the extra-linguistic phenomena, or concepts, about which we want to communicate, as possible referents. —When the Sign-Language Committee of the Swedish National Association of the Deaf created the signs to be used simultaneously with spoken Swedish, the starting-point was Swedish words. Thus, there was already a word form, a meaning and a referent—all that was missing was the manual sign form.

The question may be put: *Given a referent—how is a sign form chosen?* Are there any general principles governing the spontaneous creation of signs? A reasonable assumption might be, to take a few simple categories, that objects would be denoted by shape-reproducing signs, and activities and actions by movement-reproducing signs. But as we saw earlier, it is just as common for the movement-reproducing signs to denote objects as actions. There is no one-to-one relationship between form type and the category of the referent. This might appear at first sight to be a weakness of sign language, but on reflection it would appear rather to be a strength, as one and the same form has an increased number of reference possibilities.

The question still remains as to whether there is a general principle governing the choice of sign forms. Let us begin by stating the obvious fact that sign language is a manually produced language. This means that the sign form is chosen in order to be easily and quickly performed by the hands and their movements. This sounds trivial, but it has certain interesting consequences for the choice of base and sign form. There is a tendency to choose movements we are used to performing in non-linguistic contexts. These movements have been learnt early and are well practised. They may also have the advantage that a particular movement is associated with a certain phenomenon, which the sign can

then easily refer to, because, from the extra-linguistic context, we are already used to associating the movement imitated with the referent.

The movements that are easiest to reproduce in the articulation of signs are, of course, movements normally performed by the **hands**. This results in a strong **person-centred principle** being at work in the formation of signs. The sign **DOG** can serve to illustrate how this principle influences the choice of both base and form. The referent for **DOG** is both concrete and animate, i.e. a living creature. A referent-iconic sign might depict the shape of a dog, but such a sign would be elaborate and time-consuming. The dog's own movements could be imitated, which would be a fairly simple task if, for instance, we were to imitate the way the paws are held when the dog is "begging". But the sign used in Sweden and in many other countries is not referent-iconic but base-**iconic**. The base chosen is the way we humans can be seen to act towards the referent in question: the hand pats the leg as when we call a dog to us.—This is only one of the many examples of how base-**iconic** signs seem to be preferred if it means we can then get a human-linked base with the possibility of a movement-reproducing sign form. In such signs, the relationship between base and referent can be described by reference to human actions: how we use the referent, how we make it, etc.

Another common relationship between base and referent is that of **part of a whole**, and this is particularly characteristic of signs denoting objects. Among them are, for instance, **COW** (the horns), **RABBIT** (the ears), **RED INDIAN** (the head-dress) and **BULL** (the nose-ring). The relationship between base and referent in certain signs denoting an activity can also be said to be part of a whole. In **(DO) WOODWORK**, the only activity imitated is planing, which is only one of the many activities involved in woodworking. **COOKING** imitates stirring in a saucepan, which again is only one of many activities involved.

Objects are sometimes denoted by choosing a characteristic **quality**: **TIGER** has stripes as its base. More commonly, however, signs referring to qualities indicate one of the many objects characterised by that quality: **BLUE** (pointing to the eye—other sign languages point towards the sky) and **PALE** (a base-deictic sign with the cheek as the place of articulation).

Another type of relationship between base and referent is found in the sign **DARK, DARKNESS**. Although it refers to a directly observable phenomenon, it is not one that can be illustrated or imitated or indicated by pointing. Nevertheless, it has a motivated sign which could be described as a **concrete paraphrase**. Darkness is perceived by the sense of sight: it is as if the eyes were covered, and that is the basic idea represented by the sign form, in which the flat hands, directed up, make a crossing movement downwards, on a level with the eyes. The same basic idea could have resulted in a hand being placed over the eyes.

The concrete paraphrase is particularly appropriate when the referent is not directly observable by our senses. The sign **EMPLOY** can be taken

as an example: the right hand "takes hold of a person" and places him or her on the left palm. It is a movement-reproducing sign, but the movement in the sign is not an imitation of how we act when we employ someone or are employed ourselves. It is an invented movement by means of which we attempt to visualise something of the meaning of the sign. In the sign DISMISS, we imagine the employee "still standing" on the left hand, and he is then swept off by the right hand.

The kind of connection between base and referent in signs like DARKNESS, EMPLOY and DISMISS is not readily definable. Describing it as a 'concrete paraphrase' is not satisfactory. A semantic analysis may perhaps contribute to a clearer account of the problem.

Another equally urgent problem which must be considered in a semantic study is the form of motivated signs and its possible influence on their meaning. Is the motivated sign form perhaps an obstacle to changes in meaning, particularly extensions of meaning? Is the meaning limited because there is a direct connection between form and referent? Is there, in this respect, any difference between signs with and without a base? A consequence of these questions would appear to be a need to combine a typological description with a semantic analysis, which is particularly important in a description of SSL.

For Signed Swedish, there is also another problem as regards motivated signs. There is often a conflict between the Swedish word and the form of the sign. The word *gå* (walk, go), for instance, has many meanings and can be used in phrases like *The train is going*, *The clock is going*, *It is going well*. The sign GÅ is motivated by the movement of the legs in walking, and this means that many sign-language users resist the standardisation proposal that the sign GÅ should be used with the word *gå*, irrespective of meaning. It is a simple example, but it illustrates the type of problem that arises when signs are to be used simultaneously with spoken language, particularly if the principle one word : one sign is adhered to. This has also caused the Sign-Language Committee a great deal of trouble. In the introduction to the *Sign Dictionary*, some different types of sign are mentioned, including "natural gestures, used for words for which it is not possible to prescribe one sign—e.g. *fall*, a word covering many different situations". Here, then, the principle one word : one sign has been waived, and it is left to the signer himself to create the sign forms suited to the various contexts the word *fall* is used in. In SSL, there are a number of signs which can all be translated by the Swedish word for *fall*, but none of them is mentioned.

ARBITRARY SIGNS

Arbitrary signs (see figure 45, page 99) are signs whose form cannot be explained by the referent, either directly or indirectly. Some examples of arbitrary signs are HAPPEN, ALREADY, VERY, EXIST, BE OF THE OPINION and JEALOUS.

Arbitrary signs have no base. If a motivated connection can be established between a form and some extra-linguistic phenomenon which can be seen to be naturally related to the referent, that means that a base has been identified and the sign is motivated and not arbitrary. Seen historically, the arbitrary signs may once have had a base or may even have been directly motivated by the referent, but that is something for etymologists to investigate.

Some arbitrary signs have an articulation resembling movements that can be performed in a natural, non-linguistic context. The form of the sign ENGLAND looks like the movements made by the hands when climbing a rope (alternate gripping movements). One explanation, based on (popular) etymology, claims that England, being a great seafaring nation, has come to be denoted by the movements performed by sailors in the days of sailing-ships. DOCTOR is signed with a saluting gesture. One explanation that has been offered is that the first doctor at the Manilla School (cf. page 7) was also a soldier and used to greet people with a salute. When the pupils at the school created a sign for him, it was the salute they chose, and later the sign became more widely used as a sign for all doctors. Others claim that the sign depicts the forehead mirror sometimes worn by doctors.

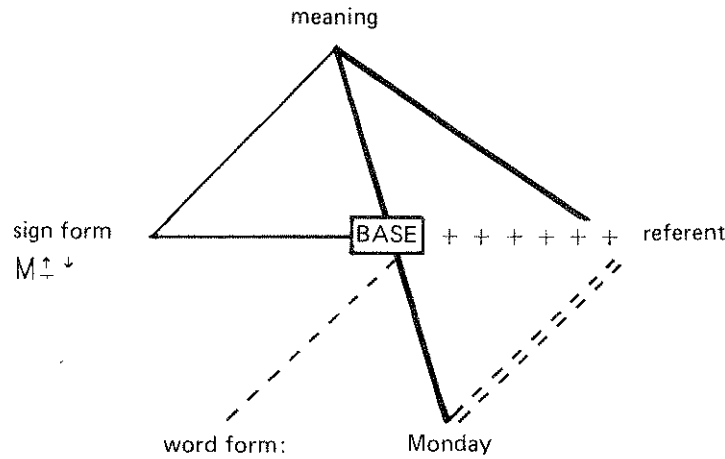
It is interesting that there is a tendency to want to find explanations for the forms of signs. When a sign form is reminiscent of a movement or of the shape of an object, but does not appear to be motivated by the referent, we happily create a base concept that "explains" the sign, even if it is far-fetched. Arbitrary signs should not, therefore, resemble any known phenomenon; the sign forms should be free from associations.

In a few arbitrary signs, there are places of articulation and hand shapes with a slight degree of motivation. For instance, many signs referring to feelings have the chest as place of articulation (a kind of deictic component). As regards the shape of the articulator, there is, for instance, the claw hand, used in signs like QUARREL, SCOLD, ROW. That hand shape has a certain semantic component of aggressiveness and is often utilised when new signs with similar meanings are created. It is worth pointing out, however, that the chest as place of articulation and the claw hand as articulator do not always have these semantic components but are also used in signs which cannot be interpreted as having these meanings (see, for instance, CONSULTANT and MINISTER, figures 29 & 30, page 57).

INITIAL SIGNS

Initial signs are influenced in their creation by Swedish. The influence of Swedish on Signed Swedish ranges over many levels of the language, from meaning to the form of the sign. Initial signs show clearly how the form can be influenced. The shape of the articulator in these signs is a letter from the manual alphabet, i.e. the one that corresponds to the initial letter of the written Swedish word. Among them are POINT,

Figure 49



The connection between form and referent in initial signs

PERCENT, WHEN, WHO-WHICH (relative), SUNDAY, HOW, HUNDRED, THANKS, BELIEVE.

Initial signs could perhaps be described as **arbitrary signs with a base**. It was admittedly argued in the preceding section that arbitrary signs cannot have a base, but the base concept may nevertheless be useful in the description of initial signs (see figure 49, above). In the illustration of the connection between form and referent in initial signs, two triangles have been joined together: thick lines for the word triangle and thin lines for the sign. The referent is common to the word and the sign. The initial letter of the Swedish word is reproduced in the sign form. In a very remote way, then, the form of the sign is indirectly motivated by the referent. But initial signs will not be referred to as motivated signs, since they are not motivated by the referent as such, only by the form of a symbol for it in another language.

In some initial signs, however, the articulation is motivated by the referent. Shape-reproducing signs occur, but more commonly they are movement-reproducing. This is the case, for instance, in one of the signs for underground railway (Sw. *tunnelbana*), in which the T-hand is moved under the flat left hand. The articulation is motivated by the movement of the train into the tunnel. This sign, incidentally, resembles

the signs IN and UNDER, which have the same articulation and the same place of articulation, with only the hand shape distinguishing them.

In the account of types of iconic sign, articulation was the basic criterion for the division into sub-groups. The initial signs do not differ from them in their articulation but only in their choice of hand shape. Some of them should therefore be described together with the iconic signs. But many have a completely arbitrary articulation and are arbitrary signs apart from the fact that their hand shape is influenced by the Swedish word. In a more detailed account of the types of sign, initial signs must be dealt with in a different way.

Initial signs are becoming increasingly common, but they are not a new phenomenon. According to Stokoe (1960), examples of this type have been recorded since the 1770's. Another type of initial sign was advocated by the American I.L. Peet in 1868 (*American Annals of the Deaf*, 1955). Peet suggested that, before the so-called base sign, the initial letter of the simultaneously spoken word should be signed, to indicate which of several synonyms was intended. Following that principle, a sign like EMOTIONAL would be introduced with the letter E and followed by the base sign FEELING. This type of sign is not found in Sweden, either in SSL or in Signed Swedish. In the initial signs we have now, the letter is instead assimilated with the sign, which makes for easier execution, as they are simple and not compound signs.

SIGN FAMILIES

Belonging to a family implies common external and internal characteristics. Members of a sign family have a common semantic component or can be semantically related in a vaguer or more intuitively perceived way. In addition, a similarity of form is required, and two of the three aspects of a sign should have the same chereemic description and the third be different. Sign families will often consist, then, of semantically related, minimally contrasting signs. As meaning is one of the criteria, we shall in this context only outline how sign families might appear, because a full account must be preceded by a semantic analysis.

The signs WALK—GO, STAND, CRAWL, CURTSEY, JUMP and STUMBLE are all members of the same family, the WALK-family. They are all of the movement-reproducing type, the articulator simulating the legs by means of a V-hand directed down. Another family with a common hand shape is the one that might be called the SEE-family, where the mother sign SEE has the upper face as the place of articulation. The same hand shape as in SEE is used in many related signs, which however are signs executed in the neutral position. They express different ways of seeing and have their approximate translations in words like *survey*, *stare*, *examine*, *look away*. They are found mainly in SSL.

One interesting aspect of sign families is that, if one knows the mother sign and has realised the connection between form and referent

in it, one can normally deduce the meanings of the other signs merely by looking at their form. This is true, for instance, of the TRAVEL—GO-family, where the mother sign is crossed N-hands being moved forwards. If, instead, they are moved in a horizontal circle, the sign becomes ROUNDABOUT (going round), and if they are moved up, it becomes LIFT. Here, there is the possibility for the signer to create signs himself by spontaneously extending the mother sign, and finding, for instance, a form for SWING.

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VERBS AND ADJECTIVES:
SOME MORPHOLOGICAL PROCESSES IN SWEDISH SIGN LANGUAGE*

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In one of the major works on American Sign Language it is characterized as an inflecting language, comparable to languages like Latin, Russian and Navajo (Klima & Bellugi, 1979). The possibility of other natural sign languages displaying other typologies is mentioned as well as a suggestion that "the modality in which the language develops constrains its natural patterning in one direction rather than another." (Klima & Bellugi, 1979, p 314). The data we are beginning to obtain from Swedish Sign Language support the latter suggestion, since many morphological processes described by Klima and Bellugi seem to be present in the Swedish Sign Language. - The striking similarities between the two languages are particularly interesting since, contrary to what has been claimed (Stokoe, 1974), the American and the Swedish sign languages are not genetically related (Bergman, 1979). However, other data from our study of sign language grammar suggest that the morphological structure also can be characterized as polysynthetic or simultaneous polysynthetic (Ahlgren & Ozolins, in press), which becomes especially obvious when we analyze texts rather than isolated signs or sentences.

By morphological processes we mean changes in the forms of the signs resulting in systematic changes in the meaning of the signs. Therefore, when studying these processes the following three issues must be dealt with: the form of the change, the meaning associated with that change and the class of signs on which the process operates.

Matthews (1974) distinguishes three major categories of morphological processes: affixation, reduplication and modification. In the spoken languages which are most familiar to many of the participants of this symposium, such as English,

French and the Scandinavian languages, morphological changes are typically made by adding one or more sound segments to a stem, affixation. This type of process can be found in Signed Swedish (Bergman, 1979) but is not utilized at all in Swedish Sign Language, which, however, has several kinds of reduplication and modification. These changes in the form of the sign are not restricted to the manual component of a sign as we shall see later but may involve the use of additional articulators such as the mouth or the head.

In this study¹⁾ I have focussed on five morphological processes: fast and slow reduplication, initial stop, doubling and initial hold. Among these, reduplication is perhaps the most familiar one. When used in spoken languages reduplication means that one part of the word or the whole word is repeated two or more times. Thus the process of reduplication differs from affixation since the reduplicated form will vary from word to word, whereas the same affix can be attached to a whole class of words.

In Swedish Sign Language there are at least two different types of reduplication, fast and slow (cf Susan Fischer's article on reduplication in American Sign Language, 1973). The difference between fast and slow reduplication is not only one of speed as implied by the terms used. Slow reduplication certainly is perceived as being slower than the fast one, but as important as that feature, is the uneven movement which is not continuous but with pauses between each repetition (for a description of features for aspectual modulation, see Klima & Bellugi, 1979). Examples of signs reduplicated in this way in the material I analysed are CALL, DRINK, LAUGH, LOOK-AT, SPIT, SUFFER, WAIT, and WALK.²⁾

Slow reduplication is often seen to be accompanied by simulta-

1) I have analyzed 32 videorecorded stories told by 14 deaf signers. These recordings were originally made for a test of the receptive skills of hearing persons applying to courses for sign language interpreters. I am grateful to the Swedish National Association of the Deaf for letting me use this material.

2) English words in capitals are here used as names of Swedish signs.

neous rocking movements of the body (again cf Fischer, 1973), one of many examples of how an additional articulator is used when a morphological process is operating on a sign.

Fast reduplication gives an impression of higher speed, but is also characterized by an even, continuous movement. In my material it has been observed in signs such as DRINK, EAT-WITH-KNIFE-AND-FORK, GET-EMBARRASSED, SPIT, TAKE-MEDICINE, WAIT, and WALK.

Reduplication can operate also on signs having some kind of repetition in the articulation of the citation form. One such example is WAIT where the flat hand (with palm down and fingers pointing left) brushes down the left side of the trunk twice (i.e. with thumb side of the hand in contact with the place of articulation). In such a sign only one of the sequences of the citation form is reduplicated, not the whole citation form with its repetitions. Another very frequent sign in my material is WALK, which also has a repeated movement in its citation form (V-hand makes two forward movements in palm of flat hand). If the sign, as represented by its citation form was reduplicated, the number of forward movements would be even. This is not the case and the number of movements most frequently observed in my study in WALK is three. "Modulations are applied to a basic movement unit (the sign unit) rather than to the base form." (Supalla & Newport, 1978).

The modification called doubling simply means that signs having a single articulator make use of the other hand and are performed with a double manual articulator. In signs where the manual component has been doubled the hands may move either simultaneously or alternately. Simultaneous movement has been observed in signs like ANGRY, BE-USED-TO, FUNNY, LOOK-AT. In doubled signs with alternate movements reduplication has also taken place: GO-HOME, GET-OUT, LOOK-AT, TRAVEL, ZOOM-OFF.

The fourth modification that I found is the initial stop: the articulator (single or double) assumes the initial position as when starting to perform the movement, but remains in that

position without completing the movement. It looks as if the whole aspect of articulation (the movement parameter) has been deleted and therefore as if the sign is not performed at all. Some of the signs when modified in this way also have the mouth open and head and eye-gaze may be turned sideways or down. This modification has been observed on HIT, THROW, TEACH, SHOOT-WITH-RIFLE, SIGN, UNDRESS.

The last modification to be accounted for is the initial hold. Here the articulation starts with a short hold before it is completed relatively fast: COLD, DEAF, ANGRY, BE-USED-TO, IMPUDENT. A characteristic feature of this modification is the movement of the head, which turns away from the position in which the articulator is held during the initial phase of the articulation. Signs starting their movement at the ipsilateral side (same side as that of the articulator) will have the head turned towards the contralateral side. The visual impression is that the sign is enlarged - the distance between the manual articulator and the head being greater than that in the unmodified form. One can also notice a change in the orientation of the hand during the initial hold - the direction of the palm tends to be opposite to that of the final phase of the sign.

Having identified some morphological processes we may now proceed to try to find out what changes in meaning are associated with them. In order to be able to describe the changes in meaning and the classes of signs on which they operate it is necessary to take a brief look at the meaning of predicates.

From the English words used here as almost arbitrary names of Swedish signs, but with some of the meaning in common with these signs, we can see that most of them denote actions while some denote states or qualities. Following Lyons' description (1977) of the denotata of predicates we can refer to the two main types of situations as static and dynamic situations. According to their duration of time, dynamic situations are further divided into processes, which are extended in time, and events, which are momentary situations. A dynamic situa-

tion under the control of an agent is referred to as an action: the agent-controlled processes and events are called activities and acts, respectively (Lyons, 1977, page 483).

Now, with respect to the different types of situations they refer to, verbs can be classified as follows:

<u>Situation</u>	<u>Verb</u>
static	stative
process	durative
event	punctual

Standard examples of static situations are those referred to by English verbs like "know", "possess" and "weigh". Some of my examples are ANGRY, BE-USED-TO, COLD, DEAF. (They will be discussed in more detail later.)

Among other examples of signs LAUGH, SUFFER, WAIT, WALK refer to processes and are durative verbs. Such verbs may be used with durational adverbs with meanings like 'for hours' and 'the whole day'. Punctual verbs are CALL, SPIT and TAKE-MEDICINE. They refer to acts and may occur with adverbials meaning e.g. 'at one o'clock' and 'suddenly'.

Let us now return to the signs mentioned earlier which take the slow reduplication. They all refer to actions and there are both durative and punctual verbs. Both types can be rendered into English by phrases like "walk and walk and walk" and "spit and spit and spit". There is, however, a difference in meaning in the reduplicated forms which is due to the lexical meaning - or "aspectual character" (Lyons, 1977) - of the signs. A durative verb like WALK adds to its meaning that the process was prolonged, meaning something like 'walk for a long time'. A punctual verb with slow reduplication, even though it also can be said to express some kind of continuation, means rather that the event keeps occurring 'over and over again'.

The above mentioned changes in the meaning of the verbs seem:

to be regular productive processes in Swedish Sign Language. They are examples of a kind of grammatical processes that we do not encounter in Swedish, aspectual modulations, "expressing different ways of viewing the internal temporal constituency of a situation" (Comrie, 1976). Other languages with grammaticalized temporal aspects are Slavonic languages, Turkish and of course English, which has the aspectual opposition of the progressive and the non-progressive. More typical of English (and Swedish) verb morphology is inflexion for the grammatical category of tense, which locates a situation in time (past, present or future) in relation to the time of the utterance.

It is tempting to refer to these processes as aspectual inflexions, as in the description of American Sign Language (in Klima & Bellugi, 1979). Considering the still very limited data from Swedish sign language we avoid the choice between inflexion and derivation for the time being, and adopt the more neutral term modulation (as used by Pedersen, 1977).

For the aspectual modulations associated with slow reduplication we will use continuative and iterative. A durative verb with slow reduplication is modulated for continuative aspect with the approximative meaning 'for a long time'.

- (1) WE (slow redupl-)WALKx4 VERY-FAR
'We walked and walked; it was very far to go.'

A punctual verb with slow reduplication is modulated for iterative aspect meaning 'over and over again'.

- (2) CALLx2 SVEN WHERE
'I called over and over again: Sven! Where are you?'

These modulations seem to be the same as those of American Sign Language described by Fischer (1973). This also applies to the rocking body movement that can sometimes be seen to accompany slow reduplication, which in Swedish Sign Language also means 'too much'.

The change of meaning rendered by the fast reduplication when operating on punctual verbs is somewhat easier to capture than when it operates on durative verbs. In the first case it can be described as 'often' or 'regularly' and this modulation will be referred to as habitual aspect. This corresponds well with the use of this modulation in a context like 'used to go there very often' where the sign ZOOM-OFF is reduplicated fast and in the following example:

- (3) MY COUSIN ALWAYS (fast redupl-)COME-INTOx2-m1-c PREVENT-c-m1 LOCKED¹⁾
 'My cousin used to come into my room and to prevent him (from doing that) I kept the door locked.'

Fast reduplication on durative verbs merely emphasizes the aspectual character of the sign so the term durational seems to capture the meaning of this aspectual modulation (Klima & Bellugi, 1979).

- (4) (fast redupl-)WAITx4 WHILE RAISE-LEG-r
 'We waited and after a while we saw a leg being raised (from behind the door).'

To sum up this preliminary analysis of the fast and slow reduplication we can set up the following table:

Morphological process	Durative verb	Punctual verb
Fast reduplication	durational aspect	habitual aspect
Slow reduplication	continuative aspect	iterative aspect

One final comment on the form of these aspectual modulations. A few signs have been observed to have a rocking movement performed by the body but with no manual reduplication: LAUGH, THINK, WAIT-WITH-FOLDED-ARMS. These signs share some formational features, viz. the continuous contact throughout the articulation of the sign and the lack of movement. This means that in the citation form the hands do not move but remain in contact with the place of articulation. If e.g. THINK, when modulated for continuative aspect, was to be reduplicated manually, the contact of the index finger of the forehead would have to be established several times. This is not done:

¹⁾ Some verbs are inflected in agreement with real or grammatically established positions of the referents of the arguments. ml = mid left, c = center, r = right are examples of such positions.

instead the contact is prolonged while the body makes the movements. - This observation supports the claim that morphological processes do not operate on the surface form of the sign as represented by the citation form, but on some underlying form (Supalla & Newport, 1978).

Reduplicated verbs are often, though not always, accompanied by different positions of the mouth. These orally produced elements are not part of the aspectual modulations but add some more information to the modulated sign: a description of the manner in which the action is performed. They are examples of non-manual lexical items and since their function is to determine verbs we can call them oral adverbs. Once again, this is not unique for Swedish Sign Language; oral adverbs also exist in American Sign Language (Baker, 1976; Baker & Cokely, 1980).

In the videorecorded stories that I analysed there are especially two such oral adverbs frequently used. One of these has a closed mouth with somewhat protruding lips ("mm" in Baker & Cokely, 1980) and means 'normally', 'with ease' when determining actions verbs. It is usually used together with durative verbs modulated for durational aspect. The other oral adverb is made with tense, spread "smiling" lips ("intense" in Baker & Cokely, 1980) and means 'intensively' or 'with effort'. It also seems to be able to express the notion of fast motion together with signs like CYCLE and RUN modulated for durational aspect. This may, however, be another modulation, because the movement is considerably faster than in the even, continuous reduplication, which here is called fast reduplication.

In connexion with the oral adverbs I would also like to draw the attention to another use of mouth movements in combination with reduplicated verbs and that is the simultaneous use of Swedish words. It means that the mouth can be seen to pronounce a Swedish word with approximately the same meaning as the sign and the word is performed as many times as the manual reduplications. The examples I have found occur both with fast and slow reduplication: CALL (fast), SUFFER (slow), WALK and

WAIT (fast). In no case has the word been inflected (for tense) but looks like the infinitive form. These words do not affect the meaning of the manual sign - as do oral adverbs - but seem to be completely redundant.

Let us now proceed to the modification called initial stop which is another modulation of durative and punctual verbs. It has been observed on HIT, THROW, TEACH, SHOOT-WITH-RIFLE, SIGN, UNDRRESS and indicates that the action was not performed. It is used in contexts like 'was just going to start the lesson (TEACH), but...' or 'I was about to hit him, when...'.

- (5) (initial stop-)SHOOT-WITH-RIFLE (initial stop-)SHOOT-WITH-RIFLE
IMPOSSIBLE I (initial stop-)SHOOT-WITH-RIFLE

'I tried to fire the rifle, once, twice, but I could not do it.'

I do not know of any language where this meaning is morphologically expressed so in want of an established term I will call this modulation "inhibitional".

The next modification to be accounted for is doubling. When the hands are simultaneously used in a doubled verb of action the meaning added by the modulation is 'each other', i.e. a reciprocal sense. Many signs with a lexical reciprocal meaning use a double articulator in the citation form (CHANGE, DISCUSS, MEET), but signs like LOOK-AT and SCOLD are modulated to express that two or more agents perform the same action on each other.

- (6) WOW STAND-WITH-NOSE-AT-EDGE-OF-TABLE ^{smile + nod}
(doubling-)LOOK-AT

' "Wow!" Standing with their noses at the edge of the table they looked at each other and smiled approvingly.'

Doubling easily combines with reduplication resulting in forms meaning e.g. 'look at each other over and over again' and 'scold each other for a long time'.

Doubled signs with alternating movements are combined with reduplication in all the examples I have found and function as an inflexion for the category of number (and/or distributional aspect, Klima & Bellugi, 1979). Thus the finger-spelled sign OUT (a punctual verb meaning 'leave' or 'get out')

when modulated in this way has the meaning 'many (people) leave at different times'. - If instead the same sign is doubled and performed with one simultaneous diverging movement it means 'all leave at the same time' and with still another modification it may mean 'get out all of you!'.

The last modification, initial hold, is simply a modulation for degree and means 'very'.

- (7) REALLY (initial hold-)DEAF HE
'He is really totally deaf.'

As already mentioned signs like COLD, DEAF, ANGRY and FUNNY take this modulation. These signs have been glossed with English adjectives which indicates their stative meaning. Signs with single articulator tend to combine initial hold with doubling but this is not obligatory. Doubling does not take place in signs located at head level if the place of articulation is a part of the body being one of the members in a pair, e.g. the side of the head or the cheek, but may do so at the chin.

In the previous paragraphs I have given just a few examples of morphological processes in Swedish Sign Language. I have also tried to outline on what signs they operate and how the meaning of the signs is changed. Though I have mentioned only some possible combinations of these processes, it should be obvious that they constitute a very complex system, both formationally and semantically, which deserves further investigation.

Before concluding I would like to make a comment on the title, which may be somewhat misleading. It states that there are both verbs and adjectives in Swedish Sign Language and that was my hypothesis when this study was begun. A more cautious, and as it seems, more appropriate title would be: Some morphological processes on predicates in Swedish Sign Language. Let me explain this very briefly.

Traditionally the definitions of the parts of speech use

semantic, syntactic and morphological criteria. To start with the first type, verbs are said to refer to processes, events or states, whereas adjectives refer to qualities. It is, however, very difficult to argue for the difference between a state and a quality and only by using semantic criteria is it barely possible to maintain that a distinction should be made between adjective and verb.

In languages that do make a distinction between adjectives and verbs the reason is that they function differently grammatically, either syntactically or morphologically. In English as in Swedish one such morphological difference is that verbs, but not adjectives are inflected for tense when used predicatively. Thus "he is nice", but not *"he nices" is grammatical in English, where the semantically empty copula is inflected for tense.

As we have seen there are some morphological processes in Swedish Sign Language operating on some predicates but not on others. The modulation for degree meaning 'very' was described to be taken by stative predicates (glossed by English adjectives). It is tempting to regard this modulation as characteristic of adjectives rather than of verbs but the distinction between stative and non-stative (i.e. durative and punctual) verbs is sufficient to capture the difference in this case. There are, however, stative verbs that do not take this modulation, like KNOW and POSSESS, but this can be described with reference to the number of arguments associated with these predicates. KNOW and POSSESS are transitive (two arguments) and those that take the initial hold modulation for degree - COLD, DEAF etc - are intransitive (one argument).

The data so far available do not give any support to the assumption that there are adjectives in Swedish Sign Language. However, more knowledge about the syntactic structure of the language is needed before it is possible to draw any definite conclusions. For pedagogical reasons it may still be justified to talk about both verbs and adjectives, if we only bear in mind that "adjectives" probably are nothing but intransitive, stative verbs.

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ON LOCALISATION IN THE SWEDISH SIGN LANGUAGE*

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ON LOCALISATION IN THE SWEDISH SIGN LANGUAGE¹⁾

Sign language can be characterized as gestural-visual with respect to manner of production and perception, whereas spoken language is vocal-auditive.²⁾ Since the eyes and the ears receive information differently, this difference between the two kinds of natural languages is vital. It is reasonable to assume that languages directed to those two senses respectively will have some different properties. It can likewise be assumed that the form of the two languages has been shaped by an ingenious interaction between the modes of production and perception, thus making the structure of the languages influenced by the behaviour that the body is capable of performing and of what the senses are able to receive. Sign language, as opposed to spoken language, is characterized by general properties such as movement, directionality, simultaneity, iconicity, and spatiality. In varying degrees these properties can be seen as characteristic of both the sign and the sentence.

Even a non-signer is willing to affirm that movement is the most conspicuous feature of sign language. This is only natural, since movement is a fundamental phenomenon for visual perception. Movement (of air and of the organs of speech) is essential to speech production, but it is not movement per se that is perceived, as is the case with sign language. The sounds that sometimes are the result of the signing movements have no communicative relevance.

It is also easily observed that sign language has extension

1) The research project on the Swedish sign language in which this study is being carried out is financed by The Bank of Sweden Tercentary Foundation (76/32).

2) As Charlotte Baker correctly reminded me after the spoken presentation of the paper "gestural" - and not manual - is the most appropriate term to use here.

in space. The way in which sign language uses three dimensional space can be compared with theatre. In order to be able to use space in the same manner (same manner as theatre) the signer needs mobile actors to take the principal parts and we find the actors in the two hands. There are also other mobile parts of the body that can take on the minor parts and we have many examples of Swedish signs with articulators other than the hands, such as lips, eyes, head, and shoulders (cf. Baker, in this volume). Moreover, all these bodily parts are, within certain limits, capable of performing movements at the same time and since vision does not limit their simultaneous use, simultaneity becomes a characteristic of a sign language to a greater extent than of a spoken one. As many authors have pointed out this is typical of the structure of the sign - the three manual aspects of a sign being performed simultaneously (e g Stokoe, 1960) - and also of the sentence structure allowing, for example, two manually performed signs at the same time and even all parts of a whole sentence (Friedman, 1976; Tervoort, 1968).

The iconicity of sign language obviously was the feature that fascinated those studying the various national sign languages in the 19th century and during the two decades after the turn of the century. It once was the main criteria for classifying signs (Skavlan, 1875; Mallery, 1880; Reuschert, 1909; Jørgensen, 1910; Wundt, 1911) but is generally not considered now to be of any linguistic significance. In our study of the Swedish sign language, however, we have found a few instances of iconicity that seem to indicate the opposite. The kind of relation between the form of the sign and the referent, the motivation of the sign, in some cases is a necessary criteria for defining a sign class and when accounting for a grammatical process (see page 46). The motivation of the form is, of course, in part responsible for the fact that new, not conventionalised signs (maybe even occurring only once) are understood, something which happens very seldom in spoken language, for which the symbols are arbitrary and by necessity conventional.

After these brief general remarks let us focus on one of the characteristics mentioned: spatiality. When written language makes use of its two dimensional surface, it usually makes use of a left-right opposition to represent the temporal, linear organisation of vocal-auditive language. In sign language space is not a substitute for the time dimension but rather is an additional one. This implies that signs, though articulated after one another in time, also can be assigned certain positions in space in relation to the signer and a sign can be placed after the last, as it were, in different positions in relation to previously articulated signs. Just as the temporal order of words or morphemes can have a syntactic function in spoken language, sign languages may likewise utilize a spatial arrangement for the same purposes, and as have many others studying sign language, we have found that the arrangement of the symbols is both temporal and spatial (Mallery, 1880; Jørgensen, 1910; Hansen & Sørensen, 1976; Fischer, 1975; Friedman, 1976).

The syntactic use of space consisting of a sign being assigned a non-neutral position has often been referred to as localisation in the European literature. An early discussion of this phenomenon can be found in a paper on the Norwegian sign language (Skavlan, 1875) and later in a book by the Danish author Johannes Jørgensen (1910) who was influenced by the former. Jørgensen also refers to Remi Valades and it may be from Valades that the term originates.

Jørgensens first paragraph on localisation is as follows (in translation): "By localisation is meant the way in which the signs are placed in space. While word order refers to the succession in time of the signs, localisation denotes their position - to the right, to the left, in front of (the signer) and so on - and regarding a sign referring to a movement, its direction in space." (Jørgensen, 1910, page 42) - a definition later adopted in a study of the sign language used by 44 Danish children (Hansen & Sørensen, 1976). Here, however, the term will be restricted in its application to mean only the assigning of a position in space to a sign, in other words to

the grammatical establishment of location. It will not include the modulation of the form of verb signs. One important formational criteria for narrowing the concept of localisation is that the localised signs when being localised directly do not undergo a change in the aspect of articulation but in the place of articulation. Verbs are also modified in their place of articulation but in a way predictable once we know the locations of their arguments.

Among the questions that will have to be asked when analysing localisation is, simply, how it is done. By what means are the signs given the locations? One obvious way is, of course, to perform the sign directly at the very point the signer intends it to be located. This implies that only signs with the neutral place of articulation in front of the signer can be moved into a marked position in this area, i.e., can be directly localised.

Related to this variant of direct localisation in the space in front of the signer is localisation on the body. This applies to a relatively small group of signs which in their citation form have the neutral place of articulation and which depict a shape, but do not necessarily refer to one. In the same way that a signer may refer to a directly localised sign by pointing in that direction, a sign localised on the body can later be referred to by pointing to that part. Signs having a place of articulation on the body in the citation form cannot be referred to by pointing to that place. In that case pointing is only capable of referring to that very spot, not to the previously signed symbol of which it is the place of articulation.

However, signs with a place of articulation on the body must sometimes also be assigned a position on the signing scene. They do not free themselves from that part, which would lead to a change in the aspect of articulation and might be interpreted as another sign. Signs of this type need the support of an additional sign for their localisation. Fischer (1975), in quoting Keep (1871), gives an example of this: "Making the

sign for cat, which we do by putting the thumb and the fore-finger of each hand to the mouth as if taking hold of whiskers, and the stroking the back of the left to indicate the fur: then locating the animal;" (my emphasis). Irrespective of what form such a sign has, its function is to localise a sign and it will here be called 'locator'. A locator frequently observed and used with signs tied to the body is a postpositioned point with the index-finger in the direction of the location of the referent.¹⁾ A sign may also be localised via a simultaneous locator articulated by the other hand.

A manual locator can be seen to be accompanied by a simultaneous gaze in the same direction, in many cases including a turn of the head, the shoulders and a change in body orientation. Localisation supported by the gaze is also found with direct localisation, which is therefore direct only in the sense that a manually articulated locator is not used.

To achieve ease of articulation the index-finger of the manual locator can be substituted by the thumb. The choice of manual locator is not related to any property of the form of the sign being localised or of the referent but to the location chosen. Thus the thumb seems to be the preferred form for locations behind the signer and upwards to the ipsilateral side of the articulator. In the latter case the index of the other hand can be used, more or less simultaneously with the localised sign. - Also signs with the neutral place of articulation, when localised behind the signer will, for practical reasons, need a locator.

One possible candidate for being analysed as a third variant of the manual locator has been observed. It is usually glossed PERSON and by tradition compared with the function of the Swedish derivational agent suffix "-are". The sign has a single articulator in the neutral place of articulation and is easily moved to the ipsilateral side, where it is used (by

¹⁾ Cf Friedman (1976, page 129): "...indexing, which entails establishing a point in space"... "for referring to a person, object or location, either real world or hypothetical."

some signers) to localise signs referring to human beings.

Signs with a hand as place of articulation seem to assume an intermediate position between those with the neutral place of articulation and those using bodily parts other than the hand. We have found signs of this type directly localised¹⁾, which means that the hand functioning as place of articulation has been moved away from its unmarked, citation position into another position on the signing scene. Also, in cases where a post-positioned manual locator is used, one frequently finds this changed position of the other hand anticipating the coming localisation.

As we can see here, the space in front of the signer has two different functions in signing. It functions as one of the manual aspects of the sign and as the signing scene (on a syntactic level). A sign being located to a certain point makes it occupied and in that case that point in front of the signer is far from neutral; on the contrary, it is charged.

It sometimes happens that signs with the neutral place of articulation are executed in the position of the citation form and are not perceived as localised, but, from subsequent sequences it becomes obvious that it was localised. That can be determined from the locations assigned to the subsequent signs and from the modified forms of verbs. Cases of that type may be interpreted as indicating the existence of a zero locator.

As mentioned above, localisation with gaze may occur with any kind of localisation (direct or with a manual locator). This means that when localising A to the left the signer looks in that direction and in the opposite direction when B is localised to the right. Another way to use gaze in connection with localisation, which may seem contradictory, occurs when the signer is "taking on the role" of one or more third persons. If A and B above denote persons whose conversation the signer

1) -as many participants at the symposium commenting on my paper predicted we would do.

is relating, the signer when referring to what A said, is looking towards the right in the direction of B, as A would do in a real situation when talking to B (hence "role taking")¹⁾. A shift in the direction of the gaze and in the body orientation towards the left indicates that what follows was uttered by B. This use of gaze direction and body orientation enables the signer to give continuous and unambiguous information on who is acting, simultaneously with the whole utterances. I would also like to mention that we have recorded on video tape examples of another variant of localising persons, where a signer points to himself instead of pointing to a location in front of him as one would expect. In other words, a third person can be localised by indicating the place in which you yourself as a signer are located - an overt, and very explicit kind of role taking. However, the signer normally reserves for himself the unmarked orientation forward and can refer to himself as the speaker through reassuming this orientation and reestablish eye contact with the addressee. If the signer takes eye contact with the receiver, when in a marked body orientation it is only to check that he is on line and does not mean that the third person quoted is looking away in that direction from his interlocutor B.

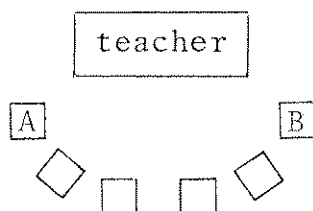
When studying localisation one must ask not only how a sign is localised but also where in space it receives a location. I will start with pleading the case of iconicity thus joining e.g. Jørgensen (1910) who claims that the signer should aim at a localisation as close as possible to nature. This, in my opinion, is likely to be a sound starting point, because of the fact that when the referents are within sight they are referred to either by a point or by an accordingly localised sign followed by a point, in both cases letting nature, the extralinguistic context, influence the form of the language. Deictic reference is not unique to sign language but the forms

¹⁾ Many beginners learning sign language will, in cases like this, look in the direction of A, not only when locating A, but also when relating what A said to B. It seems as if they want the gaze to be interpreted as something like "the one I'm looking at now said:..."

of spoken language are not influenced by the context to the same extent. This is of course only true of the vocally produced components of communication in spoken language and not of the simultaneously occurring gestural behaviour.

When the referents are not present, as if, for example, when a person is telling about something he has experienced, the actual locations of the referents as they are remembered will determine the localisation of the signs. In other words, the signer is able to reestablish a situation verbally according to his visual impressions, which enables him to refer to persons, objects and locations just as he would do if they were present. In such cases the rules for localisation assigning the locations to the signs are supplied by the signer's own experience.

One observation in support of the above claim is that two persons who have been present at the same occasion tend to localise differently. This can be explained by the fact that they were not located in the same positions, and were thus receiving different visual impressions. Therefore, they will have different, but motivated strategies for describing the situation. This implies further that localisation is made egocentrically in the sense that it is made from the signer's own perspective. If A and B having attended a class together (placed as illustrated below) afterwards are talking about the teacher, A will localise him to the left and B will do it



to his right. If, by mistake one of them (A) should localise the teacher in a wrong direction, the other person is likely to notice it and even comment on it. It is a disturbing mistake since it disagrees with the actual location of the teacher - as seen from A's perspective.

If A tells someone not present at the class about a discussion that took place. A will automatically localise the signs referring to the students in the same relative positions as they had, as viewed from his position. When finished, his interlocutor has learned not only the content of the discussion, but also the locations of the participants, irrespective of whether it was A's intention to convey that information or not.

With no visual cues, present or remembered, to guide the choice of locations as there may be in storytelling or when talking about hypothetical cases (and in interpretation), how does the signer localise? When discussing localisation with a group of deaf students an instant and spontaneous suggestion to which they all agreed, was that the signer creates a picture and localises according to that mental image. This sounds reasonable enough, especially if the subject is concrete but then another question comes up: are there any specific principles for creating mental pictures? It may, however, work in the opposite direction by which is meant that by applying the rules of localisation a picture becomes created, which can be shared by both the receiver and the signer himself.

At present we are not able to account for any specific rules of localisation, but we have observed some tendencies. One such principle which governs localisation seems to be that the formational qualities of a sign influences where the sign is localised. An often observed example illustrating this is the sign CHILD, signed with a flat hand (palm down, fingers pointing forward) indicating the height. Though this is a sign with the neutral place of articulation, it is not executed in front of the signer but towards the ipsilateral side and can thereby through its citation form, be regarded as directly localised to that side. A right hand dominated signer, when talking about an interaction between an adult and a child, will localise the child to the right, and the adult will receive his location to the left. (Cf the PERSON sign discussed above.) Indeed, there is a strong tendency for signs referring to persons to become localised to the ipsi-

lateral side. - As for a localised sign referring to an object or a location, the opposite tendency has been observed, i e the contralateral direction seems to be the preferred one.

When there are more than one third persons and when they are introduced in the discourse at the same time, they are usually localised more in front of the signer according to a general strategy for localising referents of the same kind, starting with the first sign at the contralateral side and continuing towards the ipsilateral one.

The principle of localising from the contralateral to the ipsilateral side is certainly the one governing localisation of signs referring to events occurring at different times. The left-most sign for a right hand dominated signer will be the one appearing first in time and later events are localised in succession towards the signer's right. This enables the signer, if referring to an event that happened earlier than one already mentioned, to localise it to the contralateral side of the first one mentioned, thus indicating that it took place (!) before.

Before concluding there is a third aspect of localisation I would like to mention very briefly and that is the question of which signs can take localisation. Regarding localisation as a syntactic process we have to assume that it operates on classes of signs. Since we are only in the beginning of this study we are neither able to make any statements as to which those classes are, nor to present a list of signs. However, from the preceding paragraphs it should be evident that one type of criteria for defining these classes is the semantic one. Obviously functional aspects are also relevant to the classification, and when describing the different kinds of localising devices, formational criteria are needed. I will also suggest another kind of criteria related to the iconic nature of sign language and which I will refer to as motivational.

Among the signs referring to objects and having the natural place of articulation we have noticed a group of signs that

do not take direct localisation as one would expect, but need a locator (e g WINDMILL). And there is another group of signs with the same characteristics that takes direct localisation (e g HOUSE). The signs of the "HOUSE"-group are motivationally identical, i e they have the same kind of relation between the form of the sign and the referent of the sign: a) the forms of these signs are directly motivated by the referent and b) in the aspect of articulation a shape is depicted. In other words, they are referent-iconic, shape-depicting signs (Bergman, 1977). Those that do not take direct localisation are a) indirectly motivated by the referent via a base (Schlesinger, 1971) - which in the case of WINDMILL is the sails - and b) in the aspect of articulation a movement is imitated (that of the sails); in short, they are base-iconic, movement-imitating signs.

As mentioned in the introduction of this paper the motivational, iconic nature of sign language is not generally considered to be of any grammatical significance to sign language. But up to this point we have cases where the only property capable of distinguishing between some subcategories of signs, is the motivation of the sign. Granted that the generalisations made here will allow a closer examination as the study continues, we may be justified in drawing the conclusion that iconicity does play a part in the grammar of the Swedish sign language.

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