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Classifier constructions as procedural signs in American Sign Language

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CLASSIFIER CONSTRUCTIONS AS PROCEDURAL SIGNS IN AMERICAN SIGN LANGUAGE

by

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This thesis, submitted by Stephen Jones in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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Stephen Perry Jones II
March 20, 2013

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ABBREVIATIONS

IX	Pointing to a referent in real space or signing space.
1sg	First person singular
1pl	First person plural
ASL	American Sign Language
CC	Classifier construction
CL	Classifier
SaSS	Size and shape specifiers
POSS	Possessive
RT	Relevance Theory
ISL	Israeli Sign Language

ABSTRACT

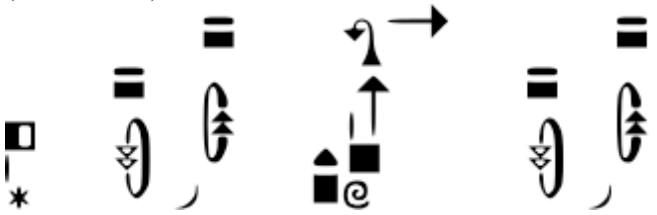
In this thesis I will be analyzing what has typically, in sign language literature, been termed classifiers and classifier constructions. I will be approaching them from the pragmatic perspective by applying Relevance Theory to explain their usage as representations that manipulate and modify their referents. The data comes from texts signed by native users of American Sign Language and are from academic lectures, interviews, narrative, and course curriculum. I have found that Relevance Theory adequately describes why and when classifiers constructions are used and that they function as a procedural referring expression.

CHAPTER 1

CLASSIFIERS AND CLASSIFIER CONSTRUCTIONS

Sign languages contain a highly productive system that denotes spatial relationships and movements. This system is typically referred to as classifier constructions and it does not abide by the normal rules of lexical signs (Sandler & Lillo-Martin 2006). In example (1) 'CC1' is an example of a classifier construction.

(1)
(Bruce 2003)



1sg biking CC1 biking

"I rode my bike down the driveway, over the curb, and down the street."

In example (1) 'biking' is a verb representing the concept of riding a bike and is a lexical sign. In the classifier construction 'CC1' the left hand  represents the driveway, while the right hand  represents the signer on a bike moving forward down the driveway, over the curb, and down the street to the right. Classifier constructions differ from lexical items in a number of ways. Movement in lexical items typically is fairly simple, but with classifier constructions movements can be much more complex, layering one movement on another chaining them in an imitation of real world action. In this example the sign

'biking' has one movement that is circular with both hands moving forward in asynchronous circles. The movement for 'CC1' has a forward movement showing the movement down the driveway followed by  which represents going over the curb followed by a movement to the right, which indicates going down the street. Each part of this classifier construction's movement adds to the proposition expressed by the utterance.

In ASL, the handshape in a classifier construction typically represents a person or object, but can also represent abstract concepts, while the movement, orientation, and facial expression happen simultaneously. Classifier constructions typically mirror the real world in their representation of people or objects through movement, orientation, handshape, and location. Unlike lexical signs, classifiers can represent different objects simultaneously with the two hands to show interaction and spatial relationships in constructions such as the driveway and bicycle in (1).

Classifier constructions have been difficult to account for. They have been variously described as verbs of motion and location, verbal predicates, lexical verbs, noun incorporation, classifier predicates, and depicting verbs (Sandler & Lillo-Martin 2006; Supalla 1982; Schick 1987; Scott Liddell 2003). So I will be using the traditional term "classifier" as a matter of descriptive convenience to refer to the handshape that forms the core of these signs and "classifier construction" to refer to the handshape in combination with movements, orientation, location, and facial expression to create full signs.

There are three types of classifiers: entity, size and shape specifiers, and handling. Entity classifiers represent the whole object or entity with a handshape. Size and shape specifiers represent the size or the extent of an object with the two hands typically

produced with one hand being stationary as an anchor while the other hand moves. Handling classifiers represent how an object is handled or gripped (Supalla 1982; Schick 1987; Scott K Liddell 2003; Valli & Valli 2011). I will explain these three categories in more detail in section 2.3.3.

While there have been numerous descriptions of classifier constructions, there has been little work on how classifier constructions are understood and why they are used instead of lexical signs. The goal of this thesis is to show how classifier constructions function. In Chapter 1, I describe the current discussions of the status of classifier constructions and how they have been analyzed. In Chapter 2, I describe Relevance Theory and its application to classifiers and classifier constructions. In Chapter 3, I give examples from American Sign Languages texts and analyze them using Relevance Theory. In Chapter 4, I address how classifier constructions can become lexicalized and then undergo back-formation to be used as a classifier construction again. In Chapter 5, I summarize my findings.

In this thesis, I use Relevance Theory, as discussed in Chapter 2, to analyze classifier constructions as a special class of signs that manipulate concepts in an addressee's mind. Classifier constructions function in an anaphoric way, referring back to previous discourse or highly accessible referents in the addressee's cognitive environment.[1] When an utterance is signed the addressee then infers what is being referenced by the classifier constructions and understands the meaning of the construction through referent

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[1] A person's cognitive environment includes everything in the person's mind and physical environment that is accessible to them to interpret an utterance.

[2] All of the handshape pictures in this thesis come from Adam Frost's work with Valerie Sutton (Sutton et al. 2011). The figures below also come from her introduction to SignWriting manual (Sutton

assignment, disambiguation, and inference. The addressee interprets the handshape, orientation, movement, and facial expression in context of the activated referent and then through inference comes to a conclusion as to what the construction meant. The process of having the addressee infer the meaning, instead of the speaker making it overt, reduces processing effort and can convey complex concepts in a shorter period of time with fewer signs. Classifier constructions can also be used to create ad hoc concepts from previously established referents through narrowing or broadening.

The data for this thesis comes from texts signed by native signers of ASL. The texts range in genre from narrative, academic lecture, teaching curriculum and interviews. I analyze these texts in Chapter 3. The goal in analyzing these texts is to see how classifier constructions are used and what their referents are. When they occur without overt prior mention of their referents, I note how context makes the referents highly accessible. I explain how classifiers help the addressee pick out referents from the context. I also explain how classifier constructions interact with each other to convey complex concepts with a minimal amount of signs for less processing effort than if lexical signs were used. Lastly, I investigate the scope and limitations of classifier constructions. In this thesis I am only focusing on the manual aspects of the classifier constructions, while leaving facial expression for further study.

Analyzing classifier constructions from a pragmatic Relevance Theoretic perspective explains how they convey meaning, make reference assignment, and provide reasons for when and how they are used. The analysis shows classifier constructions provide instructions to the addressee to pick out the intended referent and work through inference on the part of the addressee to convey complex propositions.

1.1 SignWriting and Glosses

In this thesis I have represented examples and data using a transcription system called SignWriting (Sutton 2009), developed chiefly by Valerie Sutton. A grammar of SignWriting has been written by Stuart Thiessen (Thiessen 2011). This system makes use of symbolic representations of handshapes and movements to represent a sign. The following is a short description of symbols used throughout this thesis.[2]

SignWriting is normally written from the signer's perspective. This means that you write signs as if standing behind yourself watching yourself signing as shown in Figure 1. All of the signs in this thesis are written from this perspective.

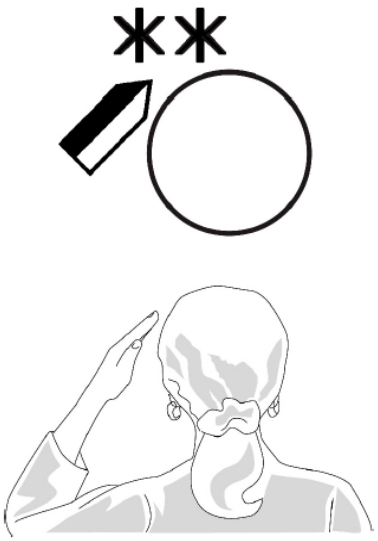


Figure 1. Signer's Perspective (Sutton 2009)

[2] All of the handshape pictures in this thesis come from Adam Frost's work with Valerie Sutton (Sutton et al. 2011). The figures below also come from her introduction to SignWriting manual (Sutton 2009). More information about SignWriting can be found at www.signwriting.org. As noted in the acknowledgements, all pictures are used with permission.

In Figure 1 the left hand is the active articulator. The pointed rectangle represents the hand with the back of the hand represented by the black part of the hand symbol and the palm side by the white. The two asterisks represent the hand tapping the forehead twice.

In Figure 2 more handshape orientations are presented on the left half of the figure. On the right are the three types of touch symbols. The rub symbol indicates a continuous contact during the duration of a sign. The brush symbol indicates a quick brush and then leaves contact during the articulation of a sign. A touch symbol represents a simple touch.

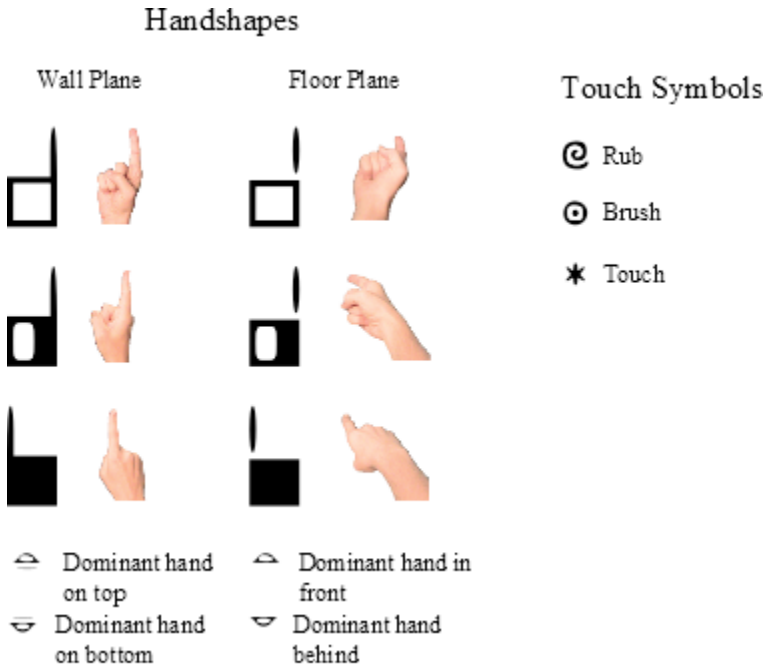
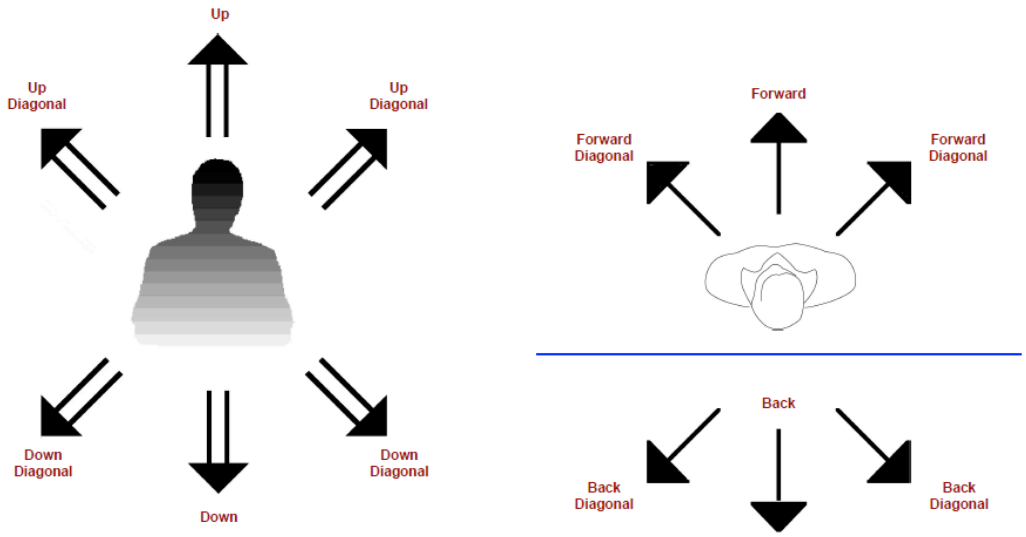


Figure 2. Handshapes and Touch Symbols (Sutton et al. 2011)

A more comprehensive comparison of handshapes to sign writing symbols, all of which can take the orientation changes shown in Figure 2, are given in Table 2 on page 40.

The next set of figures explains the movement of the hands in space. The black arrow head represents the right hand's movement, whereas when the head of the arrow is white it represents the left hand's movement. The arrows represent movement on two planes: the wall plane on the left and the floor plane on the right as seen in Figure 3.



Wall Plane Floor Plane

Figure 3. Hand Movement (Sutton 2009)

While the symbols in Figure 3 represented the whole hand's movement in space, the symbols in Figure 4 represent the hand's internal movements.

Figure 4. Hand Internal Movement (Sutton 2009)

Lastly, I am following Leipzig Glossing Rules (Comrie, Haspelmath & Bickel 2008) insofar as is possible, although because of the visual medium and simultaneity of sign languages these had to be modified.

1.2 Historic Handling of Classifiers and Classifier Constructions

For the most part, it is agreed that classifier constructions are predicate-like, but that their syntactic structure is not well understood (Sandler & Lillo-Martin 2006). They have often been analyzed as classifying nouns through handshapes being incorporated in verb predicates (Sandler & Lillo-Martin 2006). These analyses account for the structure and the semantic categories being represented, however, they do not explain how the connection is established between referent and underdetermined classifier in verb predicates to create propositions or modify concepts. I will discuss in detail how classifiers are underdetermined in section 1.3. In the following subsections, I will explain the various analyses that have been offered for classifier constructions and point out some criticisms of each one.

1.2.1 Verbs of Motion and Location

Supalla (1982) in his dissertation analyzes classifier constructions as being made up of multiple morphemes being expressed simultaneously as a type of derivational morphology. The handshape is regarded as a noun agreement marker while the movement is a verbal predicate, each of which are made from discrete morphemes.

Overall, Supalla represents a classifier construction as a form of verb that represents location and motion. These verbs can occur serially to add detail as to the central figure, secondary object, and ground, while also being made up of discrete morphemes. He also argues that American Sign Language uses classifier constructions as serial verb constructions by linking them one after another to convey meaning.

Supalla argues the classifier, that is the handshape, must be chosen in accordance with the noun because it represents the noun class. Classifiers are also constrained by

either a real reference system or an abstract reference system to makes sure size is consistent within a classifier construction (Supalla 1982; Schick 1987). The abstract reference system is the neutral space in front of the signer and the real reference system is based on movements analog to positions in real space around the signer (Supalla 1982; Schick 1987). The context provides the addressee a frame of reference and the addressee is able to interpret the size of the classifiers in relation to each other during a construction. More research would be required to understand exactly how native signers are able to interpret between the two systems as "… no ASL typology has explained its systematicity" (Schick 1990:32)

This label of "verb" for classifier constructions is quite possibly over-stated in American Sign Language since "… they do not behave like ordinary verbs, and their phonological, morphological, semantic, and syntactic structures are different as well" (Sandler & Lillo-Martin 2006:89–90). Another argument against the analysis of classifier constructions as verbs comes from the fact that they cannot take aspectual inflection like lexical verbs can. Lastly, classifier constructions typically convey whole propositions, whereas lexical signs generally must be combined with other elements to convey complete propositions. In spite of the problems with calling classifier constructions verbs of motion and location, most researchers agree that they are predicate-like.

1.2.2 Noun Incorporation

Another view of classifier constructions is that they are a type of noun incorporation in a verb root (Meir 1999; Sandler & Lillo-Martin 2006). The incorporated noun attaches to the verbal predicate with the handshape indicating the class of noun it represents.

Meir (1999) argues that classifier constructions in Israeli Sign Language undergo two types of noun incorporation. The first is termed doubling since the classifier incorporated into the verb 'doubles' an overt noun in the verb phrase. The second is termed stranding, which is where there is no overt noun to which the incorporated classifier in the verb phrase refers. Example (2) is a case of doubling, with the underlining to indicate the doubling.

(2) ISL (Meir 1999:304)[3]

BOOK INDEX$_b$ HE$_a$ $_a$GIVE-CL:flatC$_1$
book that he wide-flat-object-he-give-me
"He gave me this book."

The next example is that of stranding in ISL, where the underlined term marks the stranded classifier in the verb and its modifier. Meir states that the noun is recoverable from the context. In example (3) the recoverable noun is 'car'; that is the noun 'CL:B(vehicle)' represents. In this example Meir does not provide glosses. The context is "(In this picture I see two cars)" and the signer signs 'RED CL:B(vehicle)-GO-UP-HILL'

(3) ISL (Meir 1999:305)

(In this picture I see two cars). RED CL:B(vehicle)-GO-UP-HILL
'The red (one) is going up hill.' (='The red is vehicle-going up hill')

One criticism of incorporation analyses is that there is no noun ancestor from which the classifier handshape could have developed diachronically, although this criticism is questionable when it comes to a minority of signs such as tree or cup where the classifier

[3] I am not using SignWriting with this example because I don't know what the ISL signs are. This example and example (3) ISL (Meir 1999:305) are directly cited from (Meir 1999).

and handshape for the noun are the same (Sandler & Lillo-Martin 2006:89). It has also been noted that the verb into which the handshapes incorporate do not occur independently from the construction in the language:

> "In spoken languages, the verb stem into which a noun incorporates already exists as a fully formed, independent verb. In signed languages, however, the incorporating verb stems are general and more abstract motion and location predicates, which do not occur on their own in the language" (Meir 1999:303).

I will argue that classifiers do not encode a conceptual meaning such as 'book' or 'vehicle', but instead instruct the addressee to locate a specific referent in the discourse. Classifier constructions then encode an instruction to manipulate that concept or an instruction to modify a concept. I will discuss this in more detail in section 3.4.

1.2.3 Predicates

Brenda Schick in her 1987 dissertation argues that classifier constructions are predicates with three distinct classes. The first is "CLASS" forms that are intransitive verbs of motion and location, corresponding to what others have called "entity" or "semantic" classifiers. The second is "size and shape specifier" (SaSS) predicates which are most commonly realized as predicate adjectives. The third is "HANDLE" forms that result in an agentive transitive predicate.

CLASS forms with movement represent the subject moving through space. Schick argues CLASS forms "… categorize nominals on the basis of semantic information …" and is the reason she termed them CLASS (Schick 1987:8). I provide examples of this

form in section 2.3.3.1 under the label of entity classifiers. When a CLASS form is combined with a single point in space, this represents a copula of the verb 'to be' (Schick 1987; Supalla 1982). Handshapes refer anaphorically to previous discourse. The handshape within the predicate is used to represent the subject or describe it (Schick 1987).

The SaSS class combined with a path movement or articulated in one place represents inanimate predicate adjectives, and can be used even when lexical adjectives are available (Schick 1987). I provide examples of this class in section 2.3.3.2.

The last class, HANDLEs, creates an object argument within the predicate which makes it transitive (Schick 1987). These represent how an object is handled and I later call them handling classifiers and provide examples in section 2.3.3.3.

The referent scale system for how to interpret the represented size of a referent based on a classifier construction comes in two varieties. The first is an abstract scale that shrinks everything into the neutral space in front of the signer. The second follows the real-world scale typically by pointing in the real world environment and the classifier construction's size and movement is interpreted in terms of the real world space and not only the immediate space in front of the signer (Schick 1987; Supalla 1982).

Classifier constructions should not be labeled as predicates because the label of predicate is not a word class and not descriptive enough to be useful.

1.2.4 Lexical Verbs

The last type of analysis, and the one that is closest to my analysis, is that of classifier constructions as lexical verbs that can be placed in analog and gradient orientations. Scott Liddell (2003) states, "What distinguishes depicting verbs [i.e.,

classifier constructions – SPJ] from other verbs is that, in addition to their encoded meanings, these verbs also depict certain aspects of their meaning." I will argue, however, that they do not encode their meaning as stated by Liddell, but are underdetermined and that they derive meaning through inferential processes such as referent assignment and disambiguation. This means that they cannot be called lexical items that encode their meaning, except when through convention they become lexicalized. I will address lexicalization more fully in Chapter 4 and will address how classifier constructions are underdetermined in their meaning in section 1.3.

I do agree that there is an aspect of depiction in classifier constructions to real world movement and space which I will address in section 3.6. I also agree with Liddell that classifiers can represent full concepts once the addressee understands what the classifier is meant to depict. His analysis portrays classifier construction as lexical verbs that encode concepts. In this thesis I will show how classifier constructions are referential and do not encode concepts, but instructions. They translate as full propositions and since they do not encode a concept cannot be properly termed depicting verbs.

1.3 Classifier Constructions and Underdeterminancy

Classifier constructions can span several phrases and convey complex propositions in either monosyllabic signs, such as example (1) on page 1, or several intonational phrases (Sandler & Lillo-Martin 2006:91). They can also string together multiple propositions without a lexical word between them, such as example (13) on page 52 (Sandler & Lillo-Martin 2006:91). This indicates the productivity of using classifier constructions to convey propositions quickly, in that one classifier construction can

represent a whole proposition instead of using multiple lexical signs to convey the same proposition.

However, a satisfactory account of how concepts are linked to classifier constructions and relayed to the addressee has yet to be offered. I will show that classifier constructions are underdetermined, meaning they can represent several things until a context is given from which to interpret them from. This leads to the conclusion that they do not encode a concept, but a set of instructions to manipulate a concept that needs to be known before an interpretation can be made.

Classifier constructions are no doubt a very productive subsystem in ASL. The question addressed by this thesis is where their meaning comes from and why are they so productive. In the rest of this section I provide examples of classifier constructions from each of the three main classes as originally identified by Supalla and Schick and present their encoded meaning. While I disagree with Schick's and Supalla's analyses, the three classes of classifier constructions are useful because they accurately describe what the classifier constructions convey, just not how they convey it. I will be using these three agreed upon classes for my analysis and will show how Relevance Theory can account for how meaning is conveyed through the three classes.

The construction described below in Figure 5 is an example of an entity classifier construction. This construction is made with only the left hand starting with the index finger in a vertical position and ending with it in a horizontal position.

Figure 5. Entity Classifier Construction

In the case of Figure 5 the left hand encodes an instruction to ‘pick out a referent that is long, thin, and vertical.’ There are two movements in this construction. The first is represented by the arrow encoding the instruction to ‘manipulate a concept from point A to point B’ with a simultaneous change of orientation from vertical to horizontal. The second is a tense quick back and forth movement when the hand reaches the horizontal position. This secondary movement instructs the addressee to form an interpretation that is not a typical movement from point A to point B, but something out of the ordinary. This could be used to represent the gate at a parking garage or a tree falling, but neither of these are lexically encoded in the construction.

In Figure 6 a SaSS classifier construction is presented. The right hand  moves upward as indicated by the arrow while the left hand  remains stationary.

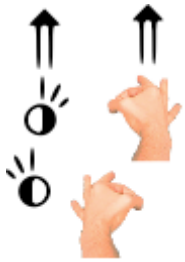


Figure 6. SaSS

Looking at a classifier construction in isolation allows us to determine what the construction encodes and what is left to inference. The two handshapes each encode the instruction to ‘pick out a referent that has the characteristic of being round.’ The right

hand index finger and thumb are directly above the left hand index and thumb with palms facing each other. The right hand moves straight up in space from a point A to a higher point B while the left hand stays stationary. The movement encodes the instruction to 'manipulate a concept from point A to point B.' In this case, because the left hand is stationary this movement of the hand represents the extent of the object rather than movement of an object. It is still being manipulated from point A to point B, but since this is a SaSS it shows the size and extent rather than motion. So to sum up the encoded information in Figure 6, it would indicate that the addressee should 'pick out a referent that has the characteristic of being round along its length from point A to point B.'

If this construction contained conceptual information, it would be easy to understand it in isolation, just as it is possible to understand a word such as 'cat' in Figure 7 or 'run' in Figure 8.

Figure 7. Cat

Figure 8. Run

In the case of this construction in Figure 6, no conceptual information is relayed. It would be easy to apply it to a referent such as a pipe, pole or a tube of some sort, but this would be an act of inference based on the instructions encoded, not the information in the classifier construction itself.

Next, I will explain what encoded information is contained in a handling classifier construction as shown in Figure 9. The right and left hand move together as one unit up and to the left, while at the same time changed their orientation and relative position from horizontal to vertical. Again, I am presenting this construction in isolation to determine what exactly the construction itself encodes.

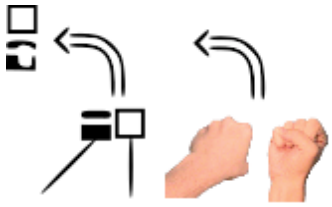


Figure 9. Handling Classifier Construction

In the case of Figure 9 the left and right hand have the same handshape. The handshape encodes an instruction to 'pick out a referent that can be gripped with the full hand.' The movement starts with both hands horizontal to each other and ends with the right hand above the left at the end of the movement. Thus, the movement encodes an instruction to 'manipulate a concept from point A to point B.' So to summarize, this construction gives the instruction to 'pick out a referent that can be gripped with the full hand and goes from point A to point B.' This classifier construction could refer to pushing a lever or prying something with a crowbar, but it does not lexically encode either of these concepts.

In fact all three of these examples occur in the same text and refer to the same referent: a broom being stuck under a dresser in a closet as a prank. Figure 6 refers to the handle. Figure 9 shows how the signer lifted the handle from a horizontal position to a vertical one after the bristles of the broom were stuck under the dresser. In the story the signer then closes the closet door and the broom is held in place under tension by the door. When the door is pulled open, Figure 5 represents the broom handle coming down

with great speed back into the horizontal position. It is the presence of an explicit, or highly accessible noun phrase, like “broom”, that makes these constructions understandable. When the context for these examples is supplied this is clear, but without context each classifier construction is too schematic to be useful. These constructions are able to instruct the addressee to form a very specific concept in their mind and how to manipulate it.

Overall, the productivity of classifier constructions is due to the fact that they do not encode conceptual content, but instructions. Since classifiers are underdetermined they have the flexibility to combine to refer to almost any type of referent. If the handshape is underdetermined in what it represents, as I argue, how does the addressee decide what noun it represents, especially if one has not been overtly stated? Also, if the referent is overtly stated, how does the addressee come to a conclusion about what the movement and orientation of the hand represents? I believe that these questions can be answered through the application of pragmatics, specifically Relevance Theory, which I will introduce in Chapter 2.

CHAPTER 2

RELEVANCE THEORY

2.1 Introduction

With classifier constructions being highly underdetermined it is necessary to explain how they can be understood and how they can be highly productive in conveying complex propositions. I claim this can be explained in a Relevance Theoretic framework.

Relevance Theory is a pragmatic theory of comprehension and communication. In order to understand how classifier constructions convey meaning I first have to present the basic principles that help us to understand any type of communication. These two principles are stated in relevance theory as:

> Cognitive Principle of Relevance: "Human cognition tends to be geared to the maximisation of relevance." (Sperber & Wilson 1995:260–261)
> Communicative Principle of Relevance*:* "Every act of ostensive communication communicates a presumption of its own optimal relevance." (Sperber & Wilson 1995:260–261)

The Cognitive Principle of Relevance means that humans try to understand what is said to us based on how it is relevant to us. The Communicative Principle of Relevance

states that every time a person tries to speak to someone they are going to try and be the most relevant to the person they are talking to. In other words the addressee with assume it will be relevant just because it is being addressed to them.

This theory claims that the goal of communication is to get the greatest amount of cognitive effects for the least amount of effort, as developed by Wilson and Sperber (2012:6):

> "Relevance is defined as a property of inputs to cognitive processes (whether external stimuli, which can be perceived and attended to, or internal representations, which can be stored, recalled or used as premises in inference). An input is relevant to an individual when it connects with available contextual assumptions to yield *positive cognitive effects*: for example, true contextual implications, or warranted strengthenings or revisions of existing assumptions. Everything else being equal, the greater the positive cognitive effects achieved, and the smaller the mental effort required (to represent the input, access a context and derive these cognitive effects), the greater the relevance of the input to the individual at that time."

This means that when a person speaks, the addressees make judgments on how relevant the message is to them and try to interpret the speaker's meaning based on how it will affect them. They will give up if the processing of the message is too taxing or not

providing enough cognitive effects. The addressee will follow the relevance-guided comprehension heuristic as stated by Sperber and Wilson (2012:7):

> "Relevance-guided comprehension heuristic:
> (a) Follow a path of least effort in constructing an interpretation of the utterance (and in particular in resolving ambiguities and referential indeterminacies, in going beyond linguistic meaning, in supplying contextual assumptions, computing implicatures, etc.).
> (b) Stop when your expectations of relevance are satisfied."

That is, once the addressees' expectation of relevance is satisfied they will stop searching out other possible meanings. In sign language, classifier constructions function on these principles of relevance and inference, giving the most positive cognitive effects with the least amount of processing effort.

Contextual assumptions are important to take into account when understanding how people interpret any utterance. Different utterances bring to mind different contextual assumptions available to use to interpret the utterance (Wilson & Sperber 2012:181). This means different contexts will be more highly accessible to make interpretations from than others depending on the utterance. So the hearer will choose how to interpret the utterance based on contextual assumptions brought to mind (Wilson & Sperber 2012:182). Depending on the utterance, some contexts will be more highly accessible than others and if a context is highly accessible it will require less processing effort to understand the utterance from that context. If a context was not brought to mind and is necessary to interpret the utterance, it forces the addressee to search their whole cognitive

environment resulting in a lot of processing effort to come to the correct interpretation. The addressee will make choices on what context to understand the utterance from based on the relevance-guided comprehension heuristic stated above.

There is a difference between explicit and implicit meaning and how they are handled in Relevance Theory. Wilson and Sperber (2012:12) explain the difference between an explicature and an implicature:

> "Explicature:
> A proposition communicated by an utterance is an explicature if and only if it is a development of a logical form encoded by the utterance.
>
> Implicature:
> A proposition communicated by an utterance, but not explicitly, is an implicature."

An explicature is the enrichment of the logical form of the utterance into a fully propositional form. The logical form is the conceptual representations given in an utterance that undergo formal logical rules such as implication and contradiction (Sperber & Wilson 1995:72). The propositional form is developed through enrichment of the logical form using reference assignment and disambiguation of the conceptual meaning. It will yield the fully propositional form known as the explicature through this type of pragmatic inference (Wilson & Sperber 2012:12). For example if a speaker says, "It is 5:00 pm," the full explicature would be, "The clock reads 5:00 pm on June 27th, 2012."

As I show later, classifier constructions function on the explicit level to help an addressee fill out the fully propositional form of an utterance.

An implicature is the implicated assumption and conclusions intended by the speaker, but not encoded in the sentence, and can only be arrived at through inference. The implicature, however, can vary based on context. In the case of "It is 5:00 pm," the implicated conclusion behind the utterance in this example is, "It is time to go to the cafeteria." This comes from the logical process seen in example (4).

(4)

Premise 1: If it is 5:00 pm it is time to go to the cafeteria.
Premise 2: It is 5:00 pm.
Conclusion: It is time to go to the cafeteria.

Premise one is the old implicated assumption held by the hearer. Premise two is the new information from the utterance. Through the process of combining the previous assumption with the new information it is possible to arrive at the implicated conclusion as seen in (4).

As we look at utterances with classifier constructions in American Sign Language, we will see that the fully propositional form of an utterance is enriched through referent assignment, disambiguation and pragmatic inference (Carston 2000). It is only once the propositional form of an utterance is filled out that one can determine implicatures such as the conclusion in (4). Classifier constructions provide instructions to the addressee as to how to form the fully propositional form.

2.2 Procedural Meaning

2.2.1 Procedural Versus Conceptual Meaning

At this point it is important to distinguish between what Wilson and Sperber (2012) have termed procedural and conceptual meaning.

Conceptual meaning encodes concepts that can be easily brought to mind, concepts such as car, tree, or dog, all of which require decoding of the lexical word (Wilson 2011:10). All of these are content words that carry conceptual meaning and add to the final proposition through the process of encoding and decoding.

Procedural meaning requires the process of inference on the part of the addressee. It does not have a specific conceptual meaning that can be determined through decoding, but requires the addressee to enrich the utterance through inference before it can be understood. Procedural meaning helps the addressee to access the correct context to come to an interpretation that satisfies their expectation of relevance. Procedural meaning is defined as follows:

> "Procedural meanings, then, are encoded instructions that specify computational operations to be performed during interpretation and, more precisely, to access a particular context for interpretation." (Wilson 2011:xix)

Hedley (2005:9) argues that pronouns do not encode concepts; instead they encode instructions to resolve the reference of a pronoun. He explains that the pronoun *he* encodes an instruction something like, "find an individual concept with the feature 'male'." His analysis agrees with Wilson's (2011:6) that, "… pronouns *I* and *he* or the

indexicals *now* and *then*, are not plausibly seen as encoding full-fledged concepts, since their referents vary from context to context and have to be pragmatically inferred." Classifier handshapes, I will argue, encode the same type of procedural instruction to pick out referents for the classifier construction, much like pronouns and other indexicals.

2.2.2 Classifier Constructions as Procedural

Classifiers in American Sign Language, function procedurally. Each classifier handshape encodes an instruction that is used to find the referent to which it refers, much like the pronouns *he* or *it*. These instructions are not enough for these constructions to function alone, unless the context is available in the addressee's cognitive environment.[4] The addressee applies inferential processes to assign the referent and enrich the utterance to a fully propositional form. This allows the classifier construction to manipulate the concept that the handshape referenced.

Part of the definition of procedural information is that it provides "… information about the representations to be manipulated, and information about how to manipulate them" (Wilson & Sperber 1993:2). Classifiers, as I argue in section 3.3, provide information on how to manipulate previously established concepts or highly accessible ones in the discourse. They do this through providing small procedural instructions in the classifier handshape, movement, and orientation that make the context accessible to the addressee. There are even instances of American Sign Language poetry that use only classifier constructions to tell an entire story. This is only possible when the procedural

[4] A person's cognitive environment includes everything in the person's mind and physical environment that is accessible to them to interpret an utterance. (Sperber & Wilson 1995:39)

instructions in the handshapes, movement, and orientation provide enough information to make the context available through inferential processes.

David Kaplan (1989:523) argues that indexicals such as *today*, *I*, and *now* can add to propositional content without being a part of the propositional constituent. As I will show in Chapter 3, classifier constructions can add propositional content while not being a part of the propositional constituent as well. This means that classifiers function in a fully referential way. They direct the addressee to the full concept and give instructions on how to interpret it, but are not the concept themselves. Classifier constructions are not part of the propositional constituent, the concept they refer to is.

I will now show how indexicals refer the addressee to concepts in English. Looking at example (5), the first line is what is uttered and the second is the fully propositional form also called the explicature.

(5) Utterance: "I ate a hamburger today."

Full Explicature: "Stephen Jones ate a hamburger on July 17, 2012 at 5:00 pm"

Now, if someone else uttered the same utterance from (5) the referent for "I" and "today" would be completely different. So, "I" and "today" are not part of the propositional constituent; the concepts to which they refer are. In the case of "I", the concept referred to is "Stephen Jones" and for "today", the concept referred to is "July 17, 2012 at 5:00 pm." The pronoun "I" is an instruction to pick out a referent and affects the truth value of the explicature.

Classifiers in ASL function in the same way. They encode a procedure to pick out a referent (a previously mentioned constituent) and give instructions on how to manipulate it. The referent, not the classifier construction, is part of the propositional constituent.

This makes classifier constructions procedural; they modify the truth conditional content of an utterance. They function like pronouns in that they put constraints on explicatures: "they guide the search for the intended referent, which is part of the proposition expressed" (Wilson & Sperber 2012:165–166). Once referent assignment has been established, it is possible to infer the meaning of the constructions because the right context is activated in the addressee's mind by the constituents of the explicature. The movement, orientation, and facial expressions used in the classifier constructions can then be interpreted using the relevance theory comprehension heuristic, which states addressees follow the path of least effort in constructing an interpretation of an utterance and then stop when their expectation of relevance is satisfied (Wilson & Sperber 2012:7). All languages follow this process of enrichment to arrive at a fully propositional form, but in the case of ASL classifier constructions it is more extreme because of the added complexity of movement, which I discuss in section 3.6.

The procedural analysis would account for why nouns and classifiers have a many-to-one relationship (any of several classifiers can be used for a given noun) instead of a one to one relationship (Wilbur 1985:3). Classifier constructions provide instructions using entity, handling or size and shape specifiers which allow the addressee to pick out the intended referent and then manipulate it. This section showed how ASL classifier constructions are procedural and refer to concepts that are part of the proposition, but are not a part of the proposition themselves. In section 2.3 I will explain how classifier constructions work to instruct the addressee to manipulate and change concepts.

2.3 Lexical Pragmatics

Lexical pragmatics investigates how literal (encoded) word meanings are modified in everyday use (Wilson 2004:343). These modified word meanings have been called ad hoc concepts because they are used once, constructed in the moment, and then maybe never used again. (Wilson 2004:351) This process of concept modification makes use of how conceptual information is stored in the mind, which I discuss in section 2.3.1. Then I will show how classifier constructions make use of this system to modify concepts.

2.3.1 How Concepts are Structured in the Mind

Relevance Theory claims that there are three types of entries for how concepts are stored at an address in the mind. They are what Sperber and Wilson (1995:86) label the logical entry, encyclopaedic entry, and lexical entry.

> "The logical entry for a concept consists of a set of deductive rules which apply to logical forms of which that concept is a constituent."
> "The encyclopaedic entry contains information about the extension and/or denotation of the concept: that is, about the objects, events and/or properties which instantiate it."
> "The lexical entry contains information about the natural-language counterpart of the concept: the word or phrase of natural language which expresses it."

It is the encyclopaedic entry that contains everything about a concept a person knows and it is from these entries that ad hoc concepts can be formed. Classifier constructions access

the encyclopaedic entries of a concept and instruct the hearer to pull from them specific entries to manipulate or change concepts.

2.3.2 Ad hoc Concepts

Ad hoc concepts are modified concepts from encoded concepts that are used once in a specific circumstance through broadening, narrowing, approximation or metaphorical extension of the concept encoded in a lexical word (Wilson 2004:347). An example of broadening would be saying something like, "This car is an oven," when what is meant is "This car is hot." The concept car is broadened to include encyclopedic entries from "oven" and applies them to car to indicates the car is hot inside. This creates the broadened ad hoc concept CAR* from 'car'. The logic in (6) shows the processes of selecting an encyclopedic entry that satisfies the addressee's expectation of relevance.

(6)

Premise 1: An oven is hot.

Premise 2: If a car is an oven then the car is hot.

Conclusion: The car is hot.

The concept CAR* with the encyclopedic entry "hot on the inside" taken from "oven" would be considered an ad hoc concept.

Narrowing would be using a broad concept to represent a small specific subset of that concept. An example would be using the sentence "There is a bird," when the intended referent is a hawk. Approximation involves using a phrase such as, "They parked a block away," when the intended meaning is they parked about a block away. Metaphorical extension occurs when a concept category is extended. For example, the

phrase, “This teacher tells us nothing,” can be uttered meaning the teacher did not tell me what to expect. In this the category “nothing” is extended to include things the person did not expect.

2.3.3 Classifiers and Ad hoc Concepts

Using Lexical Pragmatics, we can explain how classifier constructions in ASL are used to give an instruction to the addressee to construct ad hoc concepts or manipulate general concepts. The classifier (handshape) provides the instruction to pick out a referent through inferential referent assignment. Then through the use of movement and orientation an instruction is given to the addressee to manipulate the referent concept.

Classifiers and classifier constructions also instruct the addressee to create new concepts from the encoded concepts in discourse through a process of broadening or narrowing. This is one of the ways these constructions can add to the propositional content of the message through the use of inference. This is done with classifier constructions instead of lexical signs because it reduces processing effort by conveying complex propositions in less time by forcing the addressee to infer and fill in the gaps of the fully propositional form, also called the explicature, than using lexical signs to do the same thing.

We need to discuss the three generally recognized classifier types separately to understand how they indicate that the addressee should create ad hoc concepts or manipulate concepts. I present detailed examples of how these constructions do this in section 3.4, so for now I will give a brief explanation of how each type functions.

2.3.3.1 Entity Classifiers

Entity classifiers represent the whole of a concept. When used in classifier constructions they can either create ad hoc concepts or manipulate ad hoc or general concepts. For example in Figure 10, the right hand moves toward the left hand.

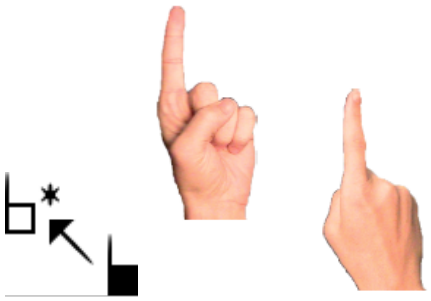


Figure 10. Entity Classifier Construction (Sutton et al. 2011)

If this was signed after two people were introduced as the referents, the context of people would be highly accessible. The right hand moving towards the left hand would be inferentially interpreted as the person represented by the right hand walking up to the person represented by the left, as this is the most accessible interpretation. Using the classifier construction provides an instruction to manipulate the referents to mean one person walking up to the other.

2.3.3.2 Size and Shape Specifiers

Size and shape specifiers narrow the general concept they are representing by providing an instruction to create an ad hoc concept. This type of classifier typically shows the size and shape of the object it is representing by using handshapes to represent the outer surface of the object with either one or two hands. When two hands are used, one hand is typically the base and is stationary while the other hand moves to show extent.

Figure 11 (ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007) is an example of a size and shape specifier. The two hands working together indicate the size of the referent, while the tense movement represented by the '〜' symbol emphasises the spatial relationship, which provides information to the inferential interpretation of this construction.

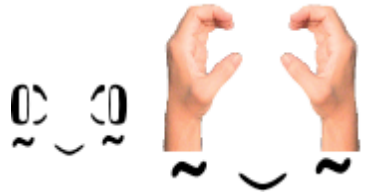


Figure 11. SaSS Classifier Construction

In the context in which this construction was used, the two hands were referring to the bristles of a broom. The tense movement informed the hearer to place importance on the size of bristles and their strength. This took encyclopedic entries from the encoded concept broom and narrowed them to a specific subset of really thick bristled brooms. The handshapes encode the instruction to 'pick out an object that is gripped with the full hand or of the same round shape.'

SaSS handshapes work to redefine a general concept into a narrower ad hoc concept. This is done to help inferentially pick out a specific object or bring attention to specific details that are important to the discourse. They can also be used to pick out a highly accessible referent by putting constraints on the possible set of referents in context through procedural instructions.

2.3.3.3 Handling Classifiers

Handling classifiers manipulate ad hoc or general concepts by showing how objects are handled by a person or other referent in the discourse. They can also provide an

instruction to create ad hoc concepts through broadening when applied to abstract referents. The handshape helps the addressee to pick out referents in discourse by using encoded procedural instructions to indicate how an object is handled.

In Figure 12 the handshapes are the same and move apart as if they were opening a book (Padden 1988). This is a stylistic imitation of real world movement, which I explain in detail in section 3.6.2.

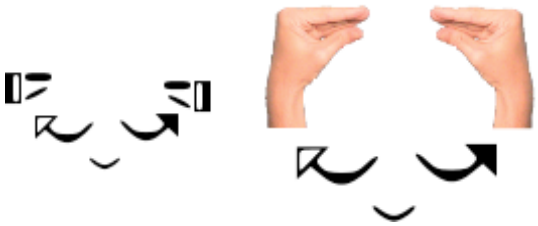


Figure 12. Handling Classifier Construction

In the context of this example the signer was talking about culture as the referent for this construction. This construction was used to broaden the abstract concept of culture to that of something that could be handled like a book and read. This took encyclopedic entries from book-like objects and applied them to culture creating an ad hoc concept.

2.3.4 Referent Assignment in Discourse

Scott (2011:188) states that referring expressions use the relevance-guided comprehension heuristic to find the most accessible referent that satisfies their expectation of relevance. Classifier constructions, by encoding procedural instructions to pick out specific referents, are chosen by a speaker in a way that aids the addressee in narrowing the set of potential referents and satisfying their expectations of relevance.

It has been difficult to assign any specific meaning to classifier constructions due to their procedural nature. As Sperber and Wilson (1993:104) state, “Conceptual

representations can be brought to consciousness: procedures can not." Classifier constructions work on a gradient of meaning as they only provide instructions to pick out the intended referent and manipulate or change it. This may be one of the reasons they have historically been analyzed in so many different ways.

Given that there are multiple classifiers available for the speaker to use for any specific referent, I will argue that a specific classifier is chosen over others because of the second half of the comprehension heuristic, of not forcing the addressee to put in too much processing effort. The use of classifier constructions to pick out referents and fill out the propositional form of an utterance can be explained fully within the Relevance Theoretic framework. I will discuss this in more detail in section 3.3 and section 3.5.

2.4 Referring Expressions

I propose that classifier constructions are a type of referring expression. Classifiers encode a procedural instruction based on their handshape to help pick out their intended referent, then use inference to construct full propositions from the classifier construction to fill out the basic explicature. Once the referent is known, the handshape represents the conceptual meaning of the referent and must be interpreted in classifier constructions as if it was the referent concept itself. This allows the classifier to be used in constructions without needing the referent to be restated once the referent has been assigned, unless it would cause confusion for the addressee. Once the classifier is understood through referent assignment it is then possible to instruct the addressee to manipulate concepts or create ad hoc concepts through adding movement, orientation, and location to the classifier in a classifier construction. By referring to previously established concepts, the classifier construction must be understood within the schema of the activated concept.

This reduces the processing effort because the addressee can quickly infer the information rather than having to process individual lexical items to fill out the propositional form.

So classifier constructions, as a type of referring expression, can only be understood once the referent assignment has been made. This makes the contextual assumptions available to the addressee. The addressee then has the appropriate context available from which to make an interpretation of the full construction through inference.

CHAPTER 3

TEXT ANALYSIS

To test the hypothesis that classifiers and classifier constructions are indeed procedural referring expressions and function to emphasis and provide detail, I analyzed several texts from native signers in the deaf community. In this chapter I first explain how reference assignment is made in section 3.2 and section 3.3. Second, I explain how classifier constructions change and manipulate concepts in section 3.4. Third, I explain how classifiers function to add to the base proposition of an utterance in section 3.5. Fourth, I explain how movement adds to the interpretation of classifier constructions in more depth in section 3.6 and how this effects the base proposition in section 3.7.

3.1 Methodology

I analyzed several different texts from native signers. I focused on six core texts for my analysis. The following table gives information about the texts. I also used several other publicly available texts to cross check my analysis.

Table 1. Analyzed Texts

Type	Length	Source
Curriculum	2 minutes 21 Seconds	(DawnSignPress 1992)
Narrative	5 minutes 15 seconds	(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)
Interview/narrative	26 minutes 31 seconds	(Christie & Durr 2009)
Performance	1 minute 17 seconds	(Bruce 2003)
Lecture	39 minutes 47 seconds	(Bienvenu, Sign Enhancers & American Sign Language Productions 2006)
Lecture	49 minutes 28 seconds	(Padden 1988)

I watched each of these videos and analyzed how and when classifier constructions were used. I focused especially on what the referents for the classifiers were, how far back in the discourse they occurred and whether they were stated explicitly or pulled from context. I worked through what specifically these constructions added to the story and how they modified concepts. In Appendix A I give full transcriptions of two narratives, one of which is from a curriculum that is used nationally in the USA and the other is from a performance at the ASLTA conference in 2007.

3.2 Classifiers

Classifiers are the specific handshapes used in classifier constructions. The handshape encodes a procedural instruction to help the addressee pick out the referent through inference. Once the referent noun is understood the handshape can be broken down further to represent different parts of the same object by applying that concept to the handshape. For example, Figure 13 is an example of a handshape that provides the

instruction of ‘Pick out an object that has the characteristic of vehicle’ while in this orientation.

Figure 13.Vehicle Entity Classifier (Sutton et al. 2011)

If the handshape is associated with the general concept of car on the basis of the discourse context, the tip of the fingers is interpreted as the front of the car, the thumb-side of the hand as the top of the car, the opposite (ulnar) side of the hand as the bottom of the car, and the wrist as the back of the car. Suppose the signer bends the index and middle finger; this would indicate the front of the car has been wrecked. If, on the other hand, the referent had been a bike, the same bent fingers would indicate a damaged front wheel. Thus the understood meaning of the handshape is fundamentally changed depending on the referent in context. Once the referent is determined on the basis of context, it changes how the classifier handshape is understood and how the movement and orientation in the classifier construction is understood.

This is evidence for the argument I made in section 2.4 that classifier constructions are a type of referring expression. It also explains why it is difficult to say what any single classifier means outside of the context in which it is used. Instead, through convention and symbolic representation the handshape encodes a procedural instruction that helps to identify the intended referent. It is also important to realize that a classifier handshape in one orientation helps pick out one referent, but if the orientation is changed

it might pick out another. If the orientation is changed to  as seen in Table 2, it encodes the procedural instruction of ‘Find a referent that is three in number and long, thin, and vertical,’ which can represent three people. The following chart includes some of the basic classifiers and their possible procedural instructions.

Table 2. Handshapes and Instructions

SignWriting	Handshapes (Sutton et al. 2011)	Instruction
		'Pick out a referent with the characteristics of wide and flat.'
		'Pick out a referent with the characteristic of long, thin, vertical and multiple.'
		'Pick out a referent with the characteristic of long, thin, and vertical.'
		'Pick out a referent with the characteristic of being animate or perceived animacy.'
		'Pick out a referent that is vertical long thin and two in number.'
		'Pick out a referent that is gripped in this way, or of the same round shape.'
		'Pick out a referent that can be gripped in this way.'
		'Pick out a referent that is long, thin, vertical and three in number.'

The encoded procedural instruction varies by orientation but I only show one orientation since a complete list has not been made and is not part of this study. Classifiers cannot be

used without a referent of some kind whether overt or highly accessible to the addressee. The encoded procedural instruction is not enough to allow them to be used without an overt or highly accessible antecedent.

Once the classifier has been assigned a referent through reference assignment, movement, orientation, and location are used to provide instructions to the addressee in manipulating concepts or creating ad hoc concepts that add to the fully propositional form of an utterance. Once the classifier has combined with movement, orientation, and location it creates a full sign.

For example, the context of Figure 14 is that the signer is asking if it is alright to move an overhead projector onto a table.

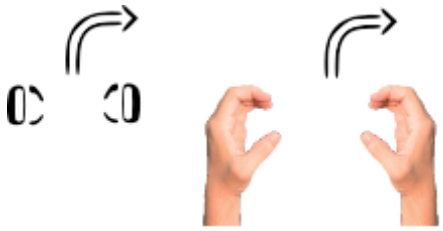


Figure 14. Handling Classifier Construction

The handshapes in this case encode the instruction to 'Find a referent that is gripped with the full hand or has this same round shape.' Given the two handshapes in space together and the context, the only acceptable reference is the overhead projector. The concept "overhead projector" is then manipulated by the movement to indicate to the addressee to move the referent in their mental representation from point A, which is low, to a point B which is higher and to the right. In context of the text, point A is the current location of the projector and point B is a location on a table to the speaker's right. So in the context in which it was uttered, this classifier construction added the meaning "move the overhead projector from the floor onto the table to my right" to the propositional form of

the utterance. This is an example of the manipulation of concepts through the use of classifier constructions. I discuss this more in sections 3.4 and 3.6.

I will be glossing classifier constructions in my examples with the abbreviation ‘CC’ and a number in the rest of this thesis. So, if there is more than one construction in an example they will be labeled ‘CC1’ and ‘CC2’. If it is just a handshape in space without movement I will label it as ‘CL’ and a number. Then I will describe them in prose making reference to those labels. In my transcriptions, the symbol ~ under a handshape indicates that the signer held the handshape during the articulation of one or more signs following its first introduction. For example, if the signer signs  with a forward movement and uses it as a list for several other signs following, I will gloss the initial articulation with the meaning, ‘three’, and show its continuation with  and then gloss the meanings of the following signs.

3.3 Referents

3.3.1 Classifiers Referring to Overt Nominal Referent

Classifiers can refer to a previously established noun phrase in the discourse through referent assignment.

In example (7) the referent ‘bed’ comes before the classifier construction ‘CC1’, which indicates the location of the beds in relation to each other. In ‘CC1’ the palm is facing down and moves away from the body with three distinct downward movements. The referent ‘table’ comes before ‘CC2’ as well. The left hand of ‘CC2’  refers back to ‘CC1’ which has picked out the noun phrase ‘bed’, while the right hand refers to

'table'; 'CC2' then shows the location of the tables at the end of the beds. The tilde under the left hand of 'CC2' represents it being a reestablishment of the left hand from 'CC1' to mean the beds.

(7)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)

"My dorm room had three beds with a table at the end of each."

Explaining the interpretation of (7) in more detail, 'CC1' only has one potential referent, that of the bed. This referent assignment is made by using the encoded procedural instruction of the left hand ■◗ to 'find a referent that is wide and flat'. The only thing that fits that instruction in this context is the 'bed'. Following the RT comprehension heuristic, the use of 'CC1' is motivated by being optimally relevant to the hearer and bringing about more cognitive effects than the sentence would without it. The movement of the left hand in 'CC1' indicates the spatial relationship of the three beds and thus manipulates the concept of 'bed' to show where the beds were placed in the room, as well as repeating the sense of multiplicity previously expressed by the numeral 'three'. This adds the implicated assumption that "the beds were in a row," which would be new information to the addressee. This could strengthen or weaken other possible assumptions the addressee may have had about the setup of the room.

The use of 'CC2' is more complicated as there are two potential referents for the right hand ▲■. Like the left hand of 'CC1' it encodes the instruction to 'find a referent that is wide and flat'. To resolve this referent assignment conflict, the signer re-establishes the left hand ■◗ in the signing space in the same position as it appeared as the active

articulator in ‘CC1’. The left hand then remains stationary as the right hand moves. Through relevance the left hand is understood to be the ‘bed’, as it is stationary (hence a reference to old information) in the same position as it had in ‘CC1’. Then ‘table’ is the only referent left for the right hand. Another factor is that since ‘table’ is the most recent possible referent it requires less effort to establish the right hand as referring to the table instead of the bed. Taking ‘bed’ as the referent would require understanding the bed to have changed orientation from what was described in ‘CC1’ and would therefore not be optimally relevant. By using ‘CC2’ the addressee is able to gain cognitive effects through the implicated assumption that “the tables were at the end of the three beds” by the addition of the one construction. Through the use of the two constructions ‘CC1’ (“The beds were in a row horizontal to each other”) and ‘CC2’ (“There was a table perpendicular to the end of the three beds”) the signer was able to convey two entire propositions in two constructions. This would have taken several lexical items to explain. Using classifier constructions thus reduces the processing effort required for the addressee than producing the same utterance with only lexical signs.

As I mentioned in section 2.4, once the referent is established, the classifier construction then indicates how to enrich and fully develop the explicature, allowing the classifier construction to be used without the referent being restated later in the discourse as show in the next example which come from an academic lecture where the referent ‘questionnaire’ is indicated in the beginning and is then never mentioned again throughout the discourse. Instead it is only referred to with classifier constructions. The introduction of the referent is shown in example (8).

(8)
(Padden 1988)

IX ask IX please IX CC1 CL1 Q-U-E-S-T-I-O-N-N-A-I-R-E

"He asked him, please fill out this questionnaire."

In example (8), 'CC1' represents the action filling something out, which is then specified to be a questionnaire by leaving the left hand from 'CC1' in the signing space (as 'CL1') while the right hand simultaneously fingerspells 'questionnaire'. This establishes the referent to the classifier 'CL1' at the same time the noun phrase is articulated. The questionnaire is the only possible referent for 'CL1'. 'CL1' encodes the instruction to 'find a referent that is wide and flat', and in context of the questionnaire, is something that can be filled out. In (8) 'CC1' is an example of a lexical sign ("fill.out") becoming a classifier construction because the left hand continues into the next sign. I will explain this more in section 4.2 as a type of back-formation.

In example (9), which comes later in the same lecture as (8), the questionnaire is continually referred to with  'CL2' which has an orientation change from 'CL1' in (8) above.

(9)
(Padden 1988)

CC1 CL2 your CL2 parents CL2 deaf

"Your parents are deaf."

CL2 IX have deaf friend IX CL2 pick CL2 IX

"You also have deaf friends. Pick those on the questionnaire."

In 'CC1' the left hand represents the referent "questionnaire", which was set up at the beginning of the discourse, while the right hand makes a sweeping motion across the left palm pointing to the questionaire as the source of the question represented in the next three signs. 'CL2' is then held throughout the first part of (9), continuing to represent the full nominal referent "questionnaire". The next three lexical signs are produced as the left hand representing the questionnaire is held. This indicates the connection of the signs to the questionnaire, and the lexical signs are understood to be a question related to deaf parents.

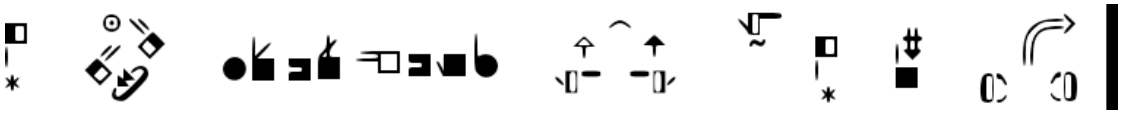
In the second half of (9) 'CL2' is produced with the left hand while the right hand simultaneously signs the lexical sign 'pick'. This is also a case of inferentially associating 'CL2' to the questionnaire established at the beginning of the discourse through reference assignment. The questionaire is the only referent that satisfies the handshape procedural instruction to 'find a referent that is wide and flat.'

The significance of this section is made clearer when looking at the possible cognitive effects of the use of the left hand to represent the questionnaire. In the first part of (9) we see that the signer uses the left hand as a type of anchor in the discourse. The addressees assume that whatever is active in the signing space is relevant according to the presumption of optimal relevance and thus that the questionnaire continues to be relevant. This allows a link to be established between what is said and the questionnaire without there being an overt statement that it is a question on the questionnaire. The signing of

the word ‘pick’ at the end while pointing to the questionnaire leads the addressees to the implicated conclusion that they should fill out the questionnaire and indicate that they have deaf friends. This also leads the addressees to the cognitive effect of strengthening the assumption that what the speaker is saying is related to the questionnaire; even though at the beginning that would not be clear without the left hand remaining active in the signing space.

Example (10) is from the same text. In this example, the signer fingerspells ‘overhead’ and then points to it in front of her, which indicates the use of real space instead of abstract space for ‘CC1’ (Supalla 1982; Schick 1987). This allows the addressee to include the real environment in the signer’s use of ‘CC1’ as a handling classifier, which indicates handling the overhead and moving it up and to the right. The table in real space is to her right and contains the surface on which she is planning to put the overhead. Thus, even though the table is not overtly mentioned, it is inferred as the surface on which she plans to place the overhead.

(10)
(Padden 1988)



1sg use O-V-E-R-H-E-A-D go.ahead 1sg IX CC1

“I need to use the overhead. Is it alright if I lift it onto the table?”

Taking a closer look at ‘CC1’ we understand it to be an object of some girth since the handshapes of both the left and right hand  are being used together as a handling classifier that also specifies the girth of the intended object. The procedural instruction of these two hands working together would be ‘find a referent with the indicated girth, as

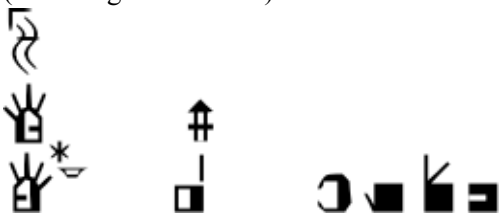
specified by the distance between both hands that can be gripped'. We are then able to narrow the possible referents in the environment. This is made even more explicit by the use of an indexical point at an overhead nearby. Thus, the overhead is the only clear referent that 'CC1' can refer to. Looking at the possible gain by using 'CC1', the addressees can fill out the full explicature of 'CC1' as the proposition "Lift the overhead onto the table to my right." The benefit of using 'CC1' as opposed to lexical signs to express the full proposition, is once again to reduce the processing effort by using one sign to convey a full proposition instead of numerous lexical signs for the same cognitive effects.

3.3.2 Classifiers Referring to Highly Accessible Nominal Referent

Classifiers can also pick out referents that are highly accessible in the cognitive environment if the context is activated in the addressee's mind.

In example (11) we see that there is no overt referent for 'CC1' in this sentence.

(11)
(DawnSignPress 1992)



CC1 IX C-A-V-E

"The eight of us wound our way up the hill in single file up to the cave."

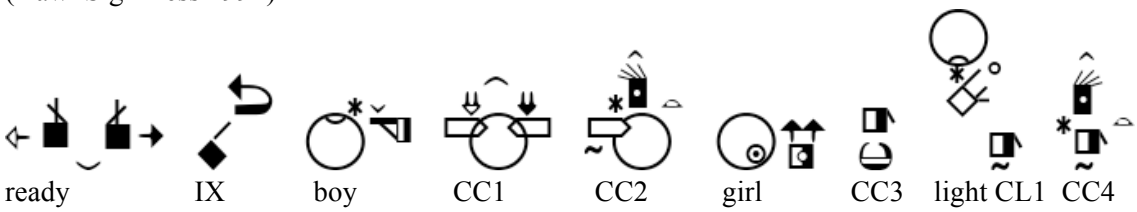
The referent for this classifier construction comes from a previous part of the text when the speaker mentioned going on a trip with seven of her friends. It is only through a search for relevance that 'CC1' is understood to be the seven friends and the signer, making eight total. This is done by first assuming that the speaker is trying to be

optimally relevant, so the addressees will try to connect ‘CC1’ to something in the discourse that satisfies their expectation of the message being relevant. ‘CC1’ encodes several instructions. First, the handshapes encode the instruction to ‘Pick out a referent with the characteristic of long, thin, vertical and multiple.’ In this case, the number of both hands together actually matches that of eight people, but the four or five fingers typically indicates a more general instruction to pick out multiple objects. In the context the only highly accessible referent would be the eight people and so this would be the easiest interpretation that satisfies the hearer’s expectation of relevance. Second, the movement roots show a winding motion. (I will explain movement roots and this particular example in section 3.6.) The movement in this construction includes two different movements. The first is an instruction to manipulate the referent from point A to point B. The second is a winding motion upward that indicates to the addressee to search for more meaning in the utterance than a simple movement of the referent from point A to point B. This implicates the proposition, “We had to walk single file and wind our way up the hill.” The use of ‘CC1’ reduces the processing effort in conveying that proposition which can only be filled out through reference assignment and an expectation of relevance to the story of going up to a cave.

Another example of the referent being picked out from a highly accessible context can be seen in (12) from the same story. The context for this sentence is the same: four boys and four girls going up to explore a cave. In this example the first two classifier constructions work together to form the ad hoc concept headlamp, pulling the referent “headlamp” from the highly accessible context of eight people entering a cave. The third and fourth classifier constructions establish the ad hoc concept of a flashlight with a large

lower hanging battery. There is no overt referent anywhere, unlike the previous example, in the discourse for the first two classifier constructions, and ‘light’ is only an approximate overt referent for the third and fourth classifier constructions.

(12)
(DawnSignPress 1992)



“We were ready to go. The boys had headlamps and the girls had large flashlights.” The speaker introduced the context of the story as eight friends going to explore a cave. She then signs, “We were ready to go.” followed by ‘boy’, ‘CC1’ and ‘CC2’. The construction ‘CC1’ encodes an instruction to ‘Pick out an object that is wide and flat on the head,’ a search for relevance could probably result in any type of hat. But the speaker narrows the possible referents by leaving the left hand as an anchor and adding the right hand which encodes something close to ‘Pick out an object that is emitting.’ The context of being ready to go to a cave leads the addressee to the implicated premise that the boys were wearing headlamps as one item that would be helpful in a cave, whereas other types of headgear would not be. In addition, by signing ‘boy’ before these constructions it is possible for the addressees to assign the classifier constructions to the noun ‘boy’, leading the hearer to connect ‘boy’ with the headlamp construction.

The signer goes on to sign ‘girl’ then proceeds with another construction ‘CC3’ which encodes ‘Pick out an object that can be gripped’ with the right hand and ‘pick out an object with this specific girth’ with the left hand. She then maintains the right hand as an anchor while articulating the lexical sign for ‘light’ with the left hand. The right

hand continues as the anchor while the left hand signs the classifier  , which encodes ‘Pick out an object that emits.’ The classifier, takes on the only possible referent in the sentence, ‘light’, and connects it to the right hand anchor , which is gripping the handled object from ‘CC3’. Looking at the context, it is possible for the addressees, expecting optimal relevance from the speaker, to narrow their search of a referent from the constraints of the encoded instructions in the handshapes. The addressee will find that the only possible referent in context would be a “flashlight with a handle and a large lower hanging battery with the light bulb near the top at the handle.”

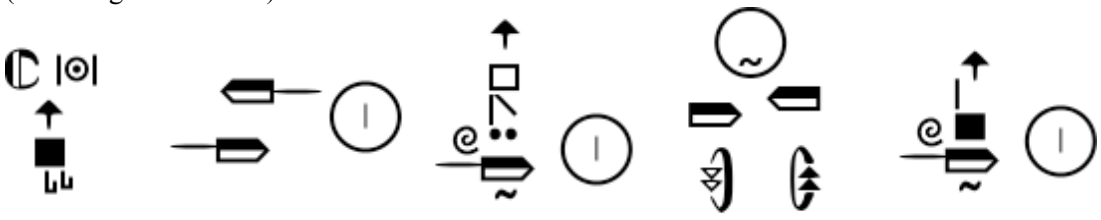
In the case of ‘CC3’ and ‘CC4’, it would take more processing effort to assign referents to the classifier constructions than to use the lexical sign ‘flashlight’. Following the comprehension heuristic, the speaker should not make an utterance that is overly taxing when it comes to processing effort. To explain this seemingly contradiction we need to look at cognitive effects.

The cognitive effects gained by ‘CC1’, ’CC2’ and ‘CC3’, ‘CC4’ justifies the increased processing effort by the implicated premises they introduce. With ‘CC1’ and ‘CC2’ the implicated premise is that “the boys were wearing a headlamp” and with ‘CC3’ and ‘CC4’ that “the girls had large flashlights with a lower hanging battery.” This is acceptable from a processing effort standpoint because of the specificity given by the two ad hoc concepts that were narrowed from the general concept of light. The justification of the processing effort is the more detailed information conveyed with the classifier constructions compared to what would be conveyed by the lexical sign ‘flashlight’.

3.4 Ad hoc Concepts

Classifier constructions can also work together to create ad hoc concepts involving the relative size of two classifiers and their referents, such as in 'CC1' in (13) below.

(13)
(DawnSignPress 1992)



CC1 CC2 CC3 CC4 CC5

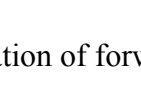
"We crawled into the small cave and continued forward on our stomachs."

'CC1' consist of an entity/SASS classifier and an entity classifier. The right hand is assigned the referent of the eight friends as they are the only possible referent of the encoded instruction to 'pick out a referent that is animate and crawling'. The right hand shows how they entered the cave, which was on their stomachs as represented in the orientation of the right hand. The classifier constructions also give the addressee the implicated assumption that if people had to crawl on their stomach, then the cave was too small to walk through. Using these constructions provides positive cognitive effects while increasing the relevance to the addressee. The left hand could be considered a SASS or an entity in this particular case because it represents both the size and shape of the cave, and the mouth of the cave. So the left hand provides an instruction to 'pick out a referent that can be gripped with the whole hand or of the same round shape'. The concept cave is the only referent available from context, and thus represents the entity as a whole, while also representing its size relative to the size of the right hand's

referent. Through involvement of both hands, it allows for a comparison of size between the cave mouth and the people entering it. This narrows the general concept of cave to become the ad hoc concept CAVE*, that is, a small cave that people have to crawl through to enter. Also, since the left and right hand are produced simultaneously in the signing space and the referent picked out by the addressee is the cave, the left and right hand's instruction is to 'pick out a referent that is of the same round shape' instead of, 'pick out an object that can be gripped with the full hand'.

Since the right hand  in 'CC1' is understood as a person moving into the mouth of the cave as represented by the left hand, 'CC2' is understood from the person's point of view indicating how narrow the cave tunnel was as they moved along. The two hands in 'CC2' represent the cave floor and ceiling, since they are the most highly accessible referents after understanding 'CC1' to mean "crawling into a cave." The left hand of 'CC2'  , which represents the floor, is held as an anchor and continues into 'CC3' which represents the group of people continuing forward on their stomachs down the tunnel. The continuation of  as an anchor in 'CC3' connects the addressee to the small space of 'CC2' as the concept of people is manipulated with the right hand  to show them moving further into the cave. By encoding the instruction to 'pick out an animate biped' the handshape  limits the possible referents to the people in the cave and thus represents their motion forward.

Throughout (13) all of the movement relates to the people and how they interacted with the cave. When one of the two hands is held in position it represents the cave itself, creating a salient concept that is accessible. When 'CC4' is signed. it is understood to

indicate how the people were able to move along the floor of the cave by almost crawling, propelling themselves with their hands. Finally, 'CC5' gives a general representation of forward movement, with the general motion classifier  moving forward. All of this continues to narrow the concept of cave into a more and more specific concept of CAVE* while also manipulating the referent 'eight friends' by showing how they interacted with the cave.

It is possible to understand the referents in (13) because of the fingerspelling of 'cave' before this utterance which activated the concept cave, and because of the schema of people going into something. In context, the 8 friends were the only people involved and the cave is the only thing they could be crawling through. Thus, through a search for relevance we choose the context that gives the most positive cognitive effects with the least amount of processing effort. If these concepts were produced with lexical signs alone it would take more processing effort and would still not represent the information as clearly and accurately as do the underdetermined classifier constructions that limit the possible referents and then add detailed meaning by providing instructions to form ad hoc concepts or manipulate general concepts.

Since the whole clause in (13) is produced with underdetermined classifier constructions, it leads the hearer to multiple weak explicatures[5] that could apply to each classifier construction. The current free translation is just a small summary of the possible

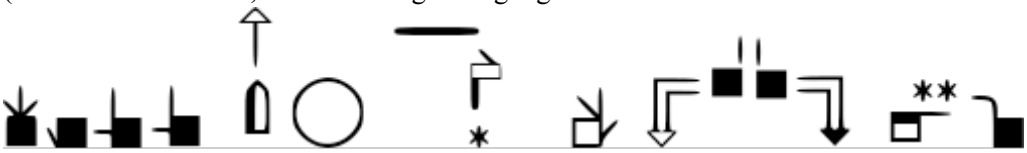
[5] "Explicature may be weaker or stronger, depending on the degree of indeterminacy introduced by the inferential aspect of comprehension." (Wilson & Sperber 2012) Since classifier constructions have a high degree of indeterminacy the possible expicatures range from stronger to weaker. The stronger is the more obvious, while the weaker is father from the central meaning conveyed.

propositions this set of classifier constructions could convey. Another perfectly acceptable free translation would be, “We crawled in to the small opening of the cave on our stomachs with barely enough room to squeeze in. The walls and ceiling left little room to move as we struggled forward deeper into the cave. We had to use our hands to propel ourselves forward with great difficulty and we slowly made forward progress deeper into the cave.” The only translations that would be ruled out would be those that do not satisfy the instructions of all the classifier constructions. For example it would rule out the translation that it was a large cave because it conflicts with ‘CC1’ that indicated a small opening to the cave, even though neither the lexical sign large or small were used.

This second free translation shows that there was significant processing effort in assigning referents to these classifier constructions, but the number of weak explicatures possible provided many positive cognitive effects, making the effort to fill out the propositional form from the activated context for this utterance worth it. Communicating the above propositions with only lexical signs would require even more processing effort because of the large number of lexical signs required. The addressee accessing the immediate contextual assumptions and assigning the referents to the constructions took less processing effort because the classifier constructions pulled from previously activated concepts and assumptions. The lexical signs would be activating new concepts with every sign and thus would require more processing effort for less gain and would not be optimally relevant. As a result, the addressees would likely experience it as boring. Also, use of classifier constructions allows for several weak explicatures to be communicated simultaneously that would have to be fully fleshed out if the speaker were to use lexical signs to convey the same meaning.

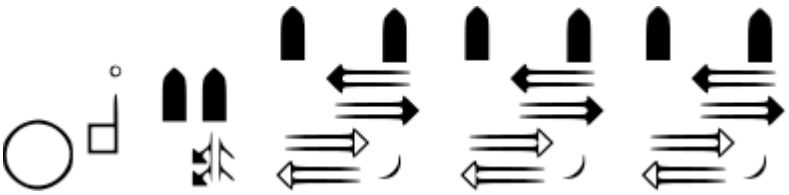
Another example of the creation of ad hoc concepts can be seen in the use of classifier constructions in (14).

(14)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)



W-A-L-L CC1 have three CC2 closet

"On the left there was a wall with three closets - "



understand door CC3 CC3 CC3

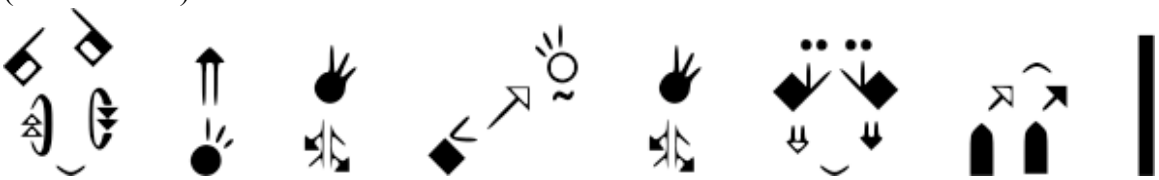
"that had sliding doors."

With 'CC1' the signer indicates a large, flat, vertical object to the left. The only available referent is the immediately preceding fingerspelling of 'wall'. This is the base concept that is modified by 'CC2'. In 'CC2' a SaSS is used to outline the door frames of the closets. It is understood that 'CC2' is modifying the concept 'wall' to WALL*, which includes three closets in it. This is done through reference assignment since 'wall' is the only referent that 'CC2' could be describing as having a large square on it. Then, the lexical sign 'closet' clarifies that 'CC2' is not just a large square on the wall, but the door frame of three closets. The second classifier construction 'CC3' modifies the concept of door that comes right before it. This is a case of an entity classifier construction providing an instruction to create an ad hoc concept DOOR* through narrowing, so that DOOR* represents sliding closet doors only. By using these two classifier constructions the signer is able to reduce processing effort for the addressee by allowing the addressee to pick out

the referent and then modify it using underdetermined handshapes that are assigned to the referent. The handshapes are clearly understood through the addressee's search for relevance which involves looking at the procedural instruction of the handshape and finding the limited set of possible referents that fit the instruction and assigning the full referent.

The next example, (15), is an example of broadening using a handling classifier construction as 'CC1'.

(15)
(Padden 1988)



"They picked out signs individually to be looked at and analyzed."

In 'CC1' we see the right hand encoding an instruction to 'pick out a referent that can be picked up with two fingers.' The only possible referent in this sentence and context is the abstract concept of a sign (an ASL sign). In this context, the speaker was talking about two different approaches to analyzing signs, this one being a more analytical, vocabulary method, in contrast to the other teaching ASL as a full language. The concept 'sign' becomes broadened to SIGN* by taking encyclopedic entries of 'things that can be picked up' and applying them to the abstract concept. Thus the concept 'sign' gains the property of being able to be picked up as if it were a physical object. This act of broadening seems to happen by applying physical attributes to abstract concepts that typically have no shape.

3.5 Explicature Enrichment

As noted in section 2.1, sccording to Sperber and Wilson (Wilson & Sperber 2012), an explicature is:

> "Explicature:
> A proposition communicated by an utterance is an explicature if and only if it is a development of a logical form encoded by the utterance."

In this section I examine how the logical form[6] of an utterance with classifier constructions is enriched or developed into a fully propositional form through reference assignment, disambiguation, and inference.

Using (16) as an example, I first work out the reference assignment for the classifier constructions and then fill out the fully propositional form through inferential understanding to show the explicature.

(16)
(Christie & Durr 2009)

"I went in and there were cobwebs hanging from the ceiling

[6] The logical form is the semantic representation of an underdetermined sentence (Carston 2002).

"There were pictures on the wall, but they were all turned inward."

In (16) the first construction, 'CC1', encodes the instruction to 'pick out an object that is long, thin, and upright'. The only referent for this particular construction is the person in the story, so by following the comprehension heuristic of least effort and satisfying the addressee's expectation of relevance, interpreting 'CC1' as the person in the story works. The interpretation gets interesting when we arrive at 'CC2' followed by the fingerspelled word 'cobwebs' followed by 'CC2' again. The context of this story is of a person going into a dark, unused back room of a museum. The construction 'CC2' is produced higher in the signing space to indicate location. Given the location and the activated concept of "dark, unused places" an addressee has the context to perhaps determine that the referent of 'CC2' is spider webs. However, right after the first signing of 'CC2' the speaker fingerspells the noun 'cobwebs' and signs 'CC2' again giving the addressee the full referent to disambiguate possible long and thin things that are hanging from the ceiling. This also shows that the processing of referent assignment happens as the classifier construction is being expressed by the signer. The addressee is continually seeking out how the utterance is relevant and tries to find an interpretation that satisfies that expectation at the moment it is signed.

The cognitive effects of the first part of (16) are either strengthened assumptions such as "dark unused places have cobwebs" or a new implicated assumption if the hearer did not know cobwebs can typically be found in such places. So the full explicature of the

first line of (16) would be, “The custodial worker went into the dark room and cobwebs were hanging from the ceiling.”

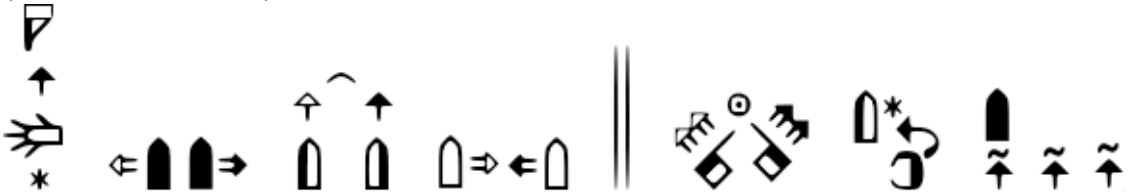
The second line of (16) starts out with the sign ‘picture’ being articulated twice to indicate plurality. The construction ‘CC3’ encodes the instruction to ‘pick out an object that is wide, tall, flat, and vertical’ and then turns the palm from inward to outwards. The encoded instruction constrains the set of referents and the only possible referent that fits that constraint is the pictures at the beginning of the phrase. Thus, the movement change in ‘CC3’, ‘CC4’ and ‘CC5’ becomes significant in its representation of the picture. The sign ‘but’[7] establishes the denial of expectation in comparison to other pictures that were described previously in the narrative. It also provides cognitive effects by negating the assumption from encyclopedic entries in the addressee’s minds that pictures normally face outward when hung on a wall. So the twist of the wrist in ‘CC3’, ‘CC4’ and ‘CC5’ indicates that the painted sides of the pictures are facing the wall. The repetition of ‘CC3’ to ‘CC4’ and ‘CC5’ represents the fact that all of the pictures were facing the wall. The full explicature of the second part of (16) would be “There were pictures on the wall in this part of the museum, but the pictures were all facing the wall.” This twisting movement is significant in that it is drawing attention to the current state of the pictures, not to an act of actually turning them over. This shows that movement in classifier constructions do not necessarily reflect actual movement, but possible movements, or are used to draw attention to a specific aspect of a referent. In the case of the pictures above,

[7] The word ‘but’ is a procedural indicator that has the function of indicating that assumptions have to be eliminated (Blakemore 2002:100).

the twisting movement drew attention to the fact they were facing the wall, which is important in context of the story.

It is interesting to compare ‘CC5’ from (16) with ‘CC4’ in (17), from the same text.

(17)
(Christie & Durr 2009)



There is a white room with various pictures on the wall.”

In example (17) the speaker has just finished explaining that she works at a museum and what her job looks like. Keeping that context in mind, it is possible to understand what the explicature for (17) is. After the speaker signs ‘white’ she follows it with three classifier constructions. The handshape  is the same in all three constructions except for the parameter of orientation. This establishes a box like structure. The handshape encoding the procedural instruction of ‘pick out an object that is wide, tall, flat and vertical,’ limits the possible referents. From the context of the speaker talking about their job, a room in the museum is the most likely candidate to be described by these three constructions. This inferential assumption is then strengthened by the next clause indicating pictures on the wall. Thus, the full explicature would be, “A room in the museum had white walls with different pictures arrayed on the them.”

In ‘CC3’, ‘CC4’ and ‘CC5’ in (16) the back of the hand represents the back of the painting and the palm represents the painted portion. In ‘CC4’ in example (17) it is the opposite, that is, the back of the hand represents the painted portion and the front palm of

the hand is the back. This is due to the function of the word 'but' in (16) as an indication of unexpectedness, as well as the wrist twist in (16) with 'CC4' and 'CC5' indicating the reversal of the pictures.

Example (17) is interesting since all of the classifier constructions use the same handshape. The first three, 'CC1' 'CC2' 'CC3' function as SaSS classifiers. The clue to the meaning is the symmetrical movements of the hands indicates to the addressee that the extent of the room is being expressed. The second clue is the context of the speaker talking about a museum, which has no accessible referent for an entity classifier that would have two large, flat, thin and vertical things moving in a box like structure. The handshapes, however, still encode the instruction to 'pick out a referent with the characteristic of being flat, tall, thin, and vertical.' In this case it is the movement and context that distinguishes them from the entity classifier used for the pictures in 'CC4'. I will discuss movement more fully in section 3.6.

We see that through reference assignment, disambiguation and inference it is possible to arrive at the full explicature of a clause with classifier constructions. It is also important to note that classifier constructions add to the propositional form of an utterance by a process of inference that includes referent assignment. It is possible that a single classifier handshape can change meaning with the same referent depending on movement and other procedural markers like 'but', so that the picture is represented in (16) with the palm and in (17) representing it with the back of the hand.

3.6 Movement

At this point it is important to explain three types of movement in classifier constructions: "… movement through space (MOV), a stylized imitation of real-world

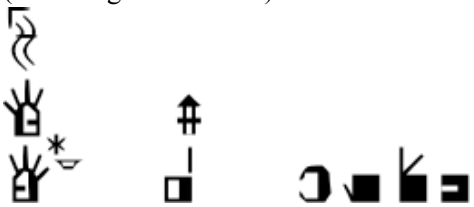
action (IMIT), and a single point in space (DOT)" (Schick 1987:9). This contrasts with Ted Supalla's (1982:12) analysis in that he breaks movement into more components. Supalla's analysis is helpful in understanding the varieties of movements possible and gives a corpus of all the different types of roots that can combine to create a full sign. Although Supalla's analysis is helpful for understanding the morphology used in creating classifier constructions, Schick's analysis organizes the roots as described by Supalla into three groups by function. Since the focus of this paper is on how classifier construction convey meaning and not morphology, I will be following Schick's approach to movement and outline how RT can add to the understanding of how movement conveys meaning in classifier constructions using the three groups.

It is important to note that, compared to lexical signs, classifiers are less constrained in their movements and in how the movements can be combined (Sandler & Lillo-Martin 2006:196). The particular movement roots discussed in this section can combine with smaller movements to convey more meaning without having to add another lexical sign, as is apparent in the more detailed descriptions below.

3.6.1 Movement Through Space

"The MOV root indicates simple movement of a hand through space and can indicate the path of the referent or the extent of the referent" (Schick 1987:9). Taking another look at example (11), reproduced below as (18), we see in 'CC1' a MOV root represented by an arrow. In this example we have the two hands moving together in a forward winding motion with a slight upward movement.

(18)
(DawnSignPress 1992)



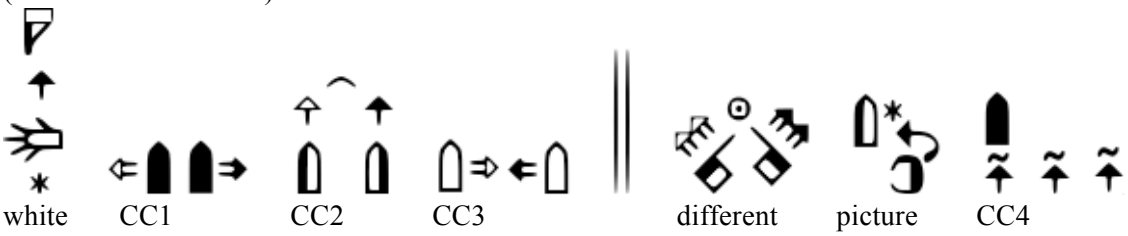
CC1 IX C-A-V-E

"The eight of us wound our way up the hill in single file up to the cave."

The MOV root in 'CC1' instructs the addressees to manipulate a concept in their mental representation. In the case of an entity classifier, like the classifier in 'CC1', it tells the addressees to move the concept associated with it in their mental representation from point A to point B. Given that the context is understood and referent assignment has already been made as the two hands together represent the eight friends, it is possible to infer the type of movement from point A to point B. This particular path movement has a winding motion that I will discuss in detail in 3.7 when I discuss weak explicatures in relation to movement.

Another type of information the MOV root can indicate is that of extent when paired with SaSSes. Let's take another look at example (17), reproduced below as (19), focusing on 'CC1', 'CC2' and 'CC3'. These three constructions work together to create an ad hoc concept of a specific white room.

(19)
(Christie & Durr 2009)



white CC1 CC2 CC3 different picture CC4

"There is a white room with various pictures on the wall."

The hands in ‘CC1’ move apart symmetrically and continue into ‘CC2’ followed by ‘CC3’, which shows the extent of the walls of this particular room in abstract space. The hands are moving with a MOV root and would be considered the extent of an object because the hands are moving symmetrically and the handshapes are being used as a SaSS to pick out the referent of walls from context.

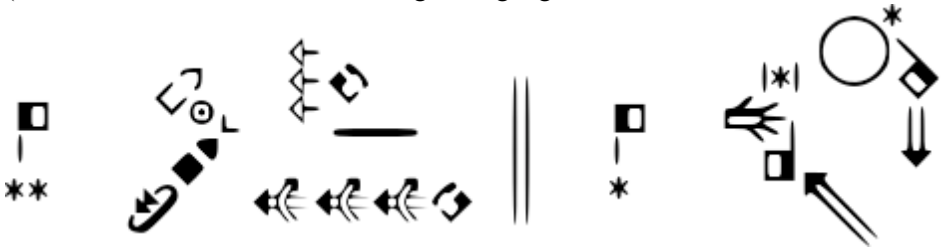
If the MOV root encodes the instruction to manipulate a concept from point A to point B in an addressee’s mental representation with that referent being a wall, it would be most reasonable to assume that the wall would be stationary. The movement from point A to point B would then show where the wall starts and stops. The walls do indeed go from where the hands are close together at point A in ‘CC1’ and move outward to the ending of the wall at point B. The symmetrical movement and the wall being the most accessible referent for the instruction from the handshape to ‘pick out a referent with the characteristics of being vertical, wide and flat’ bring to mind that walls do not move and indicate to the addressee that the movement is representing the points where the object starts and stops in space, not that the wall is moving.

3.6.2 Imitation of Real-world Action

“The IMIT root proposed here is a prototypical idealization or distillation of real-world activity rather than an imitation or complete analogue image of it” (Schick 1987:9). This means that IMIT roots are not gestural representations that are completely mimetic in nature, but conform to the rules of American Sign Language in their representations of real world movement while also depicting real world movement in an idealized way (Klima & Bellugi 1979:11).

An example of this type of IMIT root can be seen in (20). The movement in 'CC1' is a depiction of the action of sweeping a room, mimicking real world motion.

(20)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)



1sg broom CC1 1sg thought.appear

"As I was sweeping my room, I had a thought."

The handshape functions as a handling classifier, which becomes a full classifier construction with the IMIT root. This is not a full mimic of real world motion as the right hand is the only hand to change orientation. The left hand moves to the left, but keeps its' starting orientation and does not have the same wrist rotation as the right. This gives the addressee enough information to know what is said without having to completely copy real world movement precisely. The IMIT root category has some of the most complex movements in the classifier system as can be seen with the two types of movement in 'CC1' with the right hand undergoing a twisting movement while the left remains stable with a slight movement to the left. The emphasis for the IMIT root cateogry is typically on the motion itself and does not relate to two points in space as the MOV root does (Schick 1987:11).

As a depiction, the IMIT root is understood to be a representation of a real world action or calling attention to a specific part of the concept as important. In (20), once the referent 'broom' has been assigned to the classifier in 'CC1' the movement is easily understood to be a sweeping motion as it is the only interpretation that satisfies the

addressees' expectation of relevance. As a depiction of a real world action, the movement shows how a referent was manipulated by the signer, in this case the broom. The movement conveys a procedural indication to the addressee to manipulate a referent in their cognitive environment and puts emphasis on the depiction as important.

3.6.3 Single Point in Space

"The DOT root proposed here is a locative indicating the spatial position of a stationary element" (Schick 1987:12). This is characterized by a small downward movement in space or the existence of the hand stationary in the signing space (Schick 1987:12; Supalla 1982:14). This small downward movement represents a procedural instruction to activate a concept at a specific point in space. Looking at example (7), reproduced here as (22), we see this DOT root in both 'CC1' and 'CC2'.

(21)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)

"My dorm room had three beds with a table at the end of each."

Each time the movement comes down, it indicates a bed or table being located at that position. This has a discourse function of drawing attention to the specific location of the items being described, and instructs the addressee on how to setup their mental representation of the dorm room (Schick 1987:12).

In example (22), 'CC1' shows the left hand existing in space representing the location of the supervisor with the right hand approaching the left hand.

(22)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)

1sg CC1 supervisor 1sg write

"I approached my supervisor and began to write furiously."

The left hand is an instance of the DOT type root showing existence at a specific location which is then approached by the right hand. The left hand just exists in the signing space and the right hand does all of the movement. This existence in space provides the instruction to activate a concept in a specific location of the mental representation of the event.

3.7 Weak Explicature and Movement

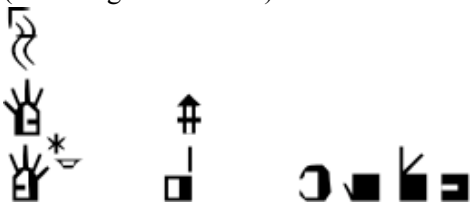
Since I have used the explicature as the base propositional form of an utterance, it is important to understand the range of how strong or weak these explicatures can be.

> "The less explicit the meaning, the more responsibility the hearer must take for the interpretation he constructs: in relevance-theoretic terms, explicatures may be stronger or weaker, depending on the degree of indeterminacy introduced by the inferential aspect of comprehension."
> (Wilson & Sperber 2012:13)

This states that indeterminacy in the original utterance creates the possibilities for weak explicatures, which are selected by the addressee through the relevance-theoretic comprehension heuristic.

Taking a look at example (11) again, reproduced here as (23), we will see how the classifier construction ‘CC1’ can convey several weak explicatures due to its indeterminancy.

(23)
(DawnSignPress 1992)



CC1 IX C-A-V-E

“The eight of us wound our way up the hill in single file up to the cave.”

The movement of ‘CC1’ gives an instruction to move a concept in the addressees’ mental representations from a point A to a point B which is higher than point A. This particular MOV root also incorporates a winding movement indicating to the addressees that more went on than simply going from a point A to a point B. The conceptual meaning in this utterance comes from the fingerspelling of the word “cave”. This utterance would then require online inferential processes to assign referents to the classifiers in ‘CC1’ as well as what the locations are at the beginning and end of the MOV root.

> “Sub-tasks in the overall comprehension process:
>
> (a) Constructing an appropriate hypothesis about explicatures by developing the linguistically encoded logical form.
>
> (b) Constructing an appropriate hypothesis about the intended contextual assumptions (implicated premises).
>
> (c) Constructing an appropriate hypothesis about the intended contextual implications (implicated conclusions).” (Wilson & Sperber 2012:13)

By online, I mean that these three parts of the comprehension process happen simultaneously and function even while an utterance is being expressed (Wilson & Sperber 2012:13). This comprehension process applies in relation to example (23) as

follows. Example (23) is a sentence signed with a logical form of "Multiple long thin vertical things going upward from point A to a higher point B and at point B is a cave." This would be the output of linguistic decoding and the instructions to build a mental representation. The addressees would assume this expression is optimally relevant to the story, and it has already been said that eight friends are planning on exploring a cave. Through referent assignment the addressees understand that the two handshapes help to pick out the referent of eight friends since they are the only possible referent in this case and so are the most accessible.

The movement of 'CC1' combines the MOV root of going from point A to point B with a winding motion that could be considered an IMIT root, an idealized version of real world movement. Previously, the signer mentioned the cave was located in the mountains. Thus the upward movement of the MOV root would be inferred to refer to the mountain. The addressees would apply (b) from the subtasks above and would probably have an assumption like: "Going up a mountain would be difficult," or "Going up a mountain would have trees and other obstacles," or "Mountains can have switch backs on trails." Assumptions like these would be accessible from context. The fact that the signer added the winding movement (IMIT root) to the MOV root would strengthen these assumptions because without the IMIT root it would be a straight movement and would not indicate to the addressees anything but moving from one place to another. When the addressees apply (c) they would come to the implicated conclusion that they probably had to walk through trees or rocks and up a trail to arrive at the cave, which was difficult.

Thus, the fact that the utterance is indeterminate at the encoded concept level requires more pragmatic inference on the part of the addressees as they assign meaning to

the utterance and specifically to ‘CC1’. In this case the added IMIT root in ‘CC1’ makes accessible several possible weak explicatures:

“We hiked through trees up to the cave.”

“We hiked through rocks up to the cave”

“We hiked on a trail up to the cave.”

“We hiked in single file up the trail.”

Based on these possible explicatures the meaning of ‘CC1’ is variable depending on the addressee. It is arguable that ‘CC1’ conveys several weak explicatures at the same time based on the implicated assumptions that are available to the addressees from context and their own background knowledge of mountains and caves. Once the addressees pick an interpretation that fits their expectation of relevance this will lead to the possible implicatures that, “We had difficulty in arriving at the cave,” or “We had to take breaks as we walked up to the cave.”

Overall, the amount of pragmatic inference needed on the part of the addressees depends on the type of roots used in an utterance and how the roots combine. The IMIT roots, being idealized movement of real world events, will require more inference on the part of the addressee than the more straightforward MOV and DOT roots.

CHAPTER 4

LEXICALIZATION OF CLASSIFIER CONSTRUCTIONS

In American Sign Language, classifier constructions are highly productive in modifying or manipulating concepts in the addressees' cognitive environment. Perhaps because they are so common, specific constructions become conventionalized into lexical items by gaining their own encyclopedic entries that relate to a concept. There are some lexical items that seem to have developed from classifier constructions, because they retain handshapes or movements that seem to stem from classifier roots (Sandler & Lillo-Martin 2006:96). These lexical items can then be used in classifier constructions through a process termed back-formation. In this section, I first address the development of classifier constructions into lexical items, then explain how lexical signs can be used in classifier constructions again in discourse.

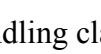
4.1 Classifier Construction into Lexical Signs

Classifier constructions within American Sign Language are a very productive source of new lexical items. "Anomalous as it seems to be, this system of classifier constructions is very prominent in all sign languages, and it provides a lexicalization source for the lexemes of these languages" (Sandler & Lillo-Martin 2006:82). An example of this type of lexicalization can be seen in (24) with the sign for 'write'.

(24)
(ASLTA Conference, American Sign Language Teachers Association & CSD-TV 2007)

1sg write 1sg complain

"I wrote my complaint."

This lexical verb, for example, can take the normal aspectual modification of lexical verbs, something normally not possible for classifier constructions, but it has obviously been derived from a classifier construction consisting of a handling classifier  in the right hand that encodes the instruction to 'pick out a referent that can be handled with the thumb and index finger' together with an entity classifier in the left base hand  which encodes the instruction to 'pick out a referent that has the characteristic of being wide, flat, and horizontal.' Through conventional use the construction no longer requires the same type of reference assignment typically required by classifier constructions and can function on its own as a lexical word that fits the constraints of an ASL lexical sign.

The process of lexicalization of classifier constructions shows that Liddell's analysis of "depicting verbs" may not be accurate. He claims that, "Depicting verbs, like verbs in any language, symbolize meaning having to do with actions and states. They differ from other verbs in that the signer is required to depict the action or state simultaneously" (Scott K Liddell 2003:316). He claims that all aspects of meaning are encoded for depicting verbs (Scott K Liddell 2003:270). Thus, Liddell claims they are already lexical signs that have encyclopedic entries of their own. If this were true, there would be no need for a classifier constructions to undergo lexicalization to be used in isolation and thus there should be no difference in the way that ordinary classifier constructions and lexicalized forms derived from classifier constructions are used. I have made the case that

classifier constructions do not encode their meaning, but instruct the addressees to manipulate or create concepts in their mental representation.

When a classifier construction is used widely and conventionally for a specific concept, that concept becomes more salient, the classifier construction can come to mean that concept as a lexical item. When this happens the construction typically changes its movement by no longer using various forms of an IMIT movement, but a less complex movement to represent what becomes the citation form and follows the typical constraints found for lexical signs in ASL. This change in movement can be seen in comparing Figure 15 and example (26) in section 4.2. Figure 15 shows the more constrained movement of the lexical sign, whereas example (26) shows the more complex IMIT root movement of the classifier construction.

4.2 Classifier Construction Back-formation

Lexical signs that seem to have developed from classifier roots can quickly be used again as a classifier construction through a type of back-formation (Sandler & Lillo-Martin 2006:96). This can be seen by examining example (8) again, reproduced below as (25) for convenience.

(25)
(Padden 1988)

IX ask IX please IX CC1 CL1 Q-U-E-S-T-I-O-N-N-A-I-R-E

"He asked him, please fill out this questionnaire."

In this example, as I mentioned in section 3.3, 'CC1' is the lexical sign for "fill out" that then undergoes back-formation. I labeled it as 'CC1' because the left hand 'CL1' gets

assigned a referent when the right hand fingerspells ‘questionnaire’. As a classifier construction the left hand encodes the instruction to ‘pick out a referent that is wide, flat, thin, and horizontal.’ The right hand would encode an instruction to “pick out a referent that is thin and can be grasped with the full hand.” Then by leaving the left hand ‘CL1’ in space while the right hand simultaneously fingerspells ‘questionnaire’ the left hand is assigned a referent. Typically, the lexical sign “fill out” does not require referent assignment because it encodes a concept. In the context of (25) the signer uses the left hand as a classifier that is referred to over the course of several propositions as the ‘questionnaire’. This means the left hand takes on the referent ‘questionnaire’, which is something lexical signs don’t do. The left hand is functioning as an entity classifier, while the right hand takes on the abstract referent of the interviewee’s answers being put onto the ‘questionnaire’. This means that it is no longer representing the concept “fill out,” instead it has taken on referents and is used as a classifier construction.

Another example of this lexicalization and subsequent back-formation can be seen in Figure 15, the ASL sign for “fall” (Aronoff et al. 2003:69; Sandler & Lillo-Martin 2006:87). Here the left hand respresents a horizontal surface and the right hand falls to the position of .

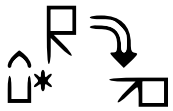
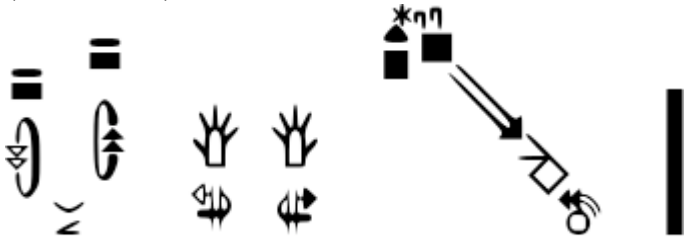


Figure 15. Fall

The sign for ‘fall’ does not refer only to a biped referent as it would if this was a classifier construction. Instead, it can refer to anything that can fall, including apples, boxes and rocks (Aronoff et al. 2003:69). However, when used with a biped referent this

lexical sign can undergo back-formation to convey a very specific rendition of how someone fell. In this case the left hand instructs the addressee to ‘pick out a referent that is horizontal, wide and flat’ and the right hand instructs the addressee to ‘pick out a referent that is biped.’ The classifiers could then combine with a IMIT movement root that expresses the manner and path of falling as seen in example (26).

(26)
(Bruce 2003)



biking finish CC1

“I was riding my bike when I fell off."

In example (26) the lexical sign for fall becomes a classifier construction by taking on the referent of the signer as a person riding their bike and then adding an IMIT root movement to show the manner in which the signer fell.

CHAPTER 5

CONCLUSION

In this thesis I have claimed that classifiers encode procedural instructions to help the addressee pick out the intended referent for the procedural referring expressions made with classifier constructions. I explained that the three classes of classifiers manipulate concepts differently and that some instruct the addressee to create ad hoc concepts though the use of inference, narrowing, and broadening. I also made the case that classifier constructions do not encode a conceptual meaning, but a procedural instruction. They can only be understood once referent assignment has been made, and then the meaning of the motion and orientation of the constructions can be understood through a process of inference.

I explained how classifier constructions, being underdetermined, encode instructions that instruct the addressee on how to fill out the explicature of an utterance. Often, because of their indeterminacy, they are able to convey several weak explicatures simultaneously in a shorter period of time than would be used by lexical signs to convey the same concept. Using classifier constructions instead of lexical signs increases the number of cognitive effects, using fewer signs, with less processing effort on the part of the addressee compared to the number of lexical signs required to convey the same propositions.

I have shown that classifier constructions function in a procedural way to convey complex propositions, take less processing effort for more cognitive effects than lexical signs, and instruct the addressee to manipulate concepts or create ad hoc concepts through inferential processes. Relevance Theory adequately describes when and why classifier constructions are used and how they convey meaning through the use of the relevance-guided comprehension heuristic and the communicative principle of relevance.

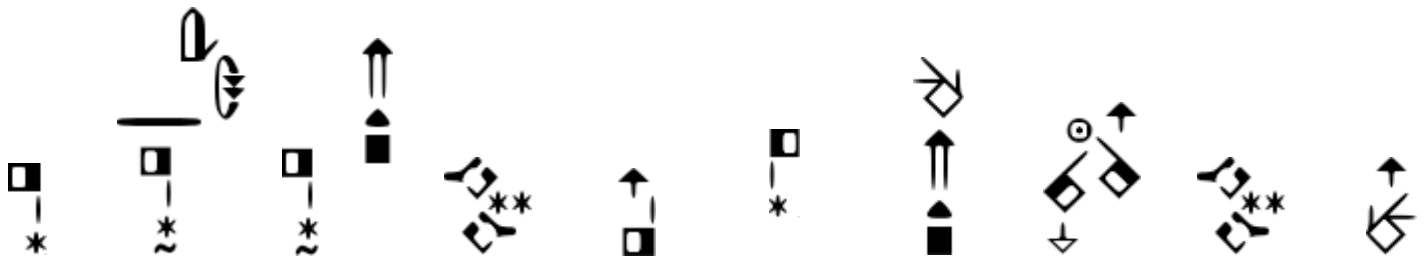
This thesis has focused on the manual aspects of classifier constructions, but further research could be to investigate how facial expressions function in conveying meaning during classifier constructions, and whether they are conceptual or procedural in nature. Also, study of the use of indexing and the importance of location in real or abstract space would be beneficial in understanding how a mental representation is established in the addressee's mind.

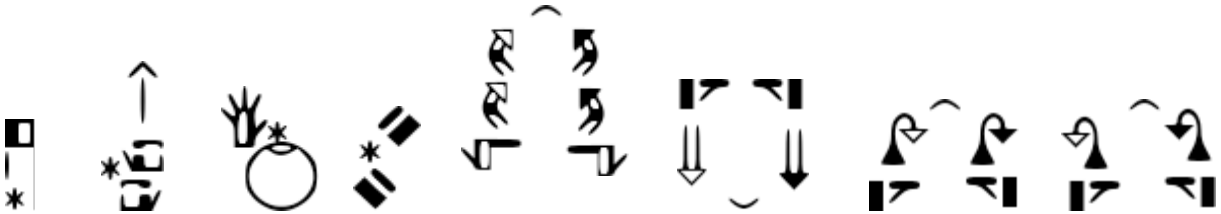
APPENDIX A

TEXT TRANSCRIPTIONS

In this appendix I have transcribed two stories from the data I analyzed. The SignWriting transcription, gloss, and free translation are on the first three lines. If the line contains classifiers, I then indicate which class each classifier falls into and what it is representing in prose beneath the free translation. Any additional notes I have for the text will also be indicated. The classifiers are in the three classes that have been mentioned in this thesis: entity, size and shape specifier (SaSS), or handling.

A.1 Broom Story



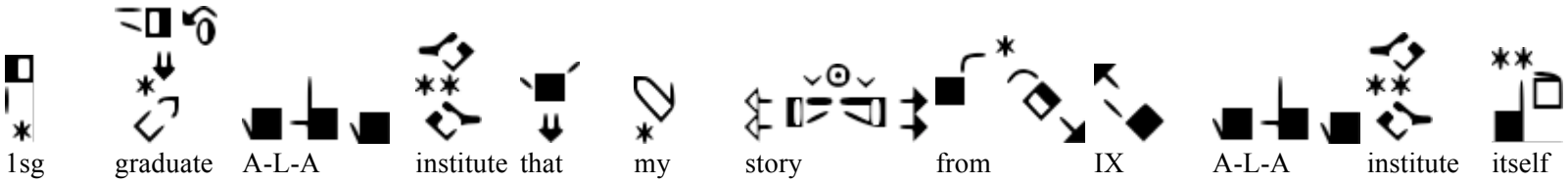


1sg follow father work promotion move move move

"You see we had to moved three times because of my father's job promotions."

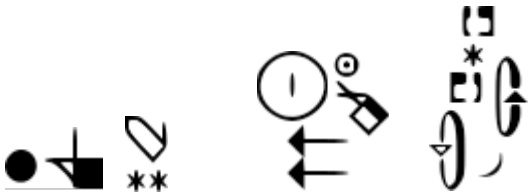
first institute F-L-A third.in.list move N-C move A-L-A

"The first was a residential school in Florida. Then we moved to North Carolina. Lastly, we moved to Alabama."



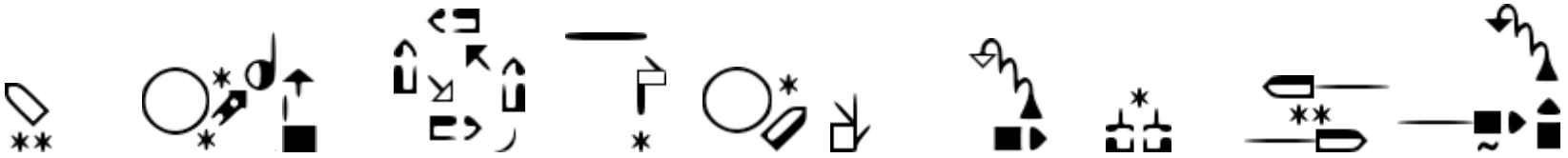
1sg graduate A-L-A institute that my story from IX A-L-A institute itself

"I graduated from the Alabama Residential school for the deaf and my story is from my time there."



O-K 1sg.poss freshman year

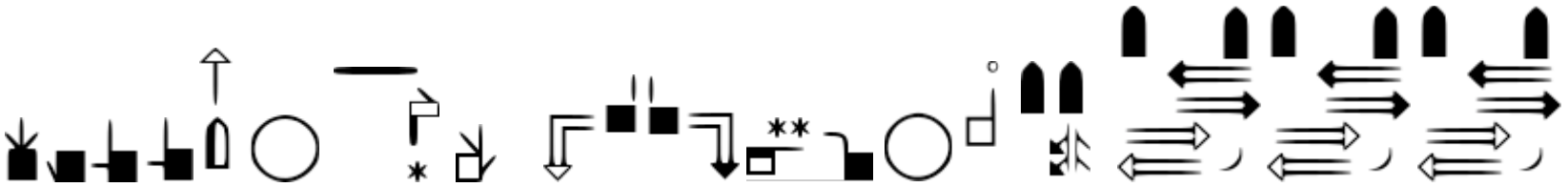
"Okay, it was my freshman year."



my dorm IX room have bed three CC1 with table CL1 CC2

"My dorm room had three beds with a table at the end of each."

CC1 is an entity CC referring to the placement of the beds. CL1 is an entity classifier re-establishing the position of the beds. CC2 is an entity CC referring to the tables and showing their position in relation to the beds.



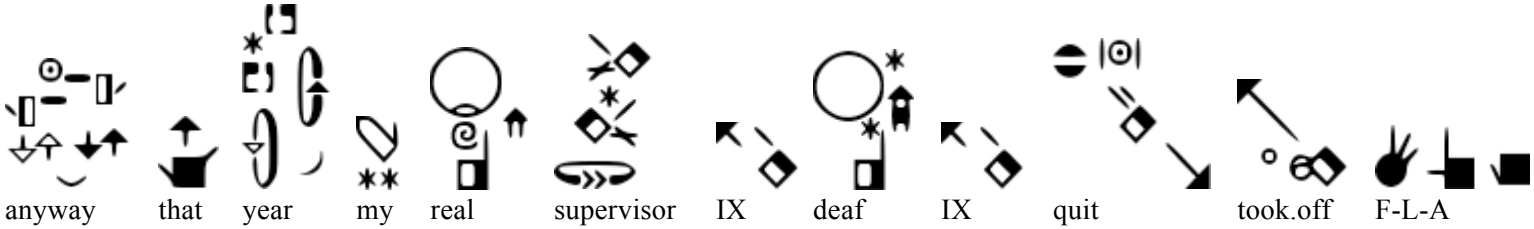
W-A-L-L CC1 have three CC2 closet understand door CC3 CC3 CC3

"On the left there was a wall with three closets that had sliding doors."

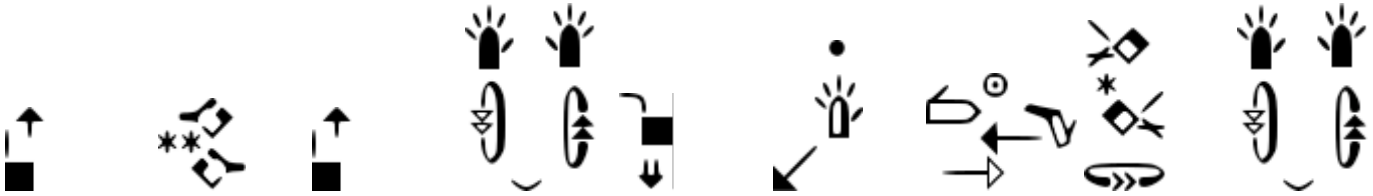
CC1 is a SaSS CC that refers to the wall's extent. CC2 is a SaSS CC that refers to the closet and indicates the extent and shape of the closet door frame. CC3 is an entity CC that refers to the door of the closet and shows its movement.

"To the right of the closets was a shared bathroom. Three guys had a room on each side with a shared bathroom in the middle."

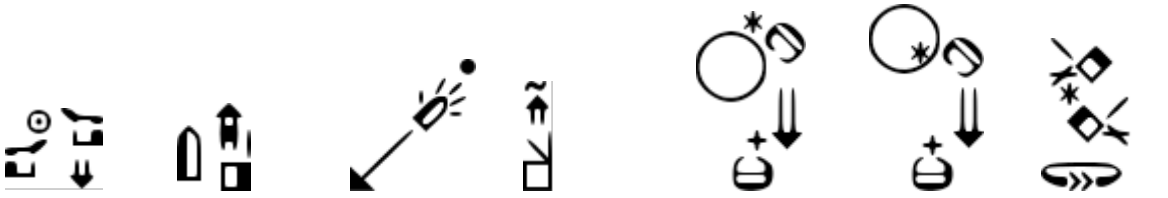
CL1 is an entity classifier that refers to the wall. CC1 is an entity CC that shows how a person would move around the wall to find the bathroom. CC2 is an entity CC indicating three people live in each room on the opposite sides of the bathroom. CC3 is an entity CC showing the path a person would take to get to the bathroom in the middle. Both CC1 and CC3 are hypothetical movements a person would take, not the actual movement of the person in the story.



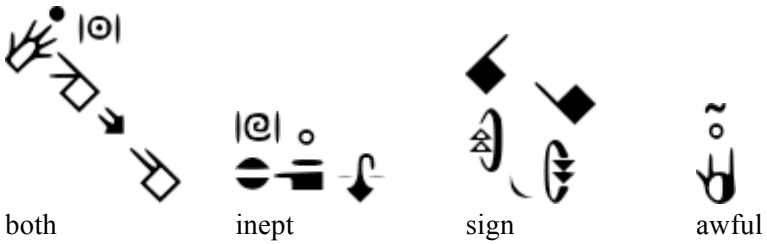
"Anyway, during that year my real supervisor was deaf, but he quit and moved to Florida."



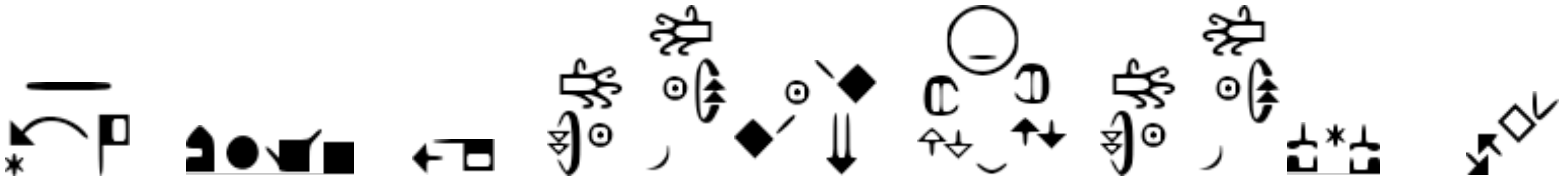
"The residential school was scrambling to find another dorm supervisor."



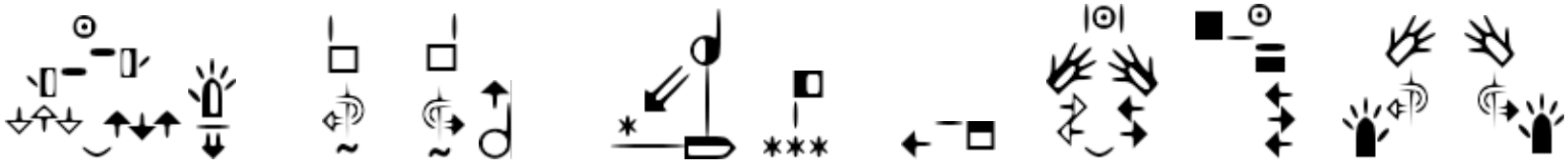
"At the last minute they hired a couple, a husband and wife, to be supervisors."



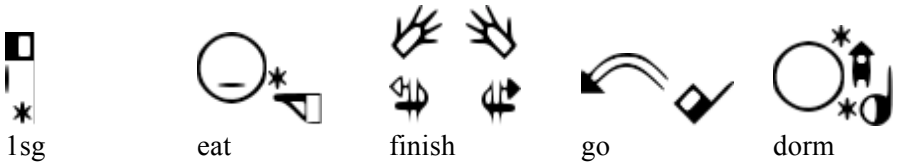
"Both of them were completely inept when it came to signing. It was terrible."



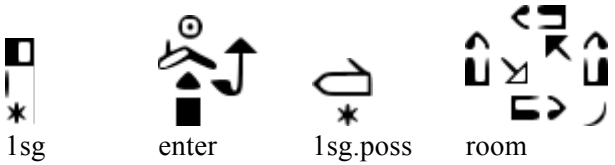
"All the boys were angry that they could not communicate with the two of them."



"Anyway, on one specific day something happened after football practice."



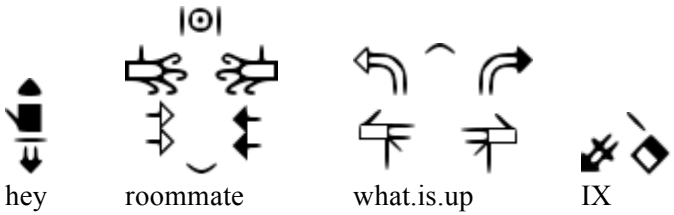
"I got something to eat then went back to my dorm."



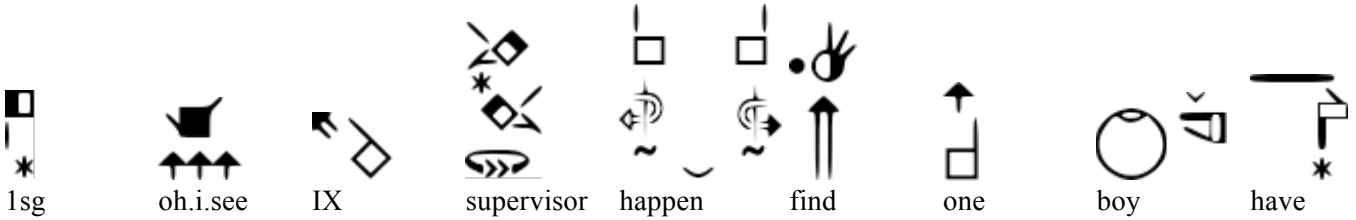
"I entered my room."

"I looked at my dresser and it was a mess."

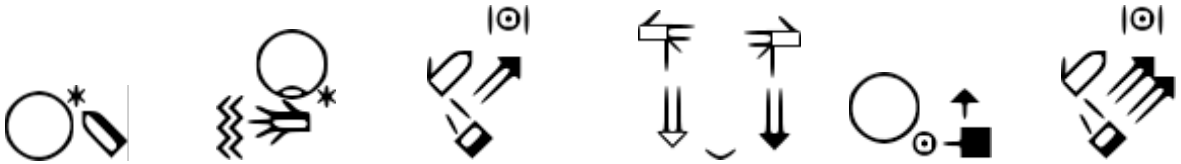
CC1 is an handling CC showing how one would open the drawers of a dresser.



"I asked my roommate why my dresser was messed up."

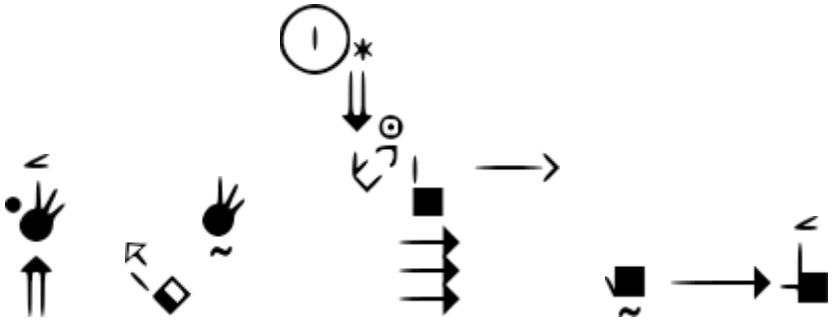


"The supervisor found one of the boys had…,"



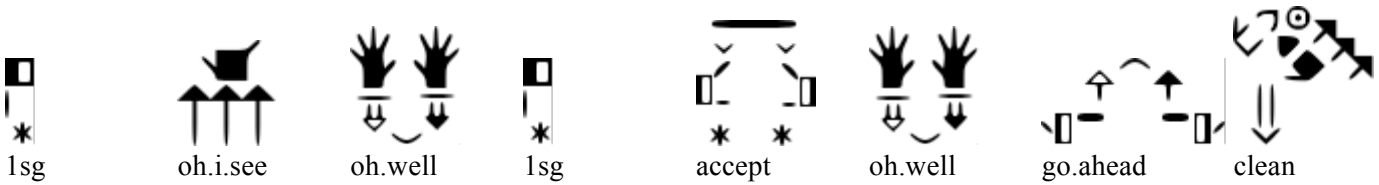
know dirty magazine naked girl magazine

"…you know, a dirty magazine with naked women."



find IX inspect A-L-L

"He found it and inspected all of the boys' rooms."



1sg oh.i.see oh.well 1sg accept oh.well go.ahead clean

"I understood and shrugged it off as a part of life and cleaned up."

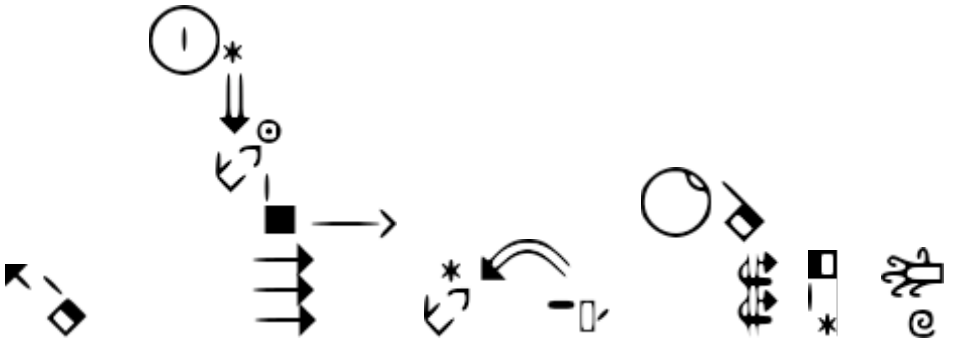
IX tomorrow again mess.up 1sg pissed.off 1sg

"The next day, again my dresser had been gone through. I was pissed off."

why 1pl not go town buy nothing (gesture)

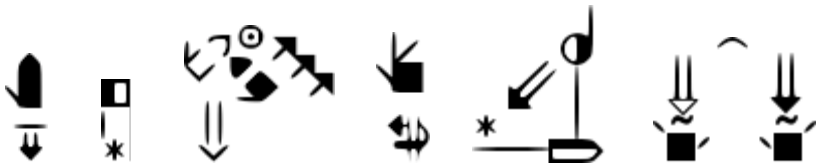
"Why? None of the boys had gone to town, which meant we had bought nothing."

The last symbol in this sentence labeled 'gesture' is the signer turning up his hands to show he did not understand why the dorm supervisor had inspected their rooms again.



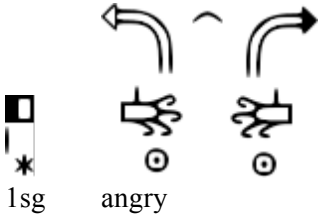
IX inspect again what.for 1sg disgust

"Why did he inspect our room again? I was disgusted."



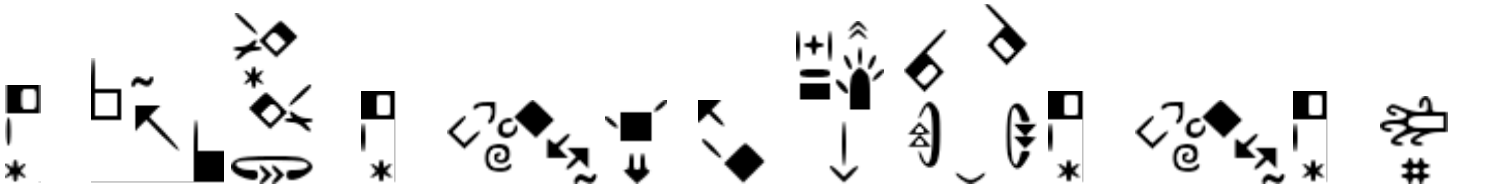
hey 1sg clean third day same

"I cleaned my room. Then on the third day in a row the same thing happened."



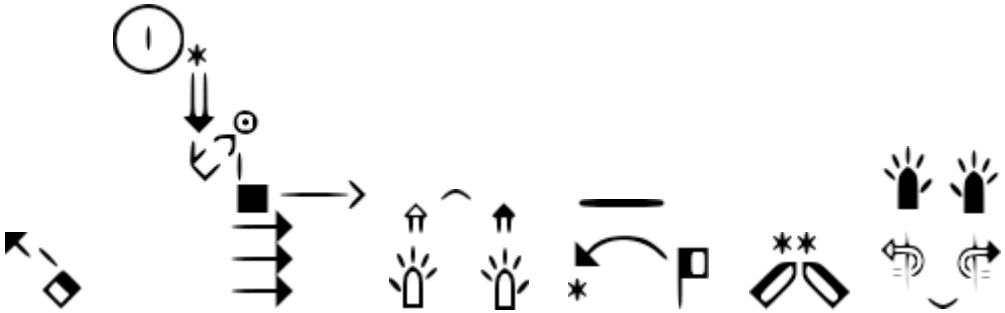
1sg angry

"I was livid."



1sg CC1 supervisor 1sg write that IX inept sign 1sg write 1sg complain

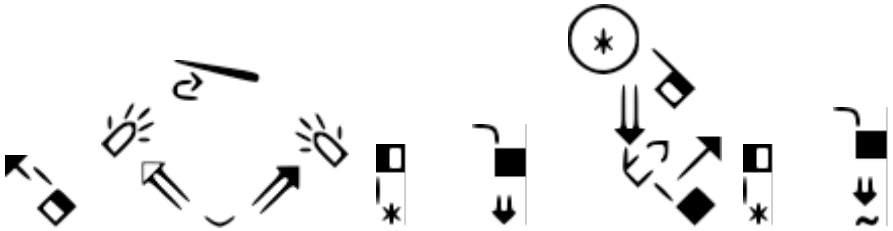
"I went up to the supervisor and began to write furiously. He could not sign, so I wrote my complaint."



IX inspect (gesture) we town (gesture)

"I asked why he inspected the rooms when we had not gone to town."

In this sentence the signer again used the 'gesture' of turning up his hands as a pause and sign of frustration. The second 'gesture' is showing even more frustration. Both gestures are the signer turning his hands to have the palms facing upwards.



IX what 1sg need inspect 1sg need

"He said, 'I had to check the room. I had to.'"

1sg what angry

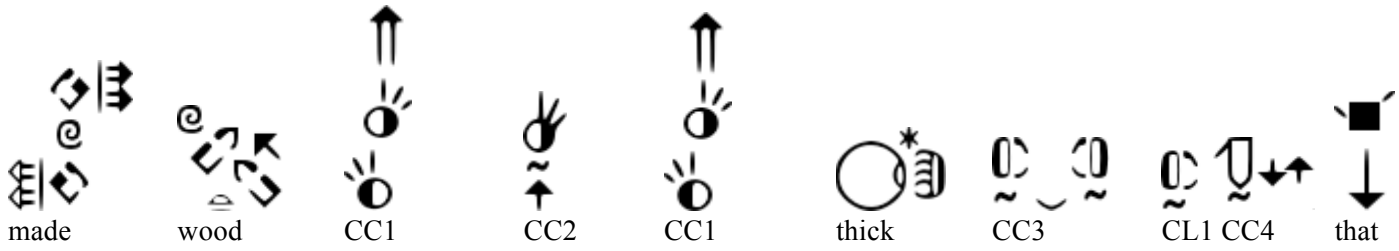
"I was angry."

hey fourth day early.morning schedule CL1.IX 1sg.poss duty clean room

"On the fourth day, early in the morning I looked at the schedule and it said it was my duty to clean the room."

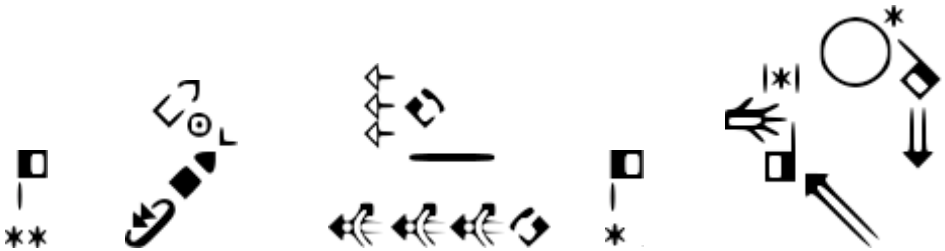
CL1 is an entity classifier that represents the schedule and the signer then points at the schedule to find his duty.

"I went and got a broom. That broom was from the school for the blind."



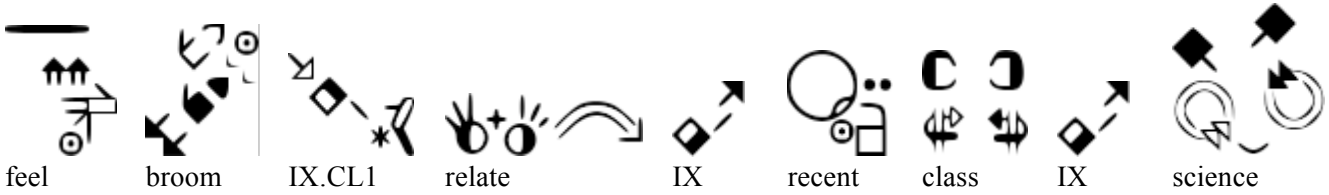
"They had made it and the wood handle was very thick as well as the bristles."

CC1 is a SaSS CC indicating the extent of the broom handle. CC2 is also a SaSS CC indicating the extreme thickness of the handle. CC3 is a SaSS indicating the extent of the extremely thick bristles of the broom. CL1 is a continuation from CC3 with CC4 being an entity CC representing the thick bristles as a whole.



"As I was sweeping the room, I had an idea."

CC1 is a handling classifier referring to how he handled the broom in this story to sweep the floor.

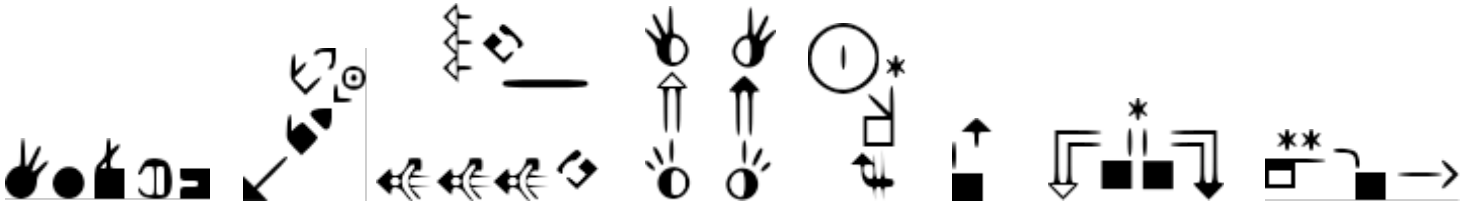


"I could feel the strength of the bristles and connected it to science class earlier…"

CL1 is an entity classifier representing the broom bristles, which then the signer points to. CL1 was part of the lexical sign 'broom' signed just before and then was used to mean the bristles specifically in CL1.

learn different law physics

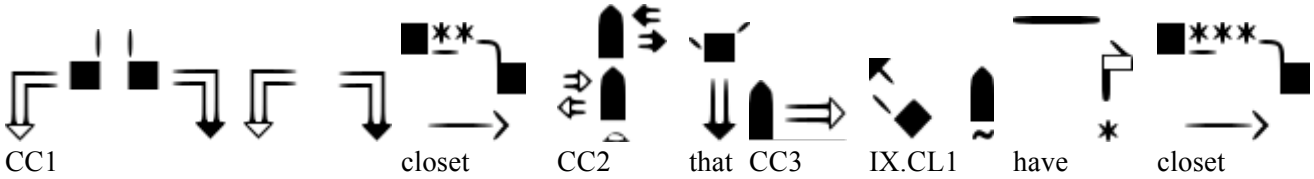
"…where we were learning the laws of physics."



F-O-R-C-E broom CC1 CC2 look IX CC3 closet

"Feeling the force of the broom bristles against the floor, I looked up at the closet."

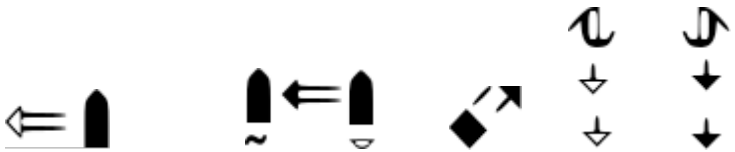
CC1 is a handling CC indicating how the broom was handled to sweep the floor. CC2 is an entity CC referring to the eyes and where the signer looked. CC3 is a SaSS CC that refers to the shape and extent of the closet door frame.



CC1 closet CC2 that CC3 IX.CL1 have closet

"The closets had a hanging rod on the left side…

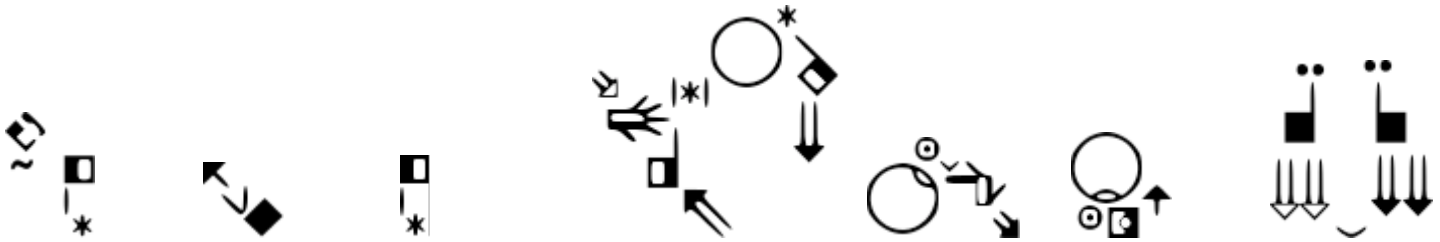
CC1 is a SaSS CC referring to the shape and extent of the closet door frame. CC2 is an entity CC referring to the motion of the closet doors. CL1 is an entity classifier indicating the placement of the door that is open while pointing with the right to indicate where clothes are to be hung up.



CC4 CL2 CC5 IX CC6

"…and drawers in the right side."

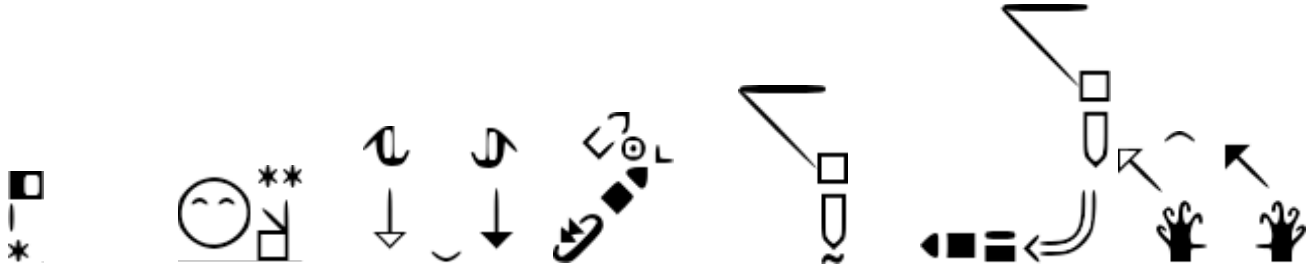
CC4 is an entity CC closing one of the two sliding closet doors. It is then represented by the left hand as CL2 while CC5, an entity CC, represents the other door sliding over it. The signer then points to the right indicating the location of the referent for CC6. CC6 is a handling CC that refers to a dresser and the drawers opening.



CL1 1sg look 1sg idea why not test

"Looking at the dresser, I had an idea and decided to test it."

CL1 is a handling classifier referring to holding the broom.



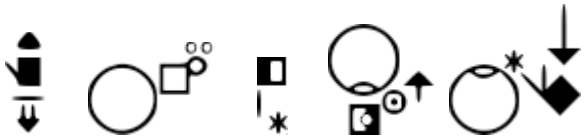
"I will see what will happen, I pulled out the dresser and placed the broom's bristles underneath of it. I then pushed the dresser back into the closet."

CC1 is a handling CC that refers to pulling the dresser out of the closet. CC2 is interesting because the left hand is using a handling classifier to hold the broom handle, while the right hand is an entity classifier representing the broom bristles. CC2 then becomes CC3 which refers to the broom being stuck under the dresser. CC4 is a handling CC referring to pushing the dresser back into the closet.

see CC1 CL1 CC2 CC3 know happen know CC4 CL1 cool

"Then to see what would happen I lifted the broom handle and shut the closet door to hold it in tension. Then pulling the door open, you know what happened? The broom handle slammed down onto the floor and it was cool."

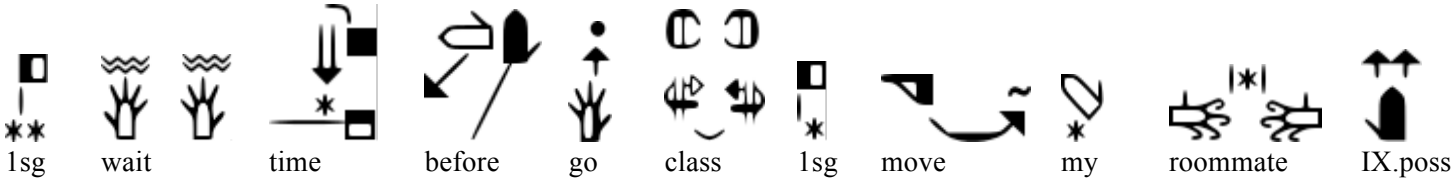
CC1 is a handling CC referring to gripping the broom and pushing it from a horizontal position to a vertical position. CL1 is a handling classifier holding the broom in place while CC2, an entity CC, refers to closing the closet door on the broom. CC3 is a handling CC that refers to pulling the closet door open to allow the broom to fly free. CC4 is an entity CC referring to the broom handle coming down with great force to a horizontal position again. CL1 is an entity classifier representing the broom handle while the signer signs 'cool' with his right hand.



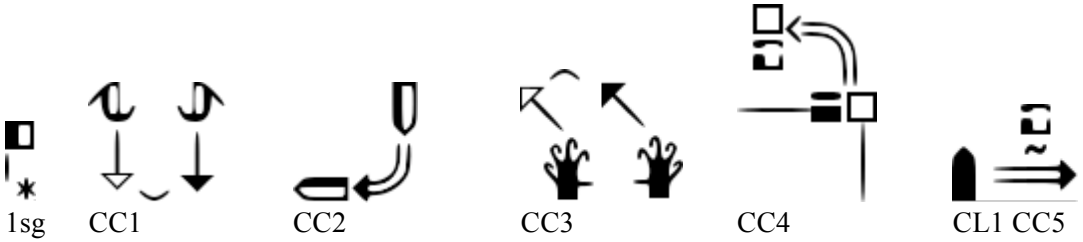
hey understand 1sg not stupid

"You have to understand I am not stupid."

"If I had left that in my closet, it would mean the supervisor would punish me."



"I waited until everyone left for class and then moved it from my closet to my roommate's."

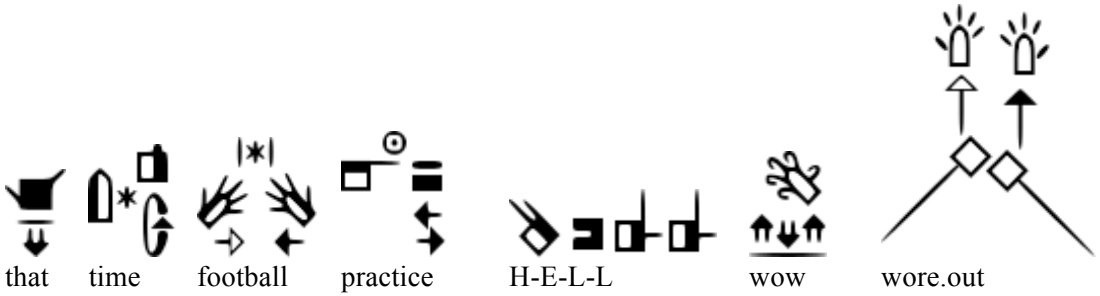


"I pulled out the dresser, stuck the broom underneath it, pushed the dresser back into the closet, lifted the handle and shut the closet door to hold it in place."

CC1 is a handling CC that refers to pulling the dresser out of the closet. CC2 is an entity CC that refers to the broom being stuck under the dresser. This has become a more simplified construction by removing the left hand that had been a handling classifier holding the broom handle that was seen earlier in the story. CC3 is a handling CC pushing the

dresser back into the closet. CC4 is a handling CC referring to grasping the broom handle and pushing it from a horizontal to a vertical position. CL1 is a handling classifier holding the broom in position while CC5, an entity CC, refers to the closet door being closed on the broom.

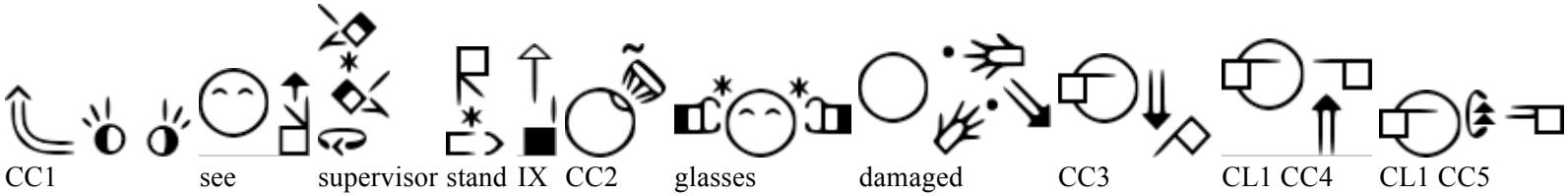
"I went to school all day. Then I headed straight to football practice. When that was over I went to the cafeteria."



"That time, football practice was hell and I was exhausted."

"I entered without thinking and grabbed a tray, got silverware, and a plate of food."

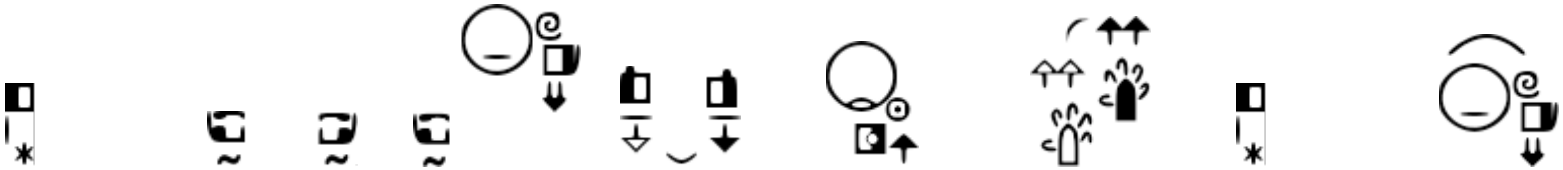
CC1 is a handling CC referring to the signer gripping a tray that is in a high position. CC2 is a handling CC pulling the tray down. CL1 is a handling classifier holding the tray while CC3, another handling CC, refers to the signer grabbing utensils from a higher position and setting them on the tray. CC4 is a handling CC referring to a plate of food that the signer then sets on the tray.



"I looked over and saw the supervisor standing on the other side of the cafeteria with a huge knot on his forehead. His glassed had been damaged and were taped back together."

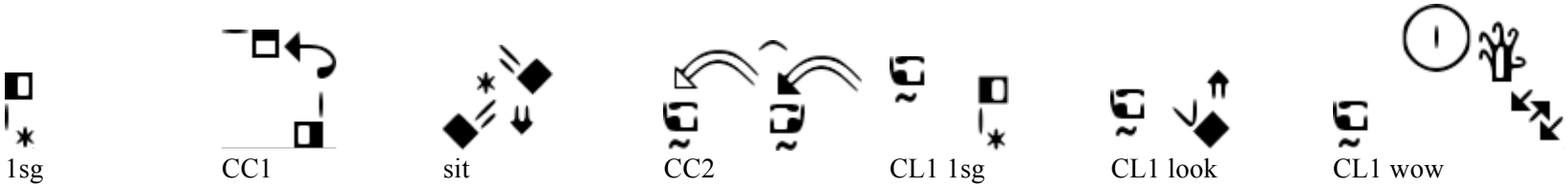
CC1 is an entity CC referring to the movement of the signers eyes. CC2 is a SaSS that indicates a lump on the supervisors head. CC3 is an entity CC that indicates the supervisor's glasses are broken. This is interesting because the

movement does not indicate actual movement, but where they broke. CL1 is an entity classifier referring to the classes frame while CC4 is also an entity CC showing the frames coming back together. The right hand then changes shape and becomes CC5. CC5 is a handling CC showing the supervisor had to wrap tape around their glasses to fix them. CC5 is not movement happening in that moment, but assumed movement of what the teacher had to have done to fix his glasses.



"It took a force of will not to laugh."

CL1 and CL2 are both handling classifiers referring to holding a cafeteria tray.

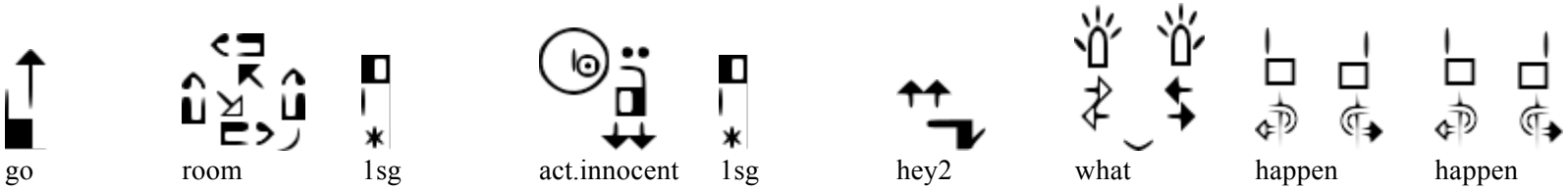


"I went around the corner and sat down. I set my tray down and looking up I saw my roommate."

CC1 is an entity CC indicating him going around a corner. CC2 is a handling CC referring to the tray being placed on the table. CL1 again is a handling classifier referring to holding the tray.

"My roommate was in the corner eating with the tray in his lap punishment and it was terrible."

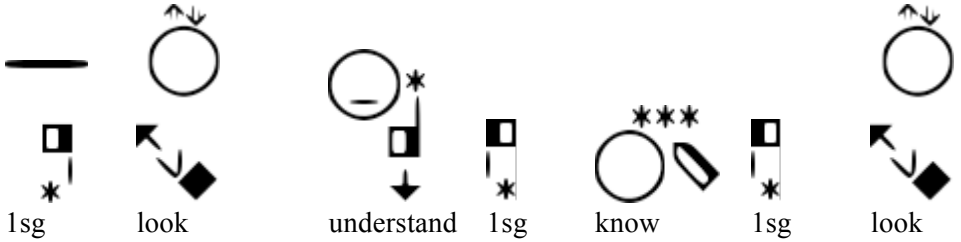
CC1 is a handling CC referring to the tray being placed in his lap. This movement again indicates movement in the past, not the movement currently happening. CC2 is a handling CC referring to a utensil to bring food to the mouth. CC2 is movement that is happening in the present moment.



"I went back to the room and acting innocent I asked my roommate what had happened."

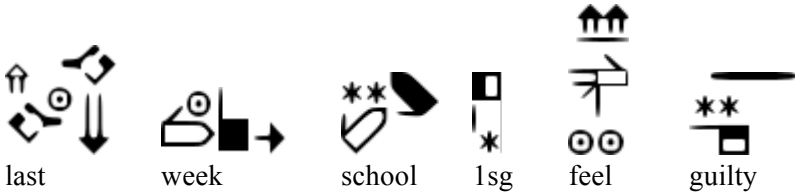
"He said he did not understand and had argued with the supervisor."

The ‘gesture’ used here indicates the roommate not understanding what was said.



“I played along, but I knew what had happened.”

“I kept it a secret until May.”



“It was the last week of school and I was feeling guilty.”

hey 1sg hey2 my roommate

"I got my roommates attention…"

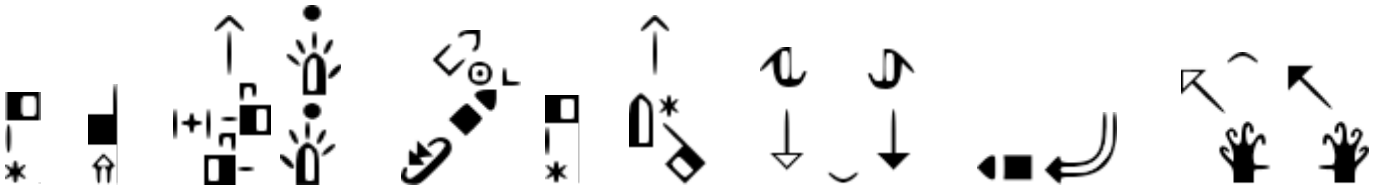
IX remember past fall IX (gesture) punish IX remember

"…I said, 'do you remember last fall when you were punished?'"

The 'gesture' here is used as a pause.

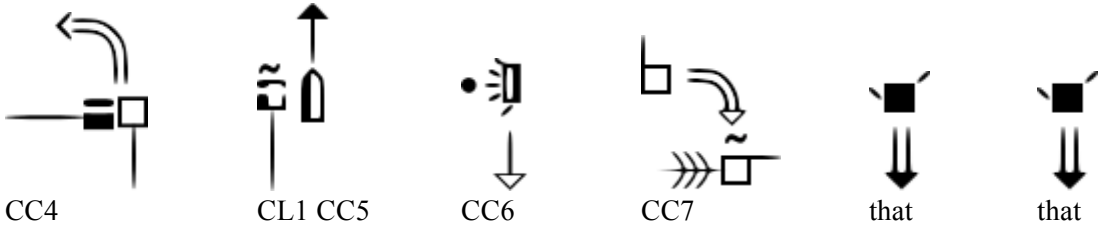
IX yes not understand 1sg hey 1sg explain IX look how

"He said, 'yes, I don't know why.' I explained to him what I had done. He asked me how I did it."



"I ran and got one of the brooms and showed him. I stuck the broom under the dresser pushed it in,…

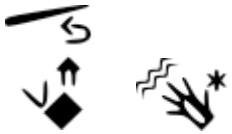
CC1 is a handling CC referring to the dresser being pulled out of the closet. CC2 is an entity CC that refers to the broom being pushed under the dresser. CC3 is a handling CC referring to the dresser being pushed into the closet again.



"…and then lifted the handle and held it in tension by closing the closet door. I then slid the door open and the broom slammed down onto the floor and told him that was how I did it."

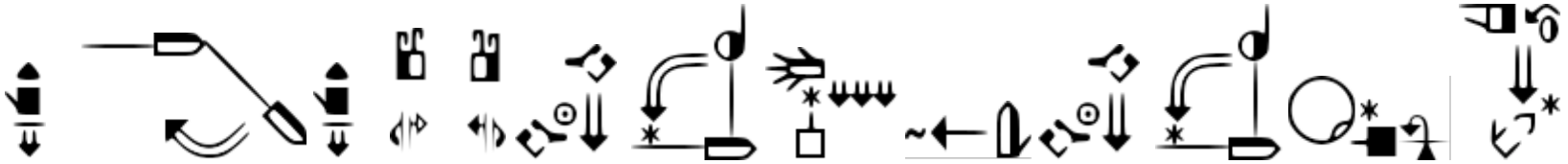
CC4 is a handling CC referring to the broom handle being grasped and pushed from a horizontal to vertical position. CL1 is handling classifier holding the broom in place while CC5, an entity CC, refers to the closet door being shut to

hold the broom in place. CC6 is a handling CC referring to the closet door being opened. CC7 is an entity CC referring to the broom handle coming down and striking the floor with great force.



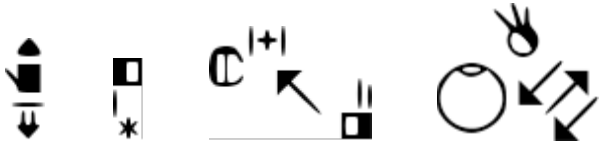
look cool

"He thought it was awesome."



hey all.night hey topic last day senior IX.poss last day tomorrow graduate

"During the night… it was the last day of school and the seniors would be graduating the next day."

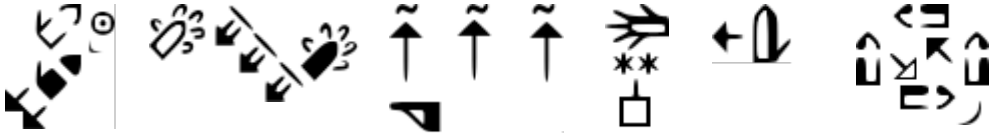


hey 1sg in.bed clueless

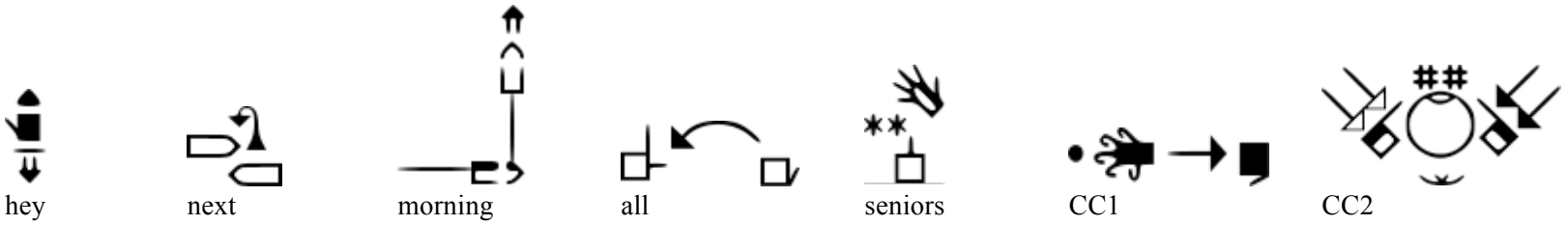
"I was asleep and had no clue what was going on."

"My roommate, by himself, got up and collected all of the brooms."

CC1 is an entity CC referring to the roommate getting out of bed.

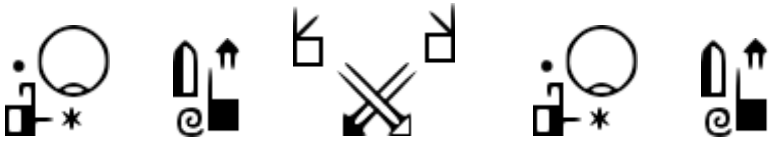


"He got all the brooms and stuck them in the seniors' rooms."



"The next morning all of the seniors opened their closet doors only to be struck in the head by a broom handle."

CC1 is a handling CC referring to closet doors being opened. CC2 is an entity CC referring to broom handles hitting the heads of all the seniors.



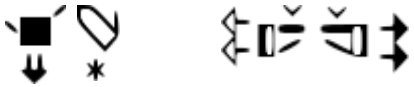
who tall worse who tall

"The tallest people got the worst of it."

hey tall go graduate CC1 see CC2 CC3 CC2 CC4 CC5 CC6

"You could see a huge knot on the tallest graduate's forehead as they received their diploma and walked off stage."

CC1 is a handling CC referring to the graduation hat put on by the seniors. CC2 is a SaSS CC indicating the size of the lump on their forehead. CC3 is a SaSS CC that shows the size and extent of the bump on their foreheads. CC4 is a handling CC referring to gripping the diploma that was handed to them. CC5 is handling CC referring to shaking another person's hand. CC6 is an entity CC referring to the graduate walking across the stage.



that 1sg.poss story

"That is my story."

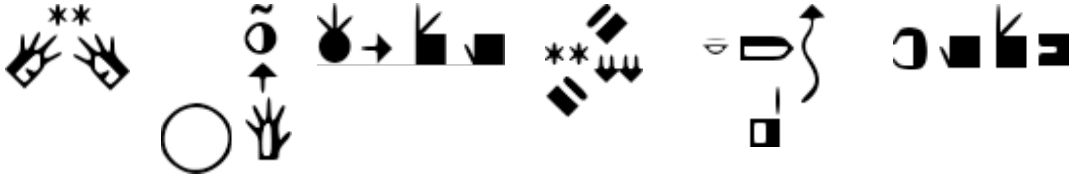
A.2 Cave Story

1sg remember past gallaudet junior

"I remember when I was a junior at Gallaudet."

1pl eight friend four girl four boy

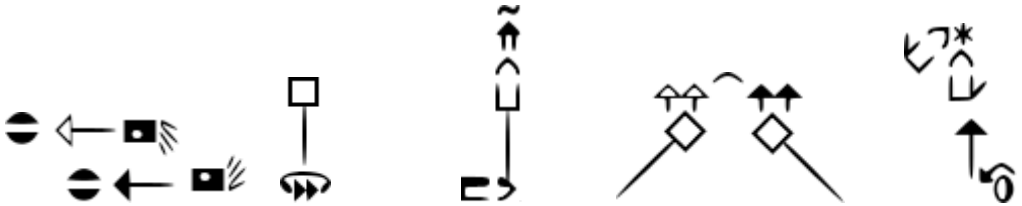
"The eight of us friends, four girls and four boys,…"



CC1 go W-V-A mountain CC2 C-A-V-E

"…went to the mountains in West Virginia to explore a cave."

CC1 is an entity CC referring to the four boys and the four girls going together. CC2 is an entity CC referring to the group of people exploring the cave.

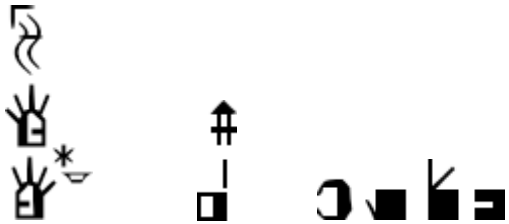


"We left Saturday morning and drove there."

"We were ready, so the boys put on a headlamp and the girls each had a large flashlight."

CC1 is a SaSS CC indicating the shape of the hat the boys were wearing. CC2 is an entity CC referring to the position of the light that attaches to their hat. CC3 is a handling CC with the right hand holding the handle of the flash light and a SaSS with the left hand representing the large lower hanging battery. CL1 is a continuation of the handling classifier

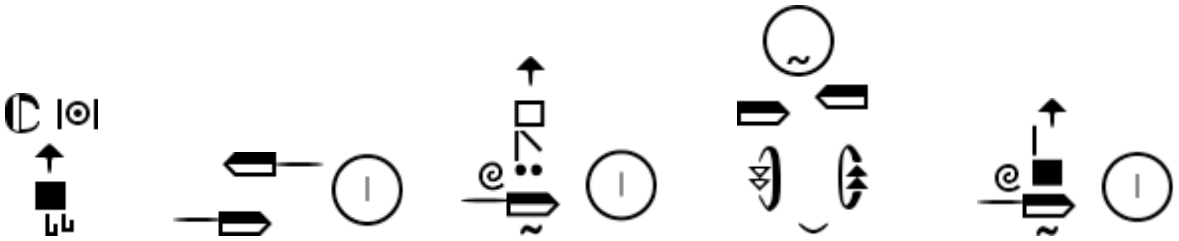
from CC3 of the left hand holding the flashlight handle. CC4 is an entity CC placing the light on the front of the gripped handle of the flashlight.



CC1 IX C-A-V-E

"The eight of us wound our way up the hill in single file up to the cave."

CC1 is an entity CC referring to the eight friends traveling up into the mountains.



CC1 CC2 CC3 CC4 CC5

"We crawled in to the small opening of the cave on our stomachs with barely enough room to squeeze in. The walls and ceiling left little room to move as we struggled forward deeper into the cave. We had to use our hands to propel ourselves forward with great difficulty and we slowly made forward progress deeper into the cave."

CC1 is an entity CC with the right hand referring to a person climbing through the small opening of a cave. The left hand indicating the size and the cave as a whole could be an entity/Sass. CC2 is a SaSS CC referring to the size of the tunnel leading in from the entrance. CC4 is an entity CC referring to a person crawling on their stomach through the tunnel. CC4 is an entity CC referring to a person crawling forward with great difficulty. CC5 is an entity CC that refers to the group moving further into the cave.

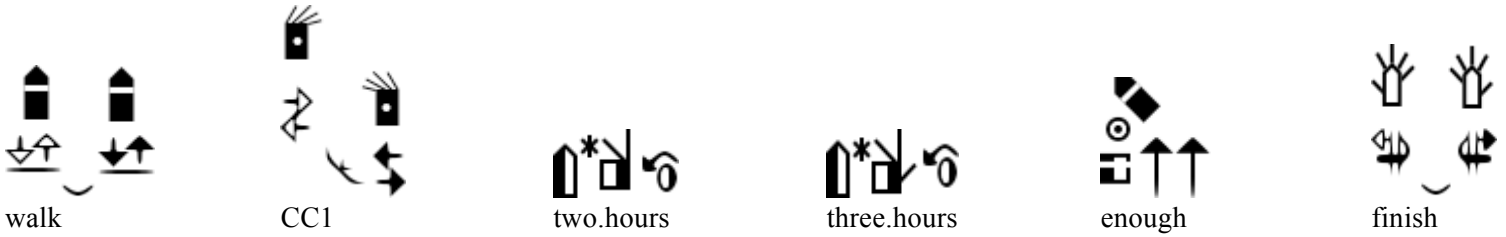
CC1 CL1 water CC2

"We went down a small hill that had water flowing at the bottom."

CC1 is an entity CC referring to a person jumping down from a small ledge. CL1 is an entity classifier for the cave floor. CC2 is an entity CC referring to water flowing in a stream.

"We walked through the cave shining our lights all around and really enjoying ourselves."

CC1 is an entity CC referring to the eight friends winding through the cave. CL1 is an entity classifier representing four people. CC2 is a handling CC referring to how the flashlight were held and shone. CC3 is an entity CC referring to the light being shone around the cave.



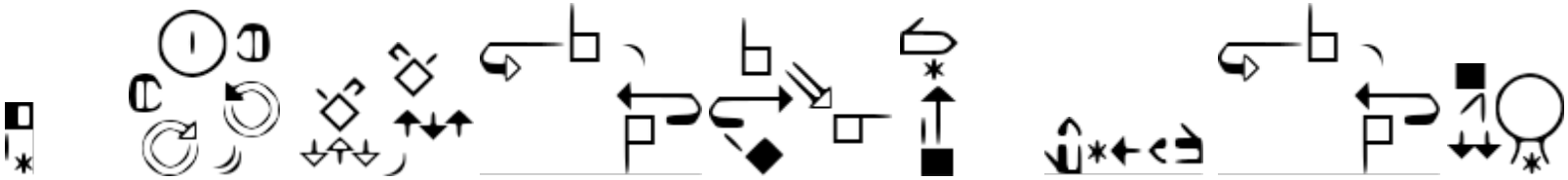
"We walked and looked around for two or three hours and had had enough."

CC1 is an entity CC referring to the light being shone around the cave walls while exploring.

CC1

"We were done and ready to go back."

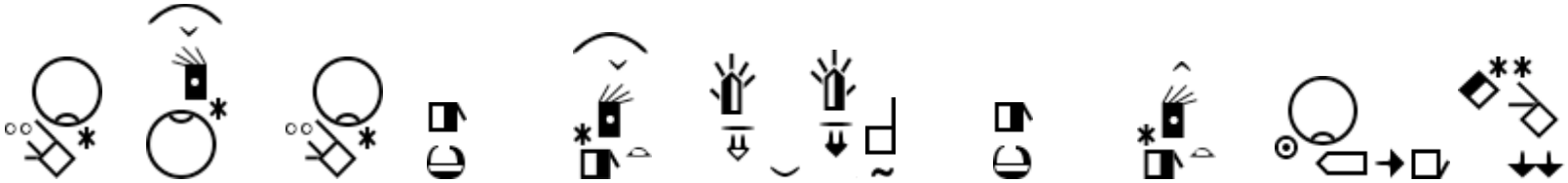
CC1 is an entity CC referring to the group turning around and going the other direction.



1sg search CC1 CC2 CC3 CC4 CC5 CC6 stuck

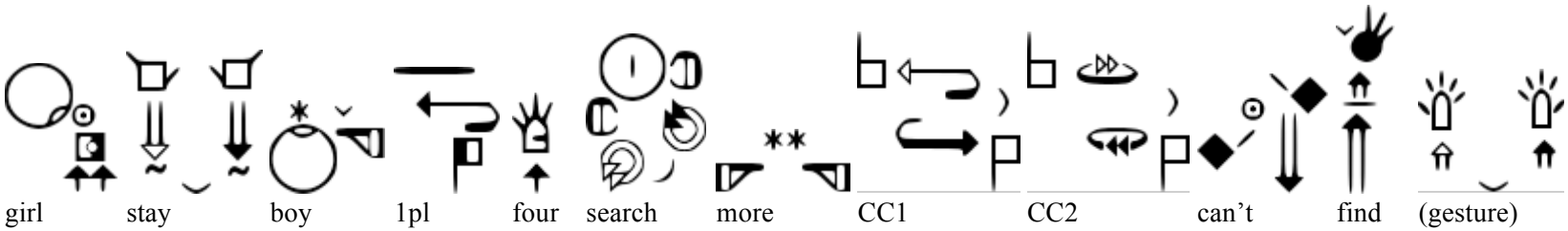
"We searched and started to get worried. We got turned around and would come to dead ends."

CC1 is a handling CC referring to the flashlights being held while exploring the cave. CC2 is an entity CC referring to the group wandering around lost. CC3 is an entity CC referring to the group wandering around lost and going forward. CC4 is an entity CC referring to the group hitting a dead end. CC5 is an entity CC referring to the group hitting another dead end. CC6 is an entity CC referring to the group again being lost.



"The headlamps on the boys started to dim and go out. The girls flashlight as well went out. Only one flashlight still was working. We decided to save it."

CC1 is an entity CC showing the headlamp fading until it goes out. CC2 is a combination of SSaS and handling CC. The left hand is a SSaS classifier referring to the size of the battery and the right hand is a handling classifier referring to the flashlights handle. CC3 is an entity CC referring to the flashlight fading. CC4 is an entity CC referring to one flashlight staying on.

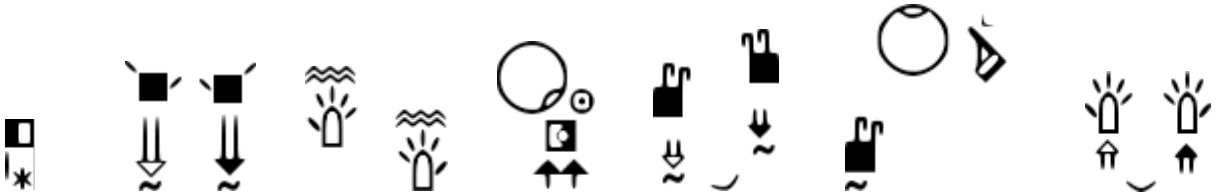


"So, the girls stayed put and the four boys continued to search for the way out and could not find it."

CC1 is an entity CC referring to them wandering around lost and the same is for CC2. The 'gesture' is a gesture of resignation about being lost.

come sorry lost

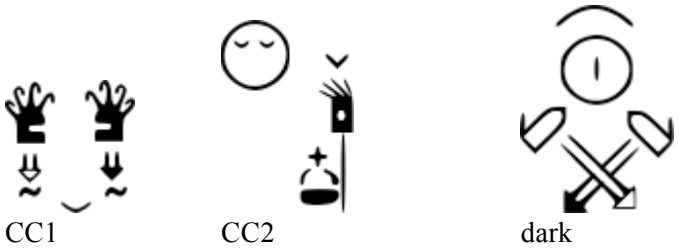
"They came back and apologized that they were lost."



1sg stay wait girl CC1 CL1 boy (gesture)

"We decided to stay put to wait and the girls all sat down tense, the boys resigned?"

CC1 is an entity CC referring to the girls sitting in shock. CL1 is an entity classifier continued from CC1. The 'gesture' is a sign of resignation on the part of the boys.



CC1 CC2 dark

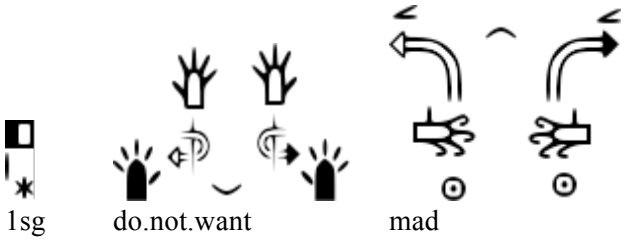
"We all sat down and turned off the flashlight. It was completely dark."

CC1 is an entity CC referring to the group sitting. CC2 is an entity CC referring to the light shutting off.

"I was cold. We signed to each other by feeling each other's hands."

CC1 is an entity CC referring to the group sitting in the dark. The gesture is one of being scared.

"I thought if we waited and waited we would get hungry and starve to death."



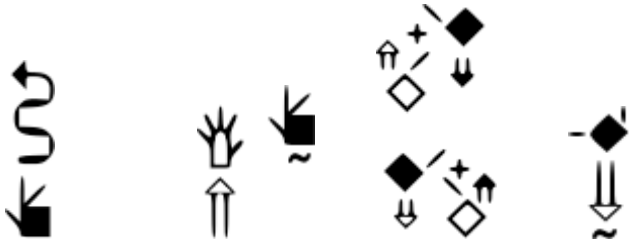
"I did not want that to happen and got mad."

1sg hey2 friend IX 1sg 1pl.dual again search try

"I got one of my friend's attention and said the two of us could try again and look for a way out."

other IX.boy want with 1pl three.of.us O-K

"One of the other boys wanted to go as well, so it would be the three of us."



CC1 five friend stay

"The three of us went and the our five friends stayed put."

CC1 is an entity CC referring to the three friends trying to find a way out of the cave.

1sg CC1 try search CC2

"We continued to explore and search the cave."

CC1 is an entity CC referring to the three friends exploring deeper into the cave as well as CC2.

find CC1 CL1 water CC3 fine

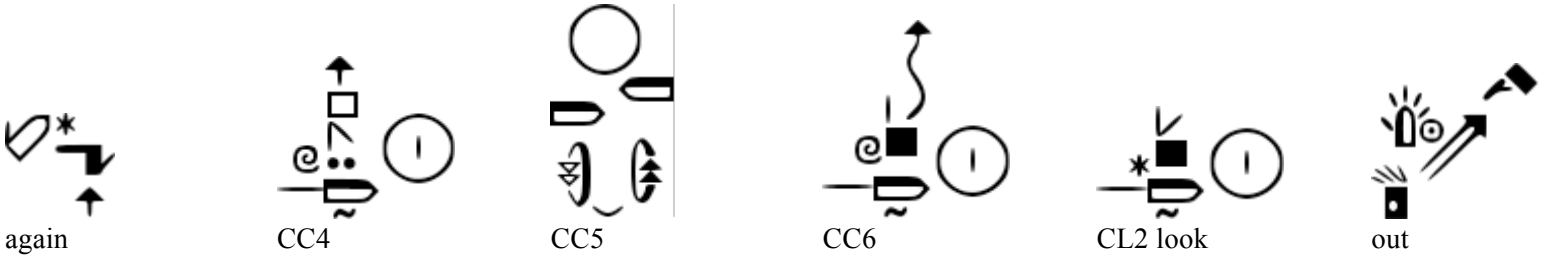
"Then we found the hill with the stream."

CC1 is an entity classifier referring to a person jumping down. The movement is referring to what they did to enter the cave not what they did to get out. CL1 is an entity classifier referring to the cave floor. CC3 is an entity CC referring to a stream of water.

walk IX CC1 CL1 that CL1 IX CL1 1sg CC2 CC3

"So we hurried and walked up the hill and could see out of the cave. We crawled through the small cave mouth…"

CC1 is a SaSS CC referring to the small opening of the cave. CL1 an entity classifier that continues from CC1 referring to the cave mouth. CC2 is an entity CC referring to the people going through the small opening. CC3 is a SaSS CC referring to the tunnel leading out of the cave.

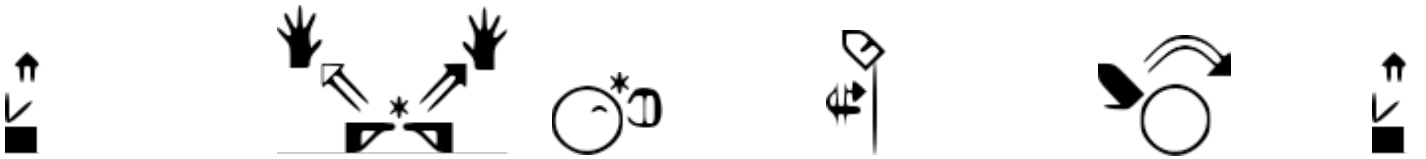


again CC4 CC5 CC6 CL2 look out

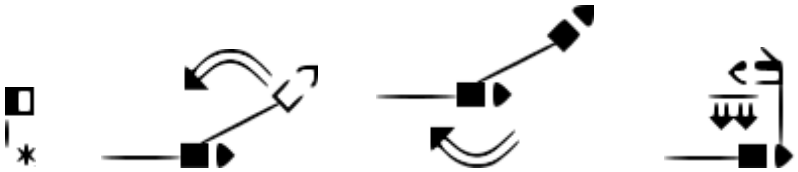
"…again, we had to use our hands to propel ourselves forward with great difficulty and we slowly made forward progress until we could see the end and got out of the cave."

CC4 is an entity CC referring to a person crawling on their stomach through the tunnel in the cave. CC5 is an entity CC referring to a person crawling forward with great difficulty. CC6 is an entity CC referring to the group moving

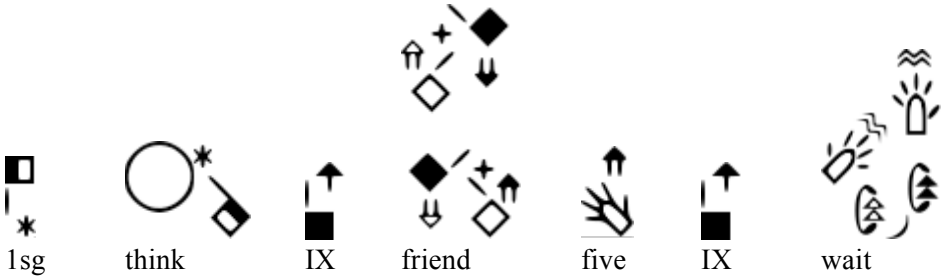
forward out of the cave through the tunnel. CL2 an entity classifier referring to the floor of the cave that occurred in CC4 and CC6.



"We looked and saw the bright moon and the sky was a clear blue."

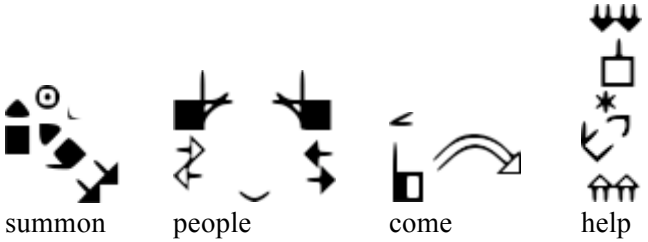


"We had been in the cave all day and all night, wow."

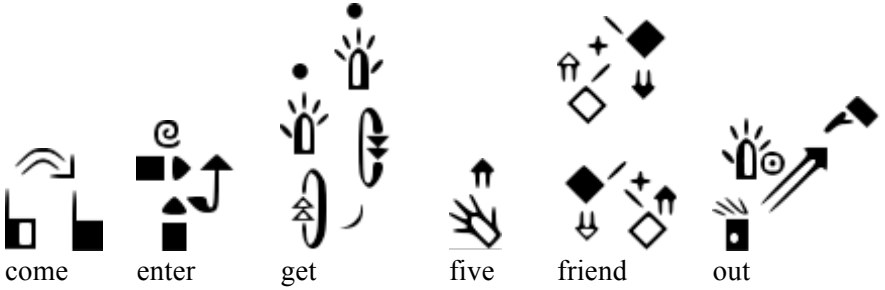


"I thought about our five friends still in the cave waiting."

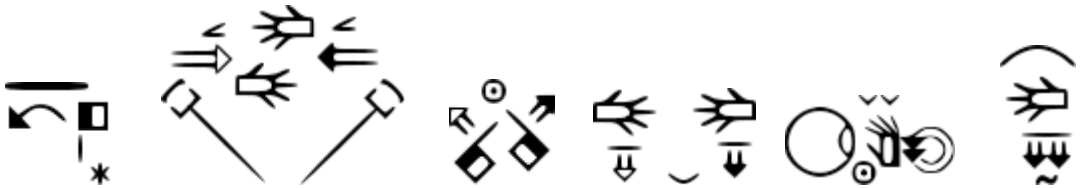
"We better hurry and go to town and get help."



"We got people to come help."



"They came and went into the cave and brought our five friends out of the cave."



1pl scare but wow experience wow

"We had been scared, but what an experience."

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