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RESEMBLANCE-ORIENTED COMMUNICATION STRATEGIES:
UNDERSTANDING THE ROLE OF RESEMBLANCE IN SIGNED AND SPOKEN
LANGUAGES

by

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Bachelor of Arts, Villa Julie College, December 2007

A Thesis
Submitted to the Graduate Faculty

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This thesis, submitted by Daniel R Eberle 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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Wayne Swisher,
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Title Resemblance-Oriented Communication Strategies: Understanding the
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Department Linguistics

Degree Master of Arts

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Date 7-26-2013

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CONVENTIONS

- Hyphenated sentences Hyphenated sentences indicate single signs or constructions which cannot be properly conveyed in a single English word, for example: MAN-WALKED-DOWN-THE-ROAD would be a single sign in American Sign Language.
- Words in all caps A convention in sign language linguistics in which an all-caps word such as ASK is used to represent the sign “ask” in the prose.

ABSTRACT

The goal of this thesis is to propose that resemblance plays an important role in human communication. Saussure proposed a characteristic principle of the linguistic sign: that connections between linguistic codes and the objects they signify are arbitrary; however, I intend to show that resemblance, which I define as the visual or aural similarity between a stimulus, the thought it is intended to activate, and the real world target that utterance is about, is an important part of human communication and should be taken into consideration when defining language and proposing theories of human communication.

I have chosen Relevance Theory as the framework for this analysis because it highlights the importance of inferential communication. According to Relevance Theory, human communication is guided by expectations of relevance, a balance between cognitive effects (information the addressee finds worthwhile) and processing effort (the amount of work required to understand that information). Human communication reduces the amount of processing effort through conventionalization; words signify concepts, starting points from which inference can be used to arrive at a communicator's intended meaning. I suggest that the range of human perception and experience acts as common ground between communicators, providing a shared context between communicator and addressee and reducing what must be explicitly communicated. Essentially, resemblance between an utterance and an intended thought performs a similar function to conventionalization, activating concepts from shared context and providing a starting

point for inferential communication, guiding addressees to the communicator's intended meaning.

My claim that resemblance has a role to play in human communication raises significant questions about the widely held stance that language is inherently arbitrary. I have proposed that signs can meaningfully resemble the things they signify; if this is true, we must consider the implications for modern linguistic analysis and adjust linguistic theory to accurately account for the use of resemblance in human communication.

CHAPTER 1

INTRODUCTION

The goal of this thesis is to propose that resemblance plays an important role in human communication. I define resemblance as the visual or aural similarity between a stimulus (such as a spoken or signed utterance), the thought it is intended to activate, (mental representation in the mind of a human) and the real world target (situation, object, other utterance, etc.) that utterance is about. I present examples from both spoken and signed language in which resemblance contrasts with the Saussurean model of language. Saussure (1959:67–70) proposed a characteristic principle of the linguistic sign: that connections between linguistic codes and the objects they signify are arbitrary; however, he went on to suggest that “when semiology becomes organized as a science, the question will also arise whether or not it properly includes modes of expression based on completely natural signs, such as pantomime.” What Saussure refers to as “natural signs” is what I intend to show as resemblance, and is highly valued by human communication and should be taken into consideration when defining language and proposing theories of human communication.

The framework I have chosen for this analysis is Relevance Theory, a theoretical approach primarily concerned with the field of pragmatics, loosely described as “the study of language use, as opposed to language structure” (Wilson & Sperber 2012). I believe that Relevance Theory is the best framework for this analysis because it highlights the importance of inferential communication. Wilson and Sperber (2012:2) explain inferential communication in the following way:

“On the inferential view, utterances are not signals, but pieces of evidence about the speaker’s meaning, and comprehension is achieved by inferring this meaning from evidence provided not only by the utterance but also by the context.”

According to Relevance Theory, human communication is guided by expectations of relevance, a balance between cognitive effects (information the addressee finds worthwhile) and processing effort (the amount of work required to understand that information) (Wilson & Sperber 2012). I hypothesize that cognitive benefits can be augmented and processing effort can be reduced through the use of resemblance. Specifically, I suggest that the range of human perception and experience acts as common ground, providing a shared context between communicator and addressee. This shared context can include knowledge about the world and how it works, in areas such as physics, spatial relationships, size, shape, human function and behavior, and more, and reduces what must be explicitly communicated. Essentially, resemblance between an utterance and an intended thought can then serve as a starting point for inferential communication.

While both spoken and signed languages make use of the resemblance between signs and the things they signify, signed languages are especially enabled by the visual modality to leverage the benefits of resemblance-oriented communication. Simply put, signed language communication is produced in the same modality as the things it signifies; an utterance meant to describe a falling tree can look like a tree falling over, even if the resemblance is fairly abstract.

Ultimately, I conclude that the use of resemblance in human communication has implications for theories of language as arbitrary, applications for pragmatic theory, and our understanding of human communication in general. I begin with an introduction of Relevance Theory in Chapter 2, followed by a theoretical description of resemblance in Chapter 3. Chapters 4 and 5 describe examples of resemblance in spoken and signed languages respectively. Chapter 6 describes the impact of resemblance on cross-linguistic communication.

CHAPTER 2

INTRODUCTION TO REVELANCE THEORY

Relevance theory is a theoretical framework proposed and developed primarily by Sperber and Wilson (1986; 1995; 2012). Its goal is to explain the processes underlying human communication, including a particular focus on how addressees interpret and understand a communicator's intentions by means of inference and decoding (Wilson & Sperber 2012). Relevance theory can be contrasted with the traditional code theory of communication, a classical view of human communication as a system of simple encoding of thoughts into an utterance on the speaker's end and decoding the utterance into concepts on the hearer's side (Saussure 1959).

2.1 Basics of Relevance Theory

The capstone of Relevance Theory is relevance itself, defined by Sperber and Wilson (2012:38) below:

“Relevance is defined as a property of inputs to cognitive processes. The processing of an input (e.g. an utterance) may yield some cognitive effects (e.g. revisions of beliefs). Everything else being equal, the greater the effects, the greater the relevance of the input. The processing of the input (and the derivation of these effects) involves some mental effort. Everything else being equal the greater the effort, the lower the relevance.”

Simply stated, any act of human communication is relevant if the cognitive effects match or outweigh the processing effort of understanding the communication. Cognitive effects can be loosely defined as any change of the addressee’s thoughts or assumptions; they could be as simple as learning what time it is, or as complex as understanding that the speaker is telling the hearer the time because they do not want the hearer to be late for class. Cognitive effects can function to strengthen or weaken existing assumptions, as well (Wilson & Sperber 2012). Along with the above definition, Sperber and Wilson (2012:64–65) posited the following two principles, critical to this thesis:

“The first, or Cognitive, Principle of Relevance: The human cognitive system tends toward processing the most relevant inputs available.”

“The second, or Communicative, Principle of Relevance: Every utterance conveys a presumption of its own optimal relevance.”

These principles make the claim that for human communication to be successful, the speaker must attempt to make their utterance optimally relevant to their audience, and the addressee must expect that utterance to be optimally relevant. A wide range of factors must be taken into consideration for this to succeed, such as context (what the speaker and addressee both know and do not know, for example), held beliefs, etc.

Communication can easily break down when, for example, the speaker assumes the addressee knows something which the addressee does not.

Given these principles and an understanding of relevance, an outline of the process by which utterances are understood begins to emerge, suggested by Sperber et. al (1995), referred to as the relevance-theoretic comprehension procedure:

- (i) Considering possible cognitive effects in their order of accessibility (i.e., following a path of least effort); and
- (ii) Stopping when the expected level of relevance is achieved (or appears unachievable).

2.2 Components of communication

Relevance Theory provides a framework for understanding ostensive inferential communication and acknowledges that human communication takes place on several different levels. Many of the distinctions which Relevance Theory makes are important for understanding my claims about the use of resemblance in communication. In the

following sections, I introduce and briefly discuss the relevant distinctions made by the theory.

2.2.1 Ostensively communication vs. non-ostensive communication

The first distinction which Relevance Theory makes is between ostensive and non-ostensive communication. This distinction is essentially based on the speaker's intention; ostensive communication can be defined as any communication which is intended to inform the hearer and conveys that intention to communicate (Wilson & Sperber 2012). It is to this type of communication, in which both speaker and hearer are aware of the intention to communicate, as summarized by the communicative principle of relevance, to which Relevance Theory applies. Non-ostensively communication is anything which is communicated unintentionally, such as blushing at embarrassment.

2.2.2 Linguistic communication vs. non-linguistic communication

The next level of distinction is between linguistically and non-linguistically communicated information. Linguistically communicated information is anything which can be understood based on an addressee's knowledge of a language, while non-linguistically encoded information is that which is language independent. Possible examples of non-linguistic information include tone of voice, facial expression, body language, cultural indicators, and other clues which a speaker's understanding of the language itself will not explain. While gesture and non-verbal communication such as posture, eye gaze, tone of voice, etc. are often considered non-linguistic, signed languages clearly show linguistic use of manual articulators and non-verbal communication.

The division between non-linguistic gesticulation and signed language is generally referred to as Kendon’s continuum, with gesticulation at one end and signed language at the other (McNeill 1992:37). Kendon’s continuum is reproduced in Figure 1 below (McNeill 1992):

Table 1. Kendon’s Continuum

Gesticulation	Language-like Gestures	Pantomimes	Emblems	Sign language
“idiosyncratic spontaneous movements of the hands and arms accompanying speech”	“grammatically integrated into the utterance” For example, if the phrase ‘he was executed’ was replaced by a throat-slitting gesture.	“The hands depict objects or actions, but speech is not obligatory.”	“Emblems have standards of well-formedness” and include conventional gestures such as the ‘OK sign’ or ‘the finger.’	“full-fledged linguistic systems with segmentation, compositionality, a lexicon, a syntax, distinctiveness, arbitrariness...”

Working from a Relevance Theory definition, only sign language, at the far right of Kendon’s continuum, would be considered linguistically communicated. I hypothesize that evidence of resemblance could be found along the entire continuum, but that is outside the scope of this thesis.

The distinction between linguistic and non-linguistic communication is important to this thesis because signed languages are similar to gesture in two key ways. First, because both use manual articulators, and second, because both make use of resemblance. In the section below, I discuss the next distinction made by relevance theory, the difference between linguistically encoded and non-linguistically encoded information.

2.2.3 *Linguistically encoded vs. not linguistically encoded information*

Wilson and Sperber (2012) also point out the differences between linguistically encoded and non-linguistically encoded information. Linguistically encoded information is anything that can be understood from an utterance using knowledge of the language, such as syntax rules. Non-linguistically encoded information is that which contributes to the understanding of an utterance, but not through linguistic structure. Basically, in a given utterance, an addressee can understand things from the utterance which are independent of the codes themselves but no less substantial. Wilson and Sperber give an example using *and* in which two propositions are equated, but it is understood that there is a causal relationship between them. Wilson and Sperber's example is reproduced below in Example 1 (Wilson & Sperber 2012:153):

Example 1. Non-linguistically encoded communication.

(A) Peter got angry and Mary left.

(B) Mary left and Peter got angry.

As far as linguistic encoding is concerned, these sentences mean the same thing: that both propositions happened; however, Wilson and Sperber point out that in reality, they are understood as causal, such that Mary left because Peter got angry in (A) or that Peter got angry because Mary left in (B). This understanding is not due to linguistic encoding, but instead, as Wilson and Sperber suggest, through inferential enrichment in accord with the cognitive principle of relevance. Since "Every utterance conveys a presumption of its own optimal relevance," (Wilson & Sperber 2012:64–65) the hearer can expect the

utterance to provide them with cognitive effects (new information). Thus, in the right context, the hearer can understand that Peter got angry because Mary left, since otherwise the utterance would not achieve relevance. Related to this is the distinction between explicatures and implicatures, discussed in the next section.

2.2.4 Explicatures and implicatures

Relevance Theory makes a distinction between what is communicated explicitly and implicitly. Sperber and Wilson (1986) used the term “explicature” to refer to the fully-propositional forms of an utterance, after referent assignment and disambiguation.

Inference often plays a part in enrichment, as well. The following sentence shows the difference between what is said and the explicatures: “He arrived before her” might have explicatures such as “John arrived at time x which was earlier than Sue, who arrived at time y”.

“Implicature” refers to what is implied—things communicated by an utterance in a given context but not explicitly present in the utterance itself (Sperber & Wilson 1986). Implicatures are understood through inference, and can often be thought of as the logical steps taken from the utterance to arrive at the speaker’s intended meaning (Wilson & Sperber 2012:77). To continue with the above example, if someone asked “Was John late for Sue’s party?” and was answered by the utterance “He arrived before her,” the implicature is that John was not late for Sue’s party.

Related to explicatures is the idea of ad-hoc concepts, which can be used in the creation of explicatures.

2.2.5 *Ad-hoc concepts*

The fine-tuning and manipulation of concepts on the fly, referred to in relevance theory as ad-hoc concepts, is particularly important for this thesis. Ad-hoc concepts are identified by Wilson and Sperber (2012:16–23) as the components of an utterance which are deemed relevant (by following the relevance theoretic comprehension procedure) and therefore used in the construction of the explicature. For example, in metaphor, an utterance such as “Dan is a machine” can be quite vague; however, in certain contexts, the connection between the two concepts is stronger or weaker based on the relevance of the individual characteristics of *Dan* and *machine*. In one context, the speaker could mean that Dan is efficient; while in another, the speaker could mean that Dan is emotionless, or perhaps in a third context both meanings are relevant. Relevance theory suggests that all human communication functions more or less in the same way, with relevance determining which elements of underspecified codes are to be included in the comprehension process and which are not, narrowing or broadening the use of the concept to achieve relevance. This is most relevant to this thesis in that the inferential comprehension of resemblance in communication is basically ad-hoc, meaning that whenever an ostensive act of communication resembles a target, the addressee must, by following the relevance theoretic comprehension procedure, choose which parts of the resemblance are relevant, creating an ad hoc concept. This process of choosing what is relevant is often constrained by lexical items, which Relevance Theory accounts for with the distinction between conceptual and procedural communication.

2.2.6 *Conceptual vs. procedural communication*

The distinction between conceptual and procedural communication is important for the purpose of this thesis. Traditionally, as defined by Wilson and Sperber, (1986; 1995; 2012) conceptually encoded information is that part of linguistic communication which deals with concepts (such as objects, people, emotions, or anything else which bring to mind an addressee's knowledge or experience). Conceptual information makes up the bulk of our utterances and is primarily conventionalized; the word *cat* triggers all we know about cats, and the connection between them is learned. Conversely, procedurally coded information consists of instructions for how to process and manipulate information, either from the utterance or from context. Examples of procedurally encoded information include things like pronouns, discourse connectives, conjunctions, and logical connectives.

Procedural elements can constrain and clarify both explicatures and implicatures. Constraints on explicatures limit the possible logically enriched forms of an utterance, such as pronouns in English, which procedurally instruct the addressee to replace the pronoun with a referent; the pronoun is critical to understanding the fully propositional form of an utterance, but the pronoun itself does not encode conceptual information. Addressees cannot properly understand an utterance with a pronoun unless they can pick out the intended referent for the pronoun.

Procedural constraints on higher-level explicatures can be phrases like the English *after all*, which communicates that the proposition is mutually manifest to both the speaker/signer and addressee, but does not change the basic proposition (Blass 2000). For example, in the utterance "Are you sure you should be skydiving? After all, you are very

old”, *after all* would constrain the higher level explicature to something like “We both know you are very old.”

Examples of constraints on implicatures include discourse connectives such as *so* which essentially serve to limit the possible implicatures when they might be unclear, based on context. (Blakemore 1992).

Wilson (2011:17) discusses a proposal presented in the Relevance email archives list by Dan Sperber. Sperber hypothesizes that “all lexical items encode procedures... When a conceptual content is encoded, so is an instruction to inferentially construct an ad hoc concept using the encoded conceptual content as a starting point.” While Sperber’s hypothesis is primarily focused on the distinction between conceptual and procedural encoding, the idea that communication of any kind provides a starting point for inference is key to this thesis.

Ultimately, the distinction between conceptual and procedural is important because some constructions common in signed languages have been analyzed as using procedural strategies which instruct the addressee to pick out a referent, much like spoken language pronouns. In the next section, I describe the Relevance Theory distinction between different types of representation.

2.2.7 Descriptive vs. interpretive representation, metarepresentation, and interpretive resemblance

Relevance theory generally distinguishes between two different uses of language: descriptive representation and interpretive representation (Wilson & Sperber 2012; 1986). Wilson and Sperber (2012:218) define descriptive representation as the “relation between thoughts or utterances and possible or actual states of affairs which make or would make

them true.” Essentially, descriptive representation occurs whenever the utterance is meant to be understood literally, i.e. the representation is totally (or as much as possible) equated with the intended target, be it a situation, characteristic, or other utterance. In a phrase such as “The car drove around the cone,” the word *car* is used descriptively to mean a literal car. Conversely, interpretive representation is defined as “the relation between thoughts or utterances and other thoughts and utterances that they resemble in content” (Wilson & Sperber 2012:218). This type of representation is used when speaking figuratively, in which only parts of the utterance are meant to represent the real or possible world, such as when summarizing, indirectly quoting, or using metaphor (Wilson & Sperber 2012).

Along with the ability to represent objects in the real world, humans have the ability to contemplate and describe the representations of those objects in an abstract way, essentially thinking about a thought or talking about an utterance iteratively, referred to as metarepresentation (Wilson & Sperber 2012). Aside from letting humans think about the thoughts of others (critical for making utterances optimally relevant to an addressee), it allows for the reuse of utterances in different contexts, ranging from direct quotation to loose use. Some quotation makes use of similarity in content known as interpretive resemblance. Wilson and Sperber (Wilson & Sperber 2012:244) define this as “resemblance in content: that is, sharing of implications. Two representations resemble each other (in a context) to the extent that they share logical and contextual implications”.

In addition to all of the distinctions made in this chapter, I believe that human communication also makes use of descriptive resemblance, the resemblance I have

defined as the visual or aural similarity between a stimulus or a thought and the real world target.

Signed languages make use of descriptive representation, interpretive representation, and metarepresentation. They also make use of interpretive resemblance, in which a subset of the resemblance between two targets is used to communicate. I am proposing in this thesis that signed languages also make use of another layer of descriptive representation, descriptive resemblance, a term not used in the literature (but which logically follows from Sperber and Wilson's discussion of descriptive and interpretive representation (Wilson & Sperber 2012:244)) which I define as a more literal resemblance between a target in the real or possible world and the linguistic communication itself. While the theoretical details behind this claim are primarily outside the scope of this thesis, I argue that many signed language communication strategies make use of resemblance in ways which show strong correlation between the real world and the linguistic encoding, something uncommon in spoken languages.

In the following chapters, I use Relevance Theory concepts to describe my hypothesis regarding the role of resemblance in human communication.

CHAPTER 3

RESEMBLANCE-ORIENTED COMMUNICATION

The goal in this chapter is to present my theory of resemblance-oriented communication from a Relevance Theory perspective. I describe the importance of inference in resemblance, the interaction between inference and conventionalization, and describe the function of resemblance in human communication.

3.1 Inference and resemblance

Wilson and Sperber present inference in the following way (Wilson & Sperber 2012:101–102):

“the communicator produces a piece of evidence of her meaning – the ostensive stimulus – and the addressee infers her meaning from this piece of evidence. Verbal communication is always context-sensitive and inferential.”

Essentially, Relevance Theory defines inference as the process by which addressees, given evidence through ostensive communication, make the desired connections between the item or items of evidence and arrive at the communicator’s meaning. The way that these connections are chosen is by following the relevance theoretic comprehension heuristic, “(i) considering possible cognitive effects in their order of accessibility (i.e., following a path of least effort); and (ii) stopping when the expected level of relevance is achieved (or appears unachievable)” (Wilson & Sperber 2012:7). According to Relevance

Theory, a wide range of ostensive acts can be used as evidence of the communicator's intent. Wilson and Sperber (2012:36) give the following example, which makes use of resemblance:

“Peter asks Mary if she wants to go to the cinema. Mary half-closes her eyes and mimes a yawn. This is a piece of ostensive behaviour. Peter recognises it as such and infers, non-demonstratively, that Mary is tired, that she wants to rest, and that therefore she does not want to go to the cinema.”

In this example, the addressee (Peter) must assume that Mary's act of communication is relevant to him. Wilson and Sperber (ibid) go on to suggest that Mary's yawn activated the concept “tired” in Peter's mind, providing a starting point for inference. Without inference, Peter would never be able to understand Mary's attempt at communication.

Like all acts of ostensive communication, resemblance-oriented communication is dependent on inference. Demonstrated by Mary's attempt at communication, acts of resemblance-oriented communication (stimuli) leverage visual or aural similarity between real-world targets (such as yawns) and intended thoughts (tiredness, a mental representation in Peter's mind) to provide starting points for the inferential process.

Inference is not the only process by which addressees understand an utterance. Relevance Theory proposes that the processing effort required to understand an utterance must be low enough to make it worth the addressee's effort. To that end, communicators will individually tailor utterances to achieve relevance for the addressee, taking shared context (everything the communicator and addressee knows) into account. One of the key

factors in lowering processing effort is conventionalization, which I discuss in the next section.

3.2 Convention and inference

While Relevance Theory proposes that most or all of human communication involves some use of inference, conventionalization has a role to play as well. Conventionalization is the standardization of a word, gesture, head shake, sound, or any other stimulus, by common use and unsaid or explicit agreement. Essentially, conventionalized words or signs function to provide starting points for inference. To continue with Mary’s example above, she could just have easily (or perhaps more easily) told Peter (using language) that she was tired, providing Peter with a very clear starting point from which he could infer her meaning and saving him processing effort.

To understand the role resemblance plays in human communication, it is important to consider the effect of conventionalization on processing effort. In Table 2 below, I chart the impacts of convention and inference on cognitive effects and processing effort.

Table 2. The interaction between cognitive effects, processing effort, inference, and conventionalization.

Cognitive effects	Processing effort
Inferential communication allows for vast amounts of cognitive benefits, limited only by the expectation of relevance. Addressee’s can understand a speaker’s meaning even when a great deal of inference is required.	Conventionalization serves to reduce processing effort. Conventions act as highly accessible anchors for inference; essentially serving as starting points for the relevance theory comprehension heuristic.

In this table, the conventionalization of codes allows an addressee to activate concepts that are similar to the communicator's intended thought. For example, if Mary had used the word *tired* instead of miming a yawn, Peter would have been able to quickly access his experience of tiredness, and by following the Relevance Theory comprehension procedure, pick out the aspects of tiredness which are optimally relevant, and follow a process of inference to arrive at Mary's intended meaning.

3.3 The role of resemblance in human communication

The primary claim of this thesis is that resemblance, like convention, functions as a bridge between communicators and acts as evidence of a speaker or signers intended thought. Visual or aural stimuli which look like or sound like the objects or concepts they are meant to communicate act as highly accessible starting points from which inference can proceed; for example, Peter sees Mary's yawn, which resembles a real yawn and fits with Peter's knowledge about yawns; the concept of tiredness will now be highly accessible to him (since yawns often indicate someone is tired) and require little processing effort. In this model, the range of human perception and experience acts as common ground, providing a shared context between communicator and addressee. This shared context can include knowledge about the world and how it works, in areas such as physics, spatial relationships, size, shape, human function and behavior, and more. Pantomime is an ideal example of this; when a person is travelling abroad in a country where he or she does not know the native language, a common way to ask for a drink would be to point the water source and mimic the act of taking a drink. The mechanism which allows this to be understood is resemblance.

In the following two chapters, I introduce examples of resemblance in both spoken and signed languages.

CHAPTER 4 RESEMBLANCE IN SPOKEN LANGUAGE

Examples of resemblance-oriented communication occur frequently in spoken languages. Ideophones, constructions which aurally imitate the real world through onomatopoeia, vowel lengthening, reduplication, etc. are all possible examples of resemblance in which the similarity between the sign and the signified is based on sound (Lydall et al. 2000). Simple examples of resemblance in ideophones in English include sound words like a dog's *bark* or duck's *quack* in which the words resemble the sound (albeit rather abstractly), and vowel lengthening in which great distance or time is conveyed by the modification of words such as *long*, as in "it was a loooong trip." Interjections such as *ouch* are also possible examples of resemblance. The International Symposium on Ideophones concluded "that ideophones and similar words have a special dramaturgic function that differs from all other word classes: Ideophones simulate an event, an emotion, a perception through language" (Voeltz & Killian-Hatz 2001:3).

In describing the arbitrary nature of language, Saussure dismisses onomatopoeia and interjections with only cursory attention. He makes the claim that in many cases the resemblance between sign and signified is merely coincidental. Additionally, he makes the following argument, claiming that resemblance eventually fades over time (Saussure 1959:69):

“As for authentic onomatopoeic words (e.g. *glug-glug*, *tick-tock*, etc.) not only are they limited in number, but also they are chosen somewhat arbitrarily, for they are only approximate and more or less conventional imitations of certain sounds (c. English *bow-wow* and French *ouaoua*). In addition, once these words have been subjected to the same evolution—phonetic, morphological, etc.—that other words undergo (cf. *pigeon*, ultimately from the Vulgar Latin *pipio*, derived in turn from an onomatopoeic formation: obvious proof that they lose something of their original character in order to assume that of the linguistic sign in general, which is unmotivated.”

Saussure is working from the traditional code model of communication, which does not take inference into account; under the inferential model, any ostensive stimulus may be used as evidence of the speaker’s intent, including the resemblance of onomatopoeic words. Regardless of the small role resemblance may play in lexicons of spoken languages, I suggest that resemblance is present and was certainly a motivating factor in the creation of some words. Saussure also argues that onomatopoeic words become more arbitrary as they are conventionalized, which from a Relevance Theory perspective makes sense, since the role of convention in communication is to reduce processing effort. The value placed on low processing effort does not preclude the use of resemblance, but in some situations it may override it.

Not all examples of resemblance in spoken languages are linguistic, however; pointing is a strong example of the use of resemblance in communication. Spoken languages often use pointing to instruct an addressee to pick out a target. In English, procedural words such as *this* and *that* are used in conjunction with pointing; in these situations, pointing acts as a visual cue in which the intended thought is conflated with or strongly similar to the object pointed to. Essentially, the speaker is indicating a target, and expecting the addressee to use that target in a particular thought. In this case, the pointing gesture itself does not resemble either the object or the thought, but it does procedurally instruct the addressee that there is a strong resemblance (in many cases direct, one-to-one resemblance) between the target and the intended thought. Because of this, the target is highly accessible to the addressee and requires practically no disambiguation, providing a very strong starting point for inference. This is especially useful in cases where referent disambiguation is important, say in a room with lots of chairs; pointing makes disambiguation easier, reducing both production time for the speaker and processing effort for the addressee. Consider the following two examples:

1. The tall, brown chair in the corner is broken.

Given a situation in which there are several chairs in the corner, a number of which are either tall or brown, the addressee must access encyclopedic entries for chairs, corners, and the color brown. The correct chair is identified as the target. Only then can the rest of the proposition be understood, that the target chair is broken.

2. That chair is broken. (accompanied by pointing)

Given the same situation, the speaker's pointing clearly instructs the addressee to pick out the correct target. The proposition can then be completed using only the optimally relevant details of the chair.

Essentially, when using pointing, the speaker is presenting the addressee with a highly unambiguous target and a wealth of possible paths for inference. Relevance theory explains how this is possible: by choosing the path of least effort and stopping when optimal relevance is achieved.

Another example of resemblance-oriented communication is the use of gesture. In the following example sentence, a gesture in combination with a spoken language utterance makes use of resemblance.

Example 2. Spoken language and gesture.

John is this tall.

This example, without an accompanying gesture or clear target from context, would generally be considered meaningless or at least unclear; however, when the speaker holds their hand at about John's height, it becomes apparent to the addressee that they are expected to equate the height of the speaker's hand with the height of John. The demonstrative *this* is conventional and procedural; it contains no information about height, just instructions to pick out a target in the same way pointing does. The adjective *tall* is entirely dependent on the context; *tall* can be used to describe a tall skyscraper or a tall chair. The process which allows the speaker to understand the utterance in this example is inference; *this* instructs the addressee to pick out a target (the speaker's hand) and *tall* instructs the addressee which quality of John to compare (using resemblance) to

that target. Essentially, the addressee understands John's height through analogy, inferring the intended meaning by comparing their mental representation of John with the resemblance of John's height demonstrated by the gesture. The hand gesture resembles one characteristic of John, and the addressee understands the speaker's meaning by way of analogy.

Gestures in spoken language often make use of visual cues which aid in inferential processing, even when highly conventionalized alternatives are available. Gestures in spoken language seem to be especially common when referring to size, describing actions, reporting speech and emotions, and other situations where visual examples are more accessible for inferential enrichment than their conventionalized counterparts. The following sentences are possible alternatives to "John is this tall."

1. John is six feet, three inches tall.

In many situations, John's exact height is probably not relevant; according to relevance theory, the speaker should only include evidence which will be optimally relevant to the addressee; additional detail can easily lead to excessive processing effort, non-optimal relevance, and miscommunication. The purpose of this statement is to state a detailed fact; possible situations where this utterance might be appropriate include a medical chart or taking measurements for a tailor.

2. John is taller than Melissa.

This utterance might be appropriate when describing John, but is only useful in that it compares John with something or someone else. Functionally, it is performing the same purpose as "John is this tall" combined with a gesture, but instead of using gesture to resemble John's height, the speaker is using Melissa's height as the target. This requires

Melissa to be present, however, or requires the addressee to be familiar with her. Gesture, though, can be used without the presence of another similar target (such as another person to compare), and can easily be approximated so that only the level of detail relevant is given.

3. John is tall.

In this utterance, the only relevant detail is that John is taller than some average left to be inferred by the addressee. Optimal relevance would be achieved only when the addressee picks out an average which is relevant to the context. This is why the English word *tall* can be used to describe a chair or a skyscraper. In many cases, gesture may be inappropriate here because it would be providing more detail than is optimally relevant. Each of these phrases is used in different situations and present slightly different explicatures. In the first, John's height is exactly similar to six feet, three inches. In the second, John's height is similar to Melissa's, but is procedurally constrained by *taller than* to indicate how his height differs from hers. In the third, John's height is compared to an average, determined by relevance. Only in the case of "John is this tall" is the gesture used; this utterance would be chosen when an approximation of John's height is optimally relevant. Essentially, "John is this tall" combined with a gesture is an example of a situation in which resemblance is more relevant than a series of conventional alternatives, because it provides cognitive benefits with optimal processing effort.

Another example of resemblance in spoken language is the use of quotation, which can range from direct quotation (essentially literal imitation of another utterance), to loose quotation (the paraphrasing of another utterance), to echoic use (which conveys attitudes by modifying quotations) (Wilson & Sperber 2012:230–258). Resemblance

between the quotation and the thought intended varies depending on the literalness of the quotation, but without the presence of resemblance, quotation would not be possible.

Ultimately, the ability to see the resemblance between any two assumptions, propositions, objects, etc. is dependent on the human ability of metarepresentation. Metarepresentation allows humans to discuss utterances or thoughts, or the thoughts of others.

Situations regularly occur in spoken languages where optimal relevance is achieved more economically using resemblance-oriented communication than arbitrary, conventional words, but I do not claim that gesture is always more economical. In many cases, resemblance-oriented communication requires greater processing effort because of its lack of conventionalization; however, to dismiss the presence and frequent use of resemblance in onomatopoeic words, interjections, pointing, gesture, and quotation ignores a common strategy used in human communication.

In the following chapter, I discuss the presence of resemblance in signed languages.

CHAPTER 5

RESEMBLANCE IN SIGNED LANGUAGES

As I have mentioned in previous chapters, both spoken and signed languages make use of resemblance in communication. Signed languages, because of their visual modality, make use of this principle in a range of ways unavailable to spoken languages. In this chapter, my goal is to describe some important strategies of signed languages which make this possible, including the use of space, continuous encoding, indexing, and directionality. I also examine supporting evidence of resemblance in signed languages, including the high degree of lexical similarity between unrelated signed languages, iconicity, the rate of signing vs. speaking, and deaf culture and experience.

5.1 General principles of resemblance evident in signed languages

In signed languages, there are several general communication strategies which make use of resemblance. Since each of these strategies is used in several constructions, I deal with them in general here, and give examples of specific uses in later sections.

5.1.1 Use of space

Sign languages make use of space in a number of ways—some of which are entirely arbitrary, but many which are not. Because the articulators are operating in three-dimensional space, just as many of the objects language describes are, there is an inherent opportunity for imitation of objects in that environment. This is functionally similar to onomatopoeia in spoken languages. On the same principle, sign languages form lexical

items, constructions, referring expressions, and more in the same space as the objects they encode. Essentially, many structures in signed languages are imitative of location or movement in the real world. I propose that signed languages use the resemblance between the signs (linguistic constructions) and the signified (what the sign stands for) to procedurally instruct addressees to manipulate concepts as they are presented in the language. In essence, signers are showing addressees how to manipulate concepts using a linguistically structured system based on resemblance to the real world. In this system, concepts can be introduced lexically, positioned in space procedurally, and understood through context-enriched inference based on resemblance.

5.1.2 Continuous encoding

Signed languages show evidence of continuous encoding in several areas. I use the term “continuous encoding” to refer to a high or non-finite number of meaningful distinctions made by a linguistic system. This is most evident when describing size, shape, distance, or other spatial situations. For example, when describing the size of an object, a signer can hold their hands an appropriate distance apart, showing by the position of their hands how big the object is. There is no linguistically-mandated set of positions at which a signer can place their hands; a sign can be adjusted to match the size of any object, limited only by the physical constraints of the human body, and even these limits can be overcome by the use of scale. This non-finite number of sizes, instead of being arbitrary lexical items, are instead mimetic examples of resemblance, in which positioning and distance between the hands resembles the size, shape, or other characteristics of the object being described. Signs can also be modified in their movement, location, or direction to physically recreate, in varying scales, situations in the

real world or imaginary space. Because the real world is infinitely variable, the changes in the language are equally variable; for instance, I can produce the lexical sign for house and simulate the position of several real-world houses in the signing space. The location in which I place each house is not lexically determined but correlates with the relative position of the houses in the real world (or in the hypothetical proposition I wish to communicate). Essentially, the location in signing space where I place each house is determined by resemblance. If these locations were lexical, this would result in a non-finite number of constructions which must be added to the lexicon, presenting a difficulty for the traditional understanding of languages as arbitrary. Instead, I propose that this phenomenon is actually an example of the structured use of inferential communication, constrained by several different linguistic elements but ultimately inseparable from resemblance. Continuous constructions of this kind occur in a number of signed language constructions, and I deal with individual examples in later sections. In the next section, I discuss use of resemblance in indexing.

5.1.3 Concrete and abstract indexing

Indexing, or the grammatical use of pointing, is common in signed languages and is a key example of a resemblance-oriented communication strategy. For the purposes of this thesis, I divide indexing into two categories: concrete and abstract. In both cases, indexing is primarily used procedurally to instruct the addressee to pick out a target which the intended thought resembles.

Concrete indexing occurs when a signer points to a person, object, location, or other target in the immediate physical context. This occurs often in spoken language as well, such as when giving directions or disambiguating targets. In many cases, indexing

accompanies a noun phrase or description of the object, which helps to limit the possible targets of the index.

I propose that concrete indexing is functionally the same in spoken languages and sign languages: it is used primarily to instruct the addressee to pick out a target. Below, I give an example of concrete indexing functioning procedurally:

1. The signer and addressee share a physical context; for this example, a room full of cats.
2. The signer produces the lexical sign for CAT.
3. The signer points to a specific cat, then signs a proposition about the cat (it looks hungry, it is the biggest, it is the signer's favorite, etc.).
4. The addressee processes the conceptual encoding for *cat*.
5. The index procedurally instructs the addressee to pick out the target based on the real world and use it in the proposition.
6. The addressee's thought is now a mental representation of the real world cat and should be similar to the signer's mental representation. This provides a controlled context. Furthermore, the addressee can now choose whatever characteristics of the cat are optimally relevant, given the rest of the proposition.

The conceptually encoded sign CAT and the procedurally encoded, visually motivated index are used in combination to create an utterance which is highly accessible from context, unambiguous, and economical. When compared with an example from either spoken or signed language which does not include indexing, the economic advantages of concrete indexing is clear; much less detail is needed when pointing than when relying on description alone. While languages have a multitude of ways to perform all of the above

target identification without indexing, they rarely do so as economically as in the above example.

Abstract indexing occurs when a signer points to indicate a target which is not physically present. This commonly occurs when indicating a location or target in three-dimensional signing space and when pointing to a referring location in the signing space. I deal with this more thoroughly in later sections, but essentially, abstract indexing functions like concrete indexing except that it encodes procedural instructions to pick out a relevant target from mental or signing space context, instead of the physically present, real-world context.

5.1.4 Directionality

Directionality is also used in several areas of signed language structure, from pronouns to discourse marking to what has been analyzed as verb agreement. Directionality can be seen as the mapping of signed constructions onto both real world directions as well as signing space constructions, in which a signer recreates a real world situation and indicates direction within that representation. Because directionality is mapped onto the real world, it can be both continuous and non-finite. I propose that directional constructions procedurally instruct the addressee to pick out directions, and often subjects and objects, in the real world or signing space.

In the following section, I introduce supporting evidence of the use of resemblance in signed languages.

5.2 Supporting evidence of resemblance in signed languages

In addition to the general strategies used above, there is substantial evidence that resemblance plays a large role in signed languages. In the following sections, I examine supporting evidence of resemblance including the high degree of lexical similarity between unrelated signed languages, the presence of iconicity, the rate of signing vs. speaking, and deaf culture and experience.

5.2.1 *Lexical similarity*

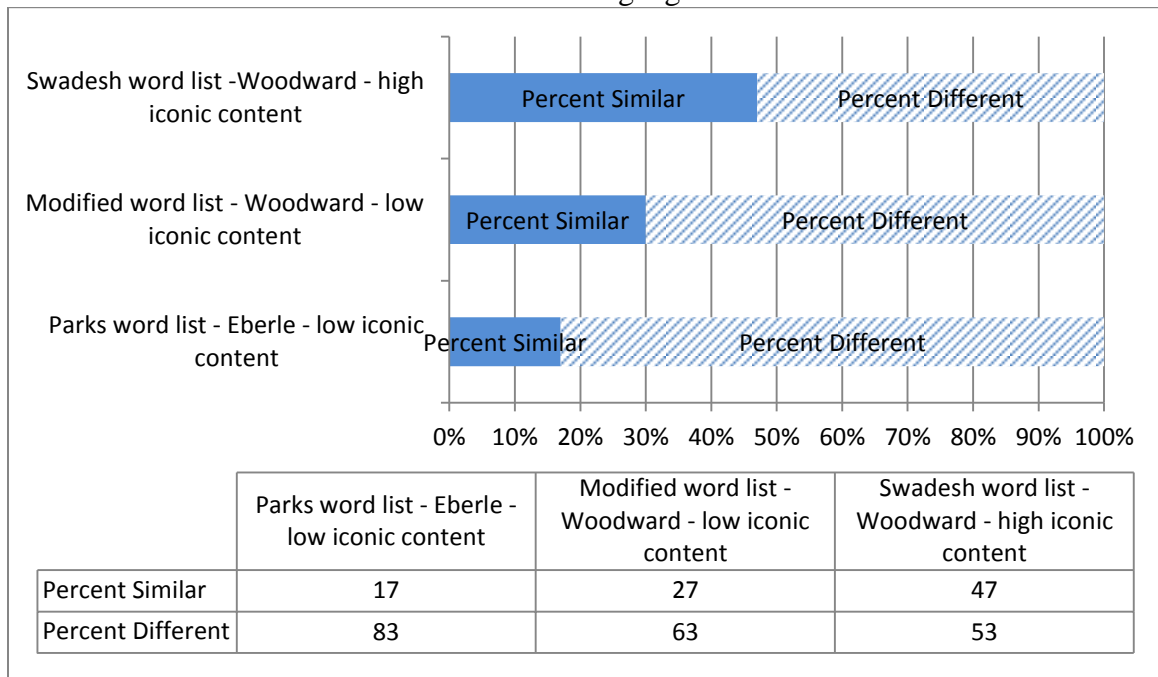
A major difference between signed and spoken languages is the degree of lexical similarity between unrelated languages. Unrelated signed languages tend to be more similar than unrelated spoken languages. While less data on lexical similarity is available for signed languages than for spoken languages, some data has been made available through lexicostatistical analysis.

Lexicostatistics is a commonly used linguistic tool for evaluating unwritten or under-documented languages, such as is regularly the case with sign languages (Woodward 2011). Woodward, in his 2011 article, outlines the history of lexicostatistics as applied to sign languages. Lexicostatistics has been traditionally used as a tool for historical linguistics, both to trace the ancestry of a given language and to identify language families. Core vocabulary from each language is collected and then compared, using a cognate identification method in which a word in one language is compared to a word in another language. If any differences in the words appear, the linguist tries to explain those differences using phonological rules such as assimilation, deletion, etc. and if they are successful, that word pair is considered a cognate (Woodward 2011). Using this method with data collected from Costa Rica, Woodward conducted two different studies:

one using the traditional Swadesh (1951) wordlist, and one using a modified wordlist to reduce the number of iconic signs. When using the traditional Swadesh word list, Woodward found that the unrelated sign languages scored between 36% and 47% lexical similarity. He attributed the extremely high scores to the word list itself, pointing out that a number of items were signed by pointing to the object (a body part, for example) or some other visually rich method, claiming that this created false cognates, inflating the languages' lexical similarity scores. Using a modified word list to reduce the number of iconic signs, he found that unrelated sign languages showed much lower lexical similarity, varying from 7% to 27%.

I was able to reproduce Woodward's results using an alternative to counting cognates, developed by Parks (2011), using a slightly different word list. Parks' method consists of counting each of four parameters for every sign in the word list: initial and final handshape, and initial and final location, then averaging those scores to produce lexical similarity scores for each wordlist pair (Parks 2011). Using word lists from signed languages of Ecuador, Romania, Italy, and Portugal, I was able to produce baseline lexical similarity scores for unrelated sign languages at between 10% and 17% lexical similarity, corroborating Woodward's numbers with samples from a much broader geographical range. See the Table 3. Lexical similarity variance using different word lists – most lexically similar unrelated languages. below for a summary of these lexicostatistical findings.

Table 3. Lexical similarity variance using different word lists – most lexically similar unrelated languages.



In the above chart, the solid bars indicate the highest percentage of lexical similarity found between unrelated languages using each wordlist. The lexicostatistical analysis using wordlists with fewer easily iconized items results in lower lexical similarity, suggesting that iconicity plays a major role in sign language similarity.

Woodward claimed that using the traditional wordlist made the lexicostatistical data from that wordlist inappropriate for historical linguistics, but it does help to explain an important factor in cross-linguistic sign language communication: that large swaths of sign language lexicons make use of indexing, body parts, mime, and other forms of iconicity to form their vocabulary, increasing the amount of lexical similarity even between unrelated languages.

High rates of lexical similarity among sign languages may be dismissed as instances of gesture and not individual words, as has been the common perception of sign

languages for much of history; however, the work of Stokoe (1960) and many other linguists have soundly put this view to rest. Researchers have gone to great lengths to distinguish sign language from gesture by enumerating the numerous structural and grammatical features they share with spoken languages.

I suggest that the high degrees of lexical similarity between unrelated signed languages is due to the presence of resemblance in the lexicons of those signed languages, a phenomenon referred to in the literature on signed languages as iconicity.

Parkhurst and Parkhurst (2003), in a lexicostatistics study of signed languages in Europe, found that four unrelated signed languages from Spain, Northern Ireland, Finland, and Bulgaria all had identical signs for the concept “book”. While Parkhurst and Parkhurst (2003) suggest the possibility that these signs are all borrowed from the same language or all four languages are descended from a common ancestor, I argue that it is far more likely that the motivation behind all of these signs is resemblance, and that the common tie between them is human perception. Additionally, Parkhurst and Parkhurst’s findings stand as evidence against Saussure’s claim that onomatopoeic words, which are functionally similar to iconic signs in signed languages, “are chosen somewhat arbitrarily, for they are only approximate and more or less conventional imitations of certain sounds” (Saussure 1959:69). It seems unlikely that four unrelated languages (and potentially many more) with no known historical ties “somewhat arbitrarily” chose the same sign to represent the concept “book.”

Lexicostatistical research has shown that sign language lexicons overlap in areas such as body parts, pronouns, or indexing; these, too, I argue are resemblance-oriented. Since human cognition tends to be geared toward a maximization of relevance, it follows that

signed languages would take advantage of iconicity. Pointing to one's body to indicate a body part is an excellent example of an efficient communication strategy because the processing effort on the hearer's part is low. All of the arbitrariness of the English word for the concept "arm" is eliminated from the communication process, leaving only the gestural evidence for the concept "arm," which can be easily accessed even by users of other sign languages (or even, perhaps, non-signers). I discuss iconicity in depth in the following section.

5.2.2 Iconicity

Iconicity is a common term in sign language linguistics which refers to how a sign in some way visually demonstrates the concept it represents. For instance, as Mandel (1977) points out, the American Sign Language (ASL) sign for the concept "house" visually duplicates the outline of a prototypical American house, with a pointed roof and straight sides. As with lexical similarity, some might argue that this resembles gesture more closely than a lexical word; however, to make such an argument, one must draw a line where gesture stops and signs begin. As Mandel points out, iconicity forms a continuum between the arbitrary lexical sign and the iconic one. He gives the example of the ASL sign BLACK, in which an index finger is drawn across the forehead, as one which bears no significant evidence of iconicity. His next example is HOUSE, mentioned above, as tracing an outline of the target. Moving along the continuum towards the iconic, he describes the sign for FOLLOW, in which one hand literally follows the other motion for motion. Finally, he describes signs which directly mimic actions closely associated with the target, such as BASEBALL, in which the signer mimes the hefting of a baseball bat over their shoulder, culminating in what he claims is a purely iconic

example in which a signer describes the action of looking down at one's hand by doing just that.

Despite the clear presence of iconicity in the lexicons of signed languages, linguists have been able to show that over time, signs which at one point were iconic and gestural become standardized over time, conforming to phonological and grammatical rules of the language (Frishberg 1979). Though these rules may often vary slightly from language to language, many are the same; for instance, it is uncommon to have signs in which both hands are moving and the dominant and non-dominant hands are performing motions which are not either mirrored or opposite of each other. Over time, even the most iconic gestures can conform to the phonological rules of a language, such as conventionalized handshapes. Occasionally, this can result in the sign losing some or all of its iconicity, but there are many constructions which remain iconic yet conform fully to the language's rules. According to Relevance Theory, this is to be expected; human communication seeks an optimal balance between cognitive effects and processing effort. Since conventionalization reduces processing effort, it should come as no surprise that gestural and pantomimic constructions will conform to language rules over time. I suggest that the degree to which they retain their iconicity and resemblance is a function of cost/benefit ratio between the benefits of resemblance and the cost in processing effort.

While the exact details of how iconic utterances are interpreted is beyond the scope of this thesis, I do have a hypothesis: that the visual similarity between the utterance and the intended thought activates general concepts in the mind of the addressee, much the same as with a lexical item. Following a process of enrichment and the relevance theoretic comprehension procedure, addressees can arrive at cognitive benefits.

Additionally, the presence of visually motivated movements and handshapes constrains the possible interpretations produced by this process, limiting the potential interpretations while providing additional clues about size, manner, speed, etc.

The impact of resemblance is difficult to measure, primarily because of the often intangible nature of processing effort. Because humans are capable of processing highly complex information quickly, the difference between an utterance with high processing effort and one with low processing effort is hard to quantify. Ultimately, the visual modality offers more ways to express resemblance than the aural modality. Because of this, the presence of resemblance is magnified in signed languages, which accounts for the frequent use of iconicity. Another difference between spoken and signed language is the rate of production, which I discuss in the following section.

5.2.3 *Rates of signing and speaking*

A key difference between spoken and signed languages is the rate of production. Klima and Bellugi (1979) conducted a study comparing the production rates of spoken English with ASL. Their data showed a drastic difference in rates of articulation between English and American Sign Language; they concluded that the average number of signs produced per second was approximately half the average number of words produced per second, as shown in Table 4. Mean words per second (spoken English) vs. mean signs per second (ASL) Reproduced from (Klima & Bellugi 1979) below.

Table 4. Mean words per second (spoken English) vs. mean signs per second (ASL)
 Reproduced from (Klima & Bellugi 1979)

	Mean words per second	Mean signs per second
Subject A	4.0	2.3
Subject B	4.9	2.3
Subject C	5.2	2.5

Given the mode of articulation, the drastic difference in signing speed might not seem to be surprising or significant. Sign language articulators themselves are larger and less nimble than spoken language articulators, and signs require much larger motions of the articulators than spoken languages (Klima & Bellugi 1979). Despite this difference in articulation rate, Klima and Bellugi found that the rate at which complete propositions were produced was roughly one-to-one: in short, signers were communicating the same story at half the rate but with twice the information content. Klima and Bellugi (1979) went on to propose their own theories for the difference in rate of articulation, listing the following strategies used by signed languages:

- The structured use of space
- The superimposed modulations of the movement of signs
- The simultaneous use of facial expressions for grammatical purposes.

I suggest that the first and second strategies, and in certain situations the third, make use of resemblance, and are present in a variety of signed language communication strategies discussed in later sections. In the next section, I discuss another factor which contributes to the use of resemblance: deaf experience.

5.2.4 Deaf culture and experience

Another factor which may impact the use of resemblance is deaf experience. Deaf cultures around the world have many characteristics in common, often including means of getting attention, directness of speech, high valuation of shared information, challenges communicating with hearing communities, and limited or no access to the aural modality. All of these characteristics create cultural similarities even across large geographical distances, foster an attitude of global community among sign language users, and provide a sense of shared cultural context amongst the deaf community. Additionally, levels of language skill among deaf communities vary greatly due to factors such as age of language acquisition, age of hearing loss, pressure to use a spoken language, and more, all of which make for a highly diverse spectrum of language ability. This results in signers having more experience communicating with addressees of varying fluency. Any and all of these characteristics could contribute to the additional use of resemblance in communication, since so many factors can impact what is optimally relevant for an addressee. In the next chapter, I examine in brief individual uses of resemblance in signed languages.

CHAPTER 6

EXAMPLES OF RESEMBLANCE IN SIGNED LANGUAGES

In this chapter I provide concrete examples of how signed languages make use of resemblance, including pronouns, role shift, classifier constructions, locatives, and facial expression.

6.1 Resemblance in Pronouns

Relevance theory treats pronouns as procedural indicators which instruct the addressee to pick out a referent. Essentially, pronouns in signed languages function the same way. One major difference between signed and spoken languages is the use of locations in the signing space, commonly termed loci, to refer to objects or people. In the vast majority of sign languages described in the literature, pronoun function “can be described as indexical pointing to locations that represent referents” (Lillo-Martin 2002:241–262). These locations can be used to refer to first, second, or third person, and can include number as well. There have been two major difficulties in analyzing these constructions, however: first, that referent loci are not limited to a discrete set of locations (Lillo-Martin 2002). This poses difficulties best described by Liddell (1995:24–25):

“There appears to be an unlimited number of possible locations for referents in Real Space and, correspondingly, an unlimited number of possible locations toward which the hand may be directed. Attempting a morphemic solution to the problem of directing signs toward any of an unlimited number of possible locations in Real Space would require an unlimited number of location and direction morphemes or it would require postulating a single morpheme whose form was indeterminate.”

The second obstacle to a clear-cut analysis of pronouns is, as Lillo-Martin (2002:245) points out, that “pointing to the location of a referent picks out that referent, not a class of potential referents (such as third person males).” Pronouns in signed languages perform all of the same functions as spoken languages, but the manner in which they instruct addressees to pick out referents relies less on class words, like *he*, which indicates singular third person male, and more on pointing and resemblance to assign referents to pronominal constructions. In the following sections, I compare the differences between spoken and signed language pronouns and explain them from a relevance theory perspective.

6.1.1 First and second person and physically present identification of referents

Both spoken and signed languages have ways to refer to the first- and second- person in a conversation. Spoken languages use arbitrary words (or other systems, such as verb agreement) to instruct the addressee to pick out the speaker or addressee as referent. In

these cases, the procedural instructions are highly explicit in instructing the hearer to pick out the referent for the speaker or the addressee.

Sign languages, on the other hand, use indexing (pointing) in place of arbitrary words. Indexing functions as a highly unambiguous method of distinguishing possible referents, especially when it is not clear who the second person is (such as when speaking to someone in a group). Signed language pronouns are essentially pointing and provide instructions roughly equivalent to “pick out the target of the index as referent.” Much of the time, pointing is used in spoken language the same way, when a speaker wants to address a member of a group or crowd whose name the speaker does not know.

Regarding Liddell’s problem stated above, that there is an unlimited number of possible locations for referents that cannot be accounted for in the lexicon, I suggest that pointing is a valid example of ostensive information which acts as evidence of the communicator’s intent. The difficulty which underlies pointing being accounted for in a lexicon suggests that it functions on the fly, leveraging resemblance in combination with the Relevance Theory comprehension procedure.

6.1.2 Third person identification of referents

Third person pronouns in both signed and spoken language provide procedural instructions to pick out the referent, even when the target is physically absent. Spoken languages typically limit the possible referents of a pronoun using context (from earlier in the discourse or otherwise) by means of the relevance theoretic comprehension procedure (if a particular referent does not seem relevant, it probably is not the one the speaker means). See Example 3. Pronouns in spoken language.

Example 3. Pronouns in spoken language.

John went to the store. He bought milk.

In this example, John is introduced in the first sentence, making him an easily accessible referent in the second sentence. The possibilities are further narrowed through the pronoun *he*, which includes classification for third person, singular and male. While sign languages use context as well, the pronoun contains no narrowing of possible referents by category except number and person; instead, unambiguous referent identification is performed through association with a location (by means of pointing at the time of introduction). The location itself is an ad-hoc construction which is associated with the referent on the fly. Here I give an example of a typical utterance using a pronoun.

1. The signer produces a conceptually encoded sign, which could be a name or a noun, or a description, while looking in the general direction of where the locus will be placed.
2. The signer points to the locus. This establishes where that person or entity will be referred to for the rest of the utterance (or longer, possibly the entire discourse). From an RT perspective, this can be considered a set of procedurally encoded instructions to logically associate a character with that locus.
3. The signer can then add additional characters in the same manner.
4. For the rest of the exchange, the signer can refer to any character previously set up simply by pointing to the associated locus.

Example 4. Pronoun reference through loci. Modified from Sandler & Lillo-Martin (2006:373)

MARY-INDEX(A). JOHN-INDEX(B). INDEX(A)(Mary)-LOVE-INDEX(B)(John).

Mary loves John.

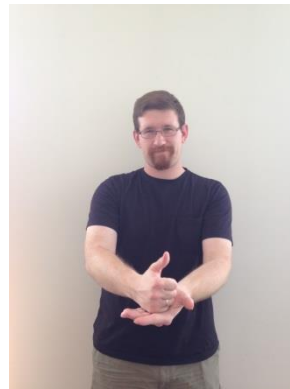
In this example, the signer signs Mary's name and points to a location, associating that location with Mary. She then signs John's name and points to another location, associating it with John. Finally, the signer points to the location associated with Mary, signs the lexical sign for love, and points to the location associated with John. Mary and John are associated with loci upon introduction. The locus itself then refers unambiguously to the character later in the discourse; the signer points to the locus when they want to refer to the associated referent. For the addressee, the loci functions as a procedural indicator to pick out the associated person or location. The loci can remain throughout the discourse, so that the signer can refer to either John or Mary at any time. While both the spoken and signed examples above are procedural, signed languages leave less room for variance because the ad hoc locus association is more constraining, and therefore requires less processing effort.

In addition to the use of resemblance in pointing, I propose that the use of loci which are positioned relative to real world locations is evidence of resemblance. It is common for loci to be situated relative to where they were or are located in the real world, either from the speaker's perspective or some other perspective. Using resemblance in this way is information rich and provides more guidance for inference. In the next section, I discuss the use of directionality of signs which interact with loci in the signing space.

6.1.3 Directionality, pronominals, and verb agreement

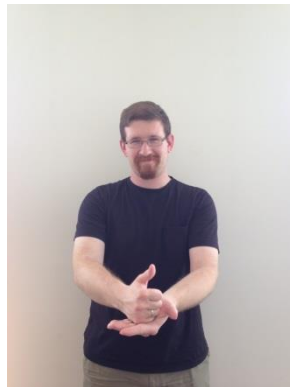
At times, the location and direction in which a sign moves is critical to the meaning of the sign. See Example 5. Directionality in HELP below, communicated by a single sign in ASL:

Example 5. Directionality in HELP



I-HELP-YOU

I am helping you.



YOU-HELP-ME

You are helping me.

These phrases are signed identically except the initial and final location and direction of the movements are reversed. In the first example, the sign begins close to the signer's

chest and moves toward the person being helped; in the second, the sign begins away from the chest, toward the second person, and moves back towards the signer's chest. The direction of the movement shows the agent (the helper) and the object (the person being helped) (Sandler & Lillo-Martin 2006). The movement can also be modified to indicate first and third person, or two third persons. Directionality has often been analyzed as verb agreement, because direction of the movement of the verb, such as in HELP, changes to match the subject and object. The primary use of resemblance occurs in directionality; the movement of subject to object mimics the direction of the action (actor to patient, for example). Like pronouns in English, the construction communicates who is helping and who is being helped; however, the directionality and movement of the ASL sign HELP shows an extreme range of possible variation: standing in a large group of people, the signer can produce HELP relative to each other person in the group, with a non-finite number of combinations. Moreover, it can be used in the same manner between second and third person or between two third parties. I propose that this grammatical use of signing space and directionality is an example of linguistically encoded resemblance in which the movement directions are not arbitrary. I outline a possible path of the communication process for these constructions below:

1. The signer chooses the conceptually encoded verb, HELP. This verb has an encyclopedic entry.
2. The signer chooses the start and end points of the sign, based on resemblance to the real world or hypothetical locations of subject and object.
3. The addressee recognizes the conceptually encoded verb as HELP.

4. The addressee recognizes the context, specifically, the relative positions of the signer and addressee or associated locations.
5. The addressee recognizes the directionality of the sign as imposing constraints on the explicatures; namely, who is helping and who is being helped.

While directionality can perform a similar function as verb agreement, I suggest that when the interaction among directionality and loci, the non-finite number of possible targets, and the resemblance of motion present in the demonstration of subject and object are taken into consideration, the use of resemblance as evidence of the speaker's meaning is more evident in signed languages than in spoken languages. In the next section, I examine the use of resemblance in role shift.

6.1.4 Resemblance in role shift

Role shift is a grammatical element present in several different sign languages which is used in discourse to show who is speaking or acting at a given time, or to cite reported speech (Winston 1999). Diane Lillo-Martin (1995) suggests role shift functions as a point of view predicate, performing the same function as the English word *like*, as in the sentence "Mom is like I'm busy!". Relevance Theory would analyze this as a procedural marker, encouraging the creation of higher-level explicatures which signal the quotation of an utterance ("John said 'go to the store'" as opposed to "Go to the store"). When using role shift, signers can dynamically change roles, shown by a rotating of the torso and shoulders, giving the appearance of alternately taking on both parts of a two-way conversation. When role shifting, signers imitate characteristics of each character, including facial expression, eye gaze, and head tilt (a short character looks up when

talking to a taller character). All of these strategies are essentially resemblance-oriented, but constrained by conventionalization. Moreover, role shift is an example of the use of metarepresentation (the representation of a representation, in this case the quoting of another utterance), in that signers are quoting, through the use of resemblance between their signing and the original or possible utterance of someone else. This resemblance can then be understood literally, figuratively, or otherwise, as is relevant.

I propose that role shift is an example of the grammatical use of signing space which makes use of resemblance. Signers take on the roles in the narrative, grammatically indicating through shoulder movement and facing that the construction or actions should be attributed to some other target character or person, even if the target is the signer at another time or place. When role shifting is performed, the character being referred to must either be designated in advance or determined by context; role shifting by itself has no lexical value. Additionally, from a discourse perspective, role shift is a highly persistent means of referring to characters, and it is not uncommon for the characters to be mentioned only once in a story, then referred to by role shift for the rest of the narrative. I outline an example of process underlying role shift below:

1. When the first character initially appears in the narrative, the signer introduces the character by name or description: a conceptually encoded entity, usually a person, but not always.
2. When the second character first takes action or signs in the narrative, the signer introduces the character by name or description and assumes the torso and shoulder orientation which will represent that character for the rest of the narrative. The shoulder position and facing act as spatial placeholders for the

position from which that character will speak (and the location they will be addressed at) for the rest of the narrative. This is procedurally encoded to instruct the addressee to reserve that position and facing for utterances from and to that character.

3. The addressee now has a mental map of the characters in the story. Each time the signer assumes the position and facing associated with a specific character, the addressee can infer that the signer's words and actions performed there should be attributed to that character.
4. The resemblance between the signer's manner, facial expression, eye gaze, etc. allows for easily accessible anchors for inference; the addressee, given the target by introduction, can easily associate the signer's actions with the target.

The use of resemblance in role shift occurs in that the signer's utterance, whether literal or figurative, visually simulates the actions and utterances of the character being represented. Much like reported speech and quotation in spoken language, the ability to represent the utterances of others is valuable. Signed languages, because of the visual modality, can also imitate the motion, location, facial expression, and pantomime of the utterance, providing rich resemblance between the utterance and its quotation.

From a Relevance Theory perspective, the use of resemblance in this way is highly economical. Addressees can infer vast amounts of cognitive effects from the resemblance between the signer's utterance and the quotation, while the conventionalization allows them to understand unambiguously who is being quoted (and often who the addressee of the original utterance was). Ultimately, the use of role shift in signed languages is

functionally similar to quotation in spoken languages, but leverages the modality to create highly accessible, visually rich constructions which make use of resemblance.

6.2 Classifier constructions

Classifier constructions are a common occurrence in sign languages, but they have proven a struggle for linguists to explain. Basically, they represent constructions in which some or all of the commonly recognized parameters of a sign, including motion, location, orientation, and handshape, can display resemblance. They have been analyzed in many different ways, three of which are summarized in the table below:

Table 5. Analyses of classifier constructions

Analysis and Author	Explanation of classifiers
Verbs of motion and location (Supalla 1986)	Classifiers “are composed of combinations of discrete morphemes...the morphological parameters are like those found in spoken languages...ASL and spoken languages differ, however, in two ways: in ASL, but not in spoken languages, each of the morphemes is sometimes transparently (or translucently) related to its meaning and the morphemes tend to combine simultaneously rather than sequentially.” (Supalla 1986:182)
Verbal classifiers and noun incorporation (Sandler & Lillo-Martin 2006)	Classifiers are basically similar to spoken language verbal classifier systems in which “nominal morphemes are attached to verbs in a particular sort of compounding, and the two together form a single word.” (Sandler & Lillo-Martin 2006:85)
Indicating verbs (Liddell 2003)	Liddell proposes that classifiers are depicting verbs and that they are “composed of lexically fixed features combined with additional meaningful, gradient aspects of form,” specifically, the signer “depicts the action or state simultaneously” with the lexical content of the verb. (Liddell 2003:269–270)

Most of these examinations of classifiers deal primarily with the morphological properties of classifier constructions; however, for the purpose of this thesis, I am primarily concerned with how classifiers function pragmatically—specifically, by leveraging resemblance.

For the purposes of this thesis, I am choosing to follow the analysis of Jones (2012:77) who made the following claims about classifiers in signed languages:

“...classifiers encode procedural instructions to help the addressee pick out the intended referent for the procedural referring expressions...create ad hoc concepts through the use of inference, narrowing, and broadening...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.”

Ultimately, I propose that resemblance acts as trigger for a concept, providing a starting point for the Relevance Theory comprehension procedure and inference; the resemblance between the signed construction, the real-world situation, and the intended thought is the basis for narrowing, broadening, and assigning referents. Essentially, resemblance is the foundation upon which classifier systems are based. The majority of classifier constructions use resemblance to real world motion, shape, size, orientation and location as a starting point for inference.

Despite the somewhat diverse analyses, linguists generally recognize three types of classifier constructions present in sign languages: size and shape specifiers, entity

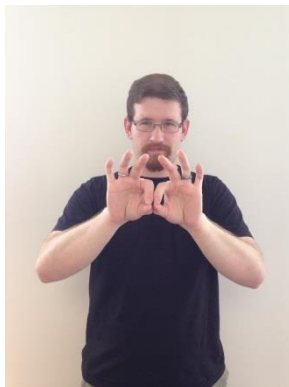
classifiers, and handling classifiers (Sandler & Lillo-Martin 2006). I will deal with each type individually in the following sections. My goal is not to fully explain classifier constructions; a great deal of literature has been produced on the topic already. Instead, I only give a brief introduction of the systems and explain how they make use of resemblance.

6.2.1 Size and shape specifiers

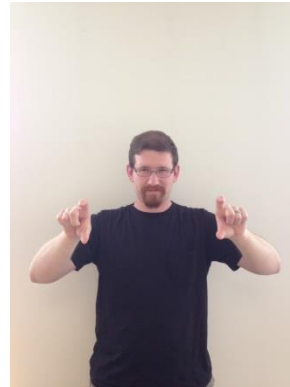
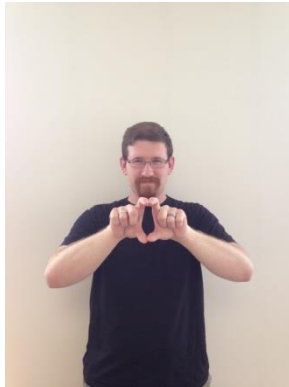
Size and shape specifiers are used to describe the size and/or shape of objects. In this type of classifier construction, signers visually reproduce, or outline, the object being described (Supalla 1986). These constructions are made up of lexical handshapes which each represent a relatively open class of sizes and /or shapes, and resemblance-driven movement. This combination procedurally instructs the addressee to pick out a target with physical properties that fit the construction based on resemblance, by means of relevance, and limited to the class provided by the lexical handshape, such as “tubular” “thin,” etc.

I present some examples of size and shape specifiers below:

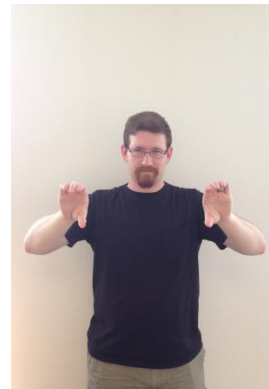
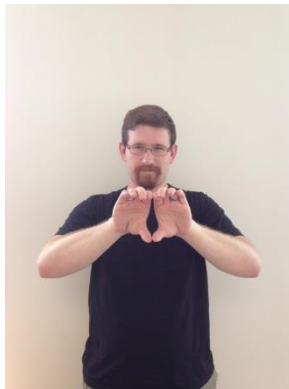
Example 6. Size and Shape Specifiers



Thin, horizontal tubular object.



Medium horizontal tubular object.



Thick horizontal tubular object.

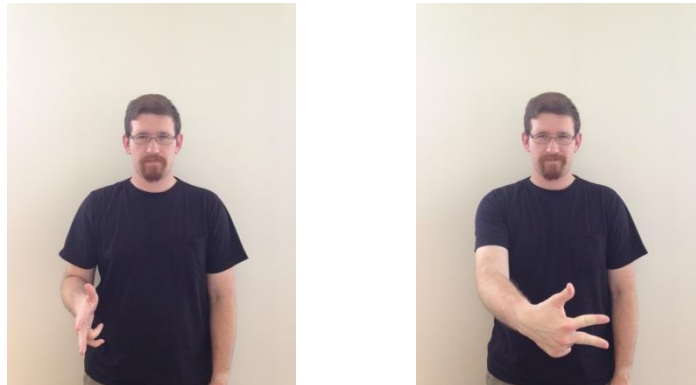
In these examples, the handshape and the movement outline the size and shape of the object, which could be a pipe, log, rolled up rug, or any number of cylindrical objects. The exact nature of the object is understood through context, inference, or explicit introduction. In size and shape specifiers, the resemblance between the signs and the target is quite strong. While the handshapes are at least partially conventionalized to refer to specific classes of characteristics, it is clear that handshapes, movements, orientation, and locations of size and shape classifier constructions resemble real world objects. As with all resemblance-oriented communication, the addressee's familiarity with possible

targets (encyclopedic entries such as shapes, sizes, objects in the real world) provides them with a starting point for inference.

6.2.2 *Entity classifiers*

Entity classifiers refer to classifier constructions which most often represent objects in their entirety (Schembri 2003). They regularly include people, vehicles, or animals, but can include a variety of objects. Essentially, a signer will introduce a concept using a lexical sign, anchor that concept using a conventionalized handshape which can represent a class of possible referents, and comment on the object using location, motion, facing, manner, etc., driven by resemblance.

Example 7. Entity classifier constructions



The car drove forward and turned left.



The car drove forward and turned right.

In the above examples, the handshape is used to represent a class of objects, specifically vehicles, which is narrowed to a specific referent based on context (if the conversation has been about the speaker's car, for example), or explicit introduction (if the signer signs "my car" before the classifier construction). The direction, movement, and facing of the construction resembles the relative or absolute direction, movement, and facing of the vehicle in the real world or hypothetical situation. As with size and shape classifiers, entity classifiers make use of visual resemblance of the construction to the real world and the intended thought. Ultimately, entity classifiers are one of the strongest examples of resemblance in signed languages.

6.2.3 Handling classifiers

Handling classifier constructions use lexically established handshapes which represent classes of objects being handled; for instance, one handshape might be used to show how very small objects might be manipulated between the thumb and index finger, and another might be used to show how a cylindrical object would be manipulated. These lexical handshapes, in combination with movements which resemble their real world

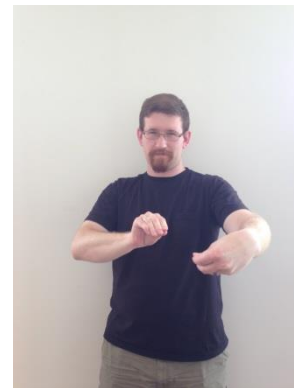
counterparts, make use of resemblance to the real-world actions they represent, and in many ways function like highly structured mime.

Example 8. Handling classifier construction



YESTERDAY

T-H-E-S-I-S



RIPPED-(thesis)-IN-HALF

(handling classifier for a flat, thin object, in this case, a stack of paper.)

Yesterday, I ripped my thesis in half.

In this example, the noun is identified through fingerspelling (since there is no lexical sign for the concept “thesis”), the lexical handling classifier handshape constrains the type of item being handled, and the movement mimics tearing the thesis in half. The use of resemblance is quite strong; an addressee can easily infer the signer’s meaning based

on the effect the motion would have on an actual thesis. Essentially, signers establish targets by way of conventional lexical signs, fingerspelling, or context, and then manipulate those targets in space as they would if they were actually performing the action. The movements themselves, while often simplified to conform to the rules of the language, deeply resemble the real world movements. Resemblance again acts as a trigger for a concept, providing a starting point for inference.

Ultimately, I argue that classifier systems in signed languages make extensive use of resemblance. Showing, through imitation of movements, resemblance to locations, shapes, orientations, etc. is more accessible (at least in situations where one or more interlocutors are not fluent) and more information rich than using arbitrary lexical items, as is done in spoken languages. The use of resemblance to show location, motion, handling, and other areas in which classifiers may also help explain the differences in rates of signing and speaking.

6.3 Locative constructions

Locative phrases in signed languages are also heavily dependent on resemblance. In the vast majority of cases, an arbitrary locative item (such as the ASL sign IN) is eschewed in favor of a locative classifier construction. In these locative constructions, as with size and shape specifiers and entity classifiers, a handshape which can represent a class of objects is used to represent the real world objects being discussed. As with entity classifiers, the location and orientation of the handshapes resemble the relative locations of the objects in the real world, activating a concept and providing a starting point for inference. Classifier constructions contain procedural instructions to manipulate the

concepts they refer to, and can include great amounts of detail regarding orientation and location. These constructions often follow the following pragmatic sequence, as shown in a cross-linguistic study of locative constructions in five different signed languages (Eberle 2012):

1. The signer produces the lexical signs for the object or objects being described, introducing the referents.
2. The signer uses classifier handshapes to represent the objects, producing the signs relative to their actual or imaginary locations.
3. This construction serves to:
 - a. Introduce the encyclopedic entries for the ground and figure.
 - b. Recreate the real-world space using a construction built from lexical handshapes, but guided by real-world locations and orientations.
 - c. Instruct the addressee to procedurally pick out the real world targets and manipulate them just as presented in the signing space.

In this way, locative constructions make heavy use of resemblance in order to make the location, orientation, shape of the objects, and the spatial relationship between the two highly accessible and economical.

Example 9. Locative construction



TABLE



PHONE



PHONE-ON-TABLE

The phone is on the table.

In the above example, the first object, the table, is introduced, followed by the second object, the phone, identifying the referents. A simultaneous locative construction, “PHONE-ON-TABLE” is then used to show the location and orientation of the phone on the table. The construction makes use of resemblance imitate the real world spatial relationship between the phone and the table.

Signed language locative constructions are both visually motivated and procedural. Their visual motivation comes from their imitation of the real world and the iconicity of handshapes, and their procedural encoding can be seen in the way they instruct addressees to manipulate concepts in their minds, ultimately resulting in an information rich, highly inferential construction based on resemblance. In the following section, I discuss my final concrete example of resemblance in signed languages: facial expression.

6.4 Facial expression

Facial expression occurs in sign languages both lexically and non-lexically. In some cases, facial expression serves grammatical purposes such as distinguishing content questions from polar questions. Some forms of facial expression, often referred to as mouth morphemes, can be analyzed as bound morphemes which only co-occur with certain signs, and can carry information about size, manner, proximity, the attitude or emotions of the target, and more (Bickford & Fraychineaud 2006). In other cases, facial expression is used to mimic the facial expressions of a human referent, either the signer (describing a past experience, for example) or another referent (describing a friend's reaction to a shock, for instance), a common occurrence in role shift. The resemblance between the facial expression which accompanies the sign and the actual or hypothetical facial expressions which occurred in the situation being described provide additional evidence of the signer's intent, and act as starting points for inference. While spoken languages make use of facial expression in this way as well, the visual nature of sign languages lends itself to even more frequent use of these forms of expression. Ultimately, the use of facial expression often resembles the facial expressions or attitudes of a real-world referent and makes use of resemblance to achieve relevance. In the following chapter, I discuss the impact of the use of resemblance on cross-linguistic communication between signed languages.

CHAPTER 7

THE IMPACT OF RESEMBLANCE ON SIGN LANGUAGE CROSS-LINGUISTIC COMMUNICATION

It is common knowledge among sign language linguists that cross-linguistic communication between users of unrelated sign languages is significantly easier than communication between users of similarly unrelated spoken languages. While many features of sign language structure and the visual modality might contribute to this phenomenon, I suggest the primary facilitating factor is the use of resemblance. I briefly describe the possible impact of resemblance-oriented communication on cross-linguistic communication below.

7.1 Use of space

Many communication strategies in signed languages make use of resemblance to the real world. Since humans have a wealth of knowledge about how the world works, such as physics, spatial relationships, size, shape, etc., the imitation of visual and spatial phenomena provide starting points for inferring the signer's meaning. Much of this knowledge transcends culture and ethnicity, so when a signer uses resemblance-oriented communication strategies, the signer and addressee's shared knowledge about the world acts as common ground from which inferential can proceed. Spoken language, because of the aural modality, is less able to make use of resemblance in this way, and therefore shows less evidence of the use of resemblance.

7.2 Indexing

Indexing instructs addressees to pick out a target which resembles the intended thought. It is common in both spoken and signed languages all over the world, and provides highly accessible evidence of the signer's intended thought. Indexing is highly resemblance-oriented and can often function independently of language; the addressee does not need to share a common language with the signer to understand that the signer is making a proposition about the indexed target. Ultimately, signed languages use indexing productively, allowing them to rely less on arbitrary words for target identification.

7.3 Directionality

Directionality facilitates cross-linguistic communication between sign languages by clearly establishing agent and patient of transitive verbs such as HELP without relying on arbitrary, language specific words. Additionally, directionality can imitate the real-world, providing addressees with visual starting points for inference. As with the use of space, directionality leverages context and knowledge about the real world for inferential communication grounded in resemblance.

7.4 Lexical similarity and iconicity

While the impact of lexical similarity is clear (namely easier communication), I have suggested that the root cause of the high lexical similarity between unrelated signed languages is resemblance. When communicating cross-linguistically, I hypothesize that the impact of resemblance is often great, because the iconic resemblance between the lexical item and real world object serves as a trigger for the addressee, acting

procedurally to instruct them to “pick out a target with the characteristics visually encoded in the sign.” As is the case with pantomime, this would not necessarily require them to know the conventional, lexical word for an item. Ultimately, though the iconicity present in signed languages is often quite abstract, signers can exaggerate and leverage iconicity when communicating cross linguistically.

7.5 Deaf culture and experience

One final factor in cross-linguistic communication is deaf culture and experience. As I mentioned previously, deaf communities around the world often share cultural and communicative values, such as visual means of getting attention, directness, high valuation of visual means of information sharing such as pictures and graphics, and many others. I hypothesize that many of these cultural similarities encourage the use of resemblance-oriented communication, and are therefore a contributing factor to cross-linguistic communication.

In the final chapter, I review the goal of the thesis, revisit major points, and suggest some possible implications for pragmatic and linguistic theory.

CHAPTER 8 CONCLUSION

The goal of this thesis has been to examine how humans make use of resemblance in ostensive inferential communication. I have defined resemblance as visual or aural similarity among a stimulus, the thought it is intended to activate, and the real world target that utterance is about.

According to relevance theory, human communication is guided by expectations of relevance, an appropriate balance between cognitive benefits (information the addressee finds worthwhile) and processing effort (the amount of work required to understand that information) (Wilson & Sperber 2012). I have claimed that resemblance offers additional cognitive benefits and reduces processing effort, and given examples of resemblance-oriented strategies in both spoken and signed languages.

Regarding ostensive communication in general, I have proposed that the range of human experience, including knowledge about how the world works, such as physics, spatial relationships, size, shape, etc., knowledge about human function and behavior, and the vast experience available through perception of the world all act as common ground, providing starting points for inferential communication. Conventionalization of codes primarily serves to reduce the processing effort required by inference; I have suggested that the commonality of human perception performs a similar function.

While both spoken and signed languages make use of the resemblance between signs and the things they signify, signed languages are uniquely enabled by the visual modality

to leverage the benefits of resemblance-oriented communication. Signed language communication is produced in the same space as the things it signifies. Aided by relevance, context, inference, and encyclopedic knowledge about the world, signers are able to quickly see the resemblance between sign and signified, even when arbitrary linguistic conventions fail.

My claim that resemblance has a role to play in human communication raises significant questions about the widely held stance that language is inherently arbitrary. As long ago as 360 B.C.E. with the writing of Plato's dialogue titled *Cratylus*, people have been questioning whether language is natural, in which words are inherently connected with the things they represent, or conventional, in which words are arbitrary and determined by consensus (Plato 1999). The use of resemblance in human communication suggests that the connection between signs and the things they signify is often meaningful. If this is true, we must consider the implications for modern linguistic analysis and adjust linguistic theory to accurately account for the use of resemblance in human communication.

APPENDIX A: GLOSSARY OF TERMS

Ad hoc concepts

The fine tuning of concepts in context, referred to in relevance theory as ad hoc concepts, is particularly important for this thesis. Ad hoc concepts are identified by Sperber and Wilson as the components of an utterance which are deemed relevant (by following the relevance theoretic comprehension procedure) and therefore used in the construction of the explicature. (Wilson & Sperber 2012:16–23) For example, in metaphor, an utterance such as “Dan is a machine” can be quite vague; however, in certain contexts, the connection between the two concepts is stronger or weaker based on the relevance of the individual characteristics of “Dan” and “machine.” In one context, the speaker could mean that Dan is very efficient; while in another, they could mean that Dan is emotionless, or perhaps in a third context both meanings are relevant.

Basically, the hearer is creating an ad hoc concept for “Dan” and “machine,” which is made up of only the relevant characteristics of each.

Arbitrary

Arbitrary language is that which has no discernible motivation for why a code (word or sign) stands for a given item. Why do we call a dog a dog? There is no reason; it is arbitrary. Arbitrary words are often a matter of convention; the standardization of a word, gesture, head shake, sound, or any other stimuli, by common use and unsaid or explicit agreement. See Convention.

Coding and decoding, encoded

Coding and decoding are the processes by which communicators produce utterances which represent concepts, and addressee's understand those codes to represent concepts. Essentially, the communicator thinks of a dog and speaks the associated, conventional word *dog*. This word encodes the concept "dog". The hearer decodes the word *dog*, and accesses the encyclopedic entry. Inference is then used to arrive at the communicator's intended meaning.

Cognitive effects/cognitive benefits

Cognitive effects can be loosely defined as any change of the addressee's thoughts; they could be as small as learning what time it is, or as complex as understanding that the speaker is telling you the time because they do not want you to be late for class. They can function to strengthen or weaken existing assumptions, as well.

(Wilson & Sperber 2012)

Conceptual and Procedural meaning

Traditionally, as defined by Wilson and Sperber, (1986; 1995; 2012) conceptually encoded information is that part of linguistic communication which deals with concepts, (such as objects, people, emotions, or anything else which triggers an encyclopedic entry). Conceptual information makes up the bulk of our utterances, and is primarily conventionalized; the word *cat* triggers all we know about cats, and the connection between them is learned. Procedurally coded information consists of instructions for how to process conceptual information, either from the utterance or context. Examples of procedurally encoded information include things like pronouns, discourse connectives, conjunctions, and logical connectives.

Conventionalization/conventional

Conventionalization is the standardization of a word, gesture, head shake, sound, or any other stimuli, by common use and unsaid or explicit agreement. Why do we call a dog a dog? Because it is a convention. In this case, *dog* is an arbitrary convention.

Economy/Economical

I use the term economy to mean efficient balance between cognitive effects and processing effort. Basically, humans like to understand things without having to work too hard. Economical communication uses different communication strategies to achieve this.

Encyclopedic entry

Everything you know about something; essentially the sum of all your experiences with an object, entity, phenomenon, emotion, color, etc. An encyclopedic entry about a dog might include things like “dogs have four legs” “dogs are furry” “dogs sometimes bite” and so on. When you hear the word *dog*, these are things you call up in your mind. See also conceptual and procedural meaning.

Explicatures

Sperber and Wilson (1986) used the term ‘explicature’ to refer the fully-propositional forms of an utterance, after referent assignment and disambiguation. Inference often plays a part in enrichment, as well. The following sentence shows the difference between what is said and the explicatures: “He arrived before her” might have explicatures such as “John arrived at time x which was earlier than Sue, who arrived at time y”. See Implicatures.

Higher level explicatures

A base explicature is the simple, fully-developed propositional form of an utterance, such as “Dan says John is tall,” while a higher level explicature is “constructed ...by development of encoded schematic sentence meaning.” (Wilson & Sperber 2012:23) Essentially, higher-level explicatures are other propositions that follow from the first. If a base explicature is “He arrived before her,” the addressee might understand the following higher-level explicatures: that the speaker is saying that John arrived first, believes that John arrived first, is happy that John arrived first, and so on. Higher level explicatures may be explicit (stated in the sentence) or implicit, requiring inference to understand.

Ideophones

Ideophones, constructions which aurally imitate the real world through onomatopoeia, vowel lengthening, reduplication, etc. are an example of resemblance in which the resemblance between the sign and the signified is based on perception. (Lydall et al. 2000) The International Symposium on Ideophones concluded “that ideophones and similar words have a special dramaturgic function that differs from all other word classes: Ideophones simulate an event, an emotion, a perception through language.” (Voeltz and Killian-Hatz 2001, 3)

Implicatures

‘Implicature’ refers to what is implied—things communicated by an utterance in a given context, but not explicitly present in the utterance itself (Sperber & Wilson 1986). Implicatures are understood through inference, and can often be thought of as the logical steps taken from the utterance to arrive at the speaker’s intended meaning

(Wilson & Sperber 2012:77). To continue with the above example, if someone asked “Was John late for Sue’s party?” and was answered by the utterance “He arrived before her,” the implicature is that John was not late for Sue’s party.

Inference/infering/inferential communication

Essentially, inference is the process of reasoning we follow in understanding communication. It consists of following logical steps, which may be explicit (said aloud) or implicit (understood from context, implied). Inferential communication relies more on reasoning and logic than understanding the meaning of the words themselves.

Linguistically encoded

Linguistic encoding includes whatever information can be retrieved from an utterance solely by knowledge of the language. Non-linguistically encoded information would include things like body language, tone of voice, etc. which adds to the meaning of an utterance, but not in a way which is understood linguistically.

Locus/Loci

The use of a point or points in three-dimensional space in signed languages. Often, a locus is used as an anchor for a referring expression such as a pronoun.

Metarepresentation

Humans have the ability to contemplate and describe the representations of those objects in an abstract way, essentially thinking about a thought or talking about an utterance (ad infinitum), referred to as metarepresentation. (Wilson & Sperber 2012)

Aside from letting humans think about the thoughts of others (critical for making

utterances optimally relevant to an addressee), it allows for the reuse of utterances in different contexts, ranging from direct quotation to very loose use. Some quotation makes use of a loose kind of similarity known as interpretive resemblance. Wilson and Sperber define this as “resemblance in content: that is, sharing of implications. Two representations resemble each other (in a context) to the extent that they share logical and contextual implications.” (Wilson & Sperber 2012:244)

Metarepresentation allows humans to discuss utterances or thoughts themselves, or the thoughts of others. This ability is demonstrated in the use of quotation, which can range from direct quotation, essentially literal imitation of another utterance, to loose quotation, the paraphrasing of another utterance, to echoic use, which conveys attitudes by modifying quotations. (Wilson and Sperber 2012, 230–258)

Naïve psychology

Naïve psychology is the ability to think about the mental states of others. For example, if you watch John put a ball into a box, you know that John knows that the ball is in the box. (Wilson & Sperber 2012:331–338) See Metarepresentation.

Narrowing and broadening

Narrowing and broadening refer to the adjustment of concepts to make them relevant. For instance, if I say “Dan is like a machine,” you will automatically narrow your understanding of machine to only the characteristics which can sensibly be compared to “Dan.” Broadening is the reverse, in which a very specific term is used loosely to apply in ways it would normally not; consider the example “That man is in a black mood.”

Ostensive communication

Ostensive communication can be defined as any communication which is intended to inform the hearer and conveys that intention to communicate. (Wilson & Sperber 2012)

Pragmatics

“the study of language use, as opposed to language structure.” (Wilson & Sperber 2012). Pragmatics is concerned with what happens cognitively during communication.

Processing effort

The mental effort required to comprehend the speaker’s meaning. In most situations, we are able to come up with a possible understanding of an utterance, but often that explanation is either not relevant, or is too far-fetched to be believable. Basically, when we communicate we apply Occam’s razor: the simplest interpretation of an utterance (which makes sense given the context) is often the best.

Relevance

“Relevance is defined as a property of inputs to cognitive processes. The processing of an input is (e.g. an utterance) may yield some cognitive effects (e.g. revisions of beliefs). Everything else being equal, the greater the effects, the greater the relevance of the input. The processing of the input (and the derivation of these effects) involves some mental effort. Everything else being equal the greater the effort, the lower the relevance.” (Wilson & Sperber 2012)

Resemblance

Resemblance is used in a general way to mean one thing is in some way similar to another. For signed languages, this similarity is visual; one thing looks like another, at least in some ways. For example, I can say that a dog resembles a cat; one might understand that to mean that they both have four legs, are furry, and so on. An utterance resembles another insofar as they are similar (measurable by waveforms, perhaps) or share the same content (mean the same thing). The scale between these two is a matter of description (measurably similar) or interpretation (similar in content, which is more difficult to measure).

I define resemblance as the visual or aural similarity between a stimulus (such as a spoken or signed utterance), the thought it is intended to activate, (mental representation in the mind of a human) and the real world target (situation, object, other utterance, etc.) that utterance is about.

Sign and signified

A sign is any conventionalized stimulus, a signified is what it stands for. “Dog” is the sign, while an addressee’s conceptual knowledge about dogs (and all the dogs in the real world) are the signified.

Stimuli

Anything used to intentionally communicate; a hand gesture, sideways look, nodding of the head, words, signs, nodding of the head, etc.

Target

Whatever thought, situation, concept, fact, idea, referent, etc. which a speaker/signer is referring to, trying to get the addressee to think of, or use as a comparison with something else. Basically, anything a person is talking about.

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