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Linguistic Cognition and Bimodalism: A Study of Motion and Location in the Confluence of Spanish and Spain’s Sign Language

Francisco Meizoso

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LINGUISTIC COGNITION AND BIMODALISM: A STUDY OF MOTION AND LOCATION IN THE CONFLUENCE OF SPANISH AND SPAIN’S SIGN LANGUAGE

A Dissertation Presented
by
FRANCISCO MEIZOSO

Submitted to the Graduate School of the University of Massachusetts Amherst in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY

February 2015
Department of Languages, Literatures and Cultures
LINGUISTIC COGNITION AND BIMODALISM:
A STUDY OF MOTION AND LOCATION IN THE
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Thanks to my mother for all the time she spent helping me to do homework for school.
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ABSTRACT

LINGUISTIC COGNITION AND BIMODALISM: A STUDY OF MOTION AND LOCATION IN THE CONFLUENCE OF SPANISH AND SPAIN’S SIGN LANGUAGE

FEBRUARY 2015

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The goal of this dissertation is to study the intrapersonal and symbolic function of gesture by a very specific type of population: hearing speakers of Spanish who, having been born to deaf parents, grew up developing a bimodal (Spanish and Spain’s Sign Language) linguistic interface, which borrows elements from the manual and spoken modalities.

In the ordering of gestures devised by Kendon (1988) and cited by McNeill (1992), gesticulation and sign languages are placed at opposite ends of a continuum. At one end, gesticulation is formed by idiosyncratic spontaneous gestures lacking any conventional linguistic proprieties, which are produced in combination with speech in a global and synthetic semiosis. At the other end, sign languages are fully-fledged languages formed by conventionalized signs, which are produced in the absence of speech in a segmented and analytic semiosis.
Some previous L2 studies (Brown and Gullberg, 2008; Choi and Lantolf, 2008; Negueruela, Lantolf, Jordan, and Gelabert, 2004; Stam, 2001) have addressed the relationship between speech and gestures in order to investigate whether second language speakers, even at advanced, near-native proficiency levels, shift their thinking-for-speaking patterns.

Data in this study come from the spoken depiction of motion events (Talmy, 2000) of four bimodal participants and are compared with those of four Spanish unimodal counterparts. Data was gathered by video recording participants co-constructing and individually retelling a series of narratives in signing, oral and written modalities, although, the analysis for this study focuses almost exclusively on the oral modality, with some references to the signing when it is deemed appropriate.

Results show how, in the construction of spoken narratives, bimodal participants display a particular sign-like gesticulation which, while co-occurring with speech, maintains linguistic properties and is, at least, partly conventionalized. Future research, whether in the general study of bimodalism or specifically in the confluence of Spanish and Spain’s Sign Language, will hopefully benefit from the initial insights outlined here.
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INTRODUCTION AND PURPOSE OF THE DISSERTATION

When engaged in communication, language users try to direct the attention of their interlocutors to certain aspects of the reality or phenomenon they have set out to discuss, and they do so by selecting any of the linguistic forms available in any of the inventories or collections of signs and constructions known as natural languages. Additionally, while language users may select what they consider the most appropriate candidates from any of the forms at their disposal in a given inventory, these forms themselves also come with selections of their own and therefore constrain their users to a certain degree in the types of combinations of elements they can use, and more importantly, force the users to direct their attention to certain aspects of the phenomenon that they may or may not be fully aware that they are highlighting. This idea is best encapsulated in the words of Roman Jakobson, who considered that the “true difference between languages is not in what may or may not be expressed but in what must or must not be conveyed by the speakers” (Jakobson, 1959, p. 42).

But the constraints imposed by the elements of a language do not only operate within its limits but rather also affect the way in which speakers of a particular language may interact with other languages, and also, how elements of different languages can be combined by individual speakers. A look to any of the most consolidated and predominant languages today will reveal that, first, the collection of signs that a particular speaker may handle is not completely equivalent to the collection handled by any other speaker, and, second, that within the membership of a particular language, some of its members can trace back their origin to other languages. For instance, current day English or Spanish is not exactly equal among all its speakers, and both
languages contain elements whose origins can be respectively traced back to French or Arabic for example. A diachronic, historical perspective shows how the adoption of some once external elements was a process in which the predominant patterns of the receiving language interacted with the characteristics of new elements, which typically underwent a series of transformations to adapt themselves to the new environment, that was itself also changed by the interaction with the new members. But this process is not just simply a historical one, and in fact, the only permanent element of linguistic systems may be the impermanency of its signs (Valsiner, 2001).

Every single day language speakers use language signs to make sense of their experiences and these signs may be drawn from various places although, obviously, one would not expect a rational, say, Mandarin speaker, to consciously draw elements from French to which he had access, when communicating with another Mandarin speaker who had no knowledge of French. But, if the second speaker did also have knowledge of French, and both speakers were aware of their interlocutors’ language knowledge, then both could choose to use the elements from both languages that they felt helped them to achieve their goals better. In that specific situation, the language of these two language users would be a system resulting from the interaction of the elements from one current inventory of signs, Mandarin, with another one, French, and the limitations and constraints that the current patterns of both inventories would impose on the interaction of their elements.

Furthering this last point, this blend, may not necessarily be limited to an outward use, when communicating with other people, but rather, it could also have an inward use, and therefore, speakers with access to elements of different languages may combine those elements to suit their needs in the way they make sense of their experiences through language. This combinatorial process where language users draw elements from more than one inventory may be slightly different to that of the speakers with only access to only one language.
One additional consideration regarding the use of the linguistic forms available to speakers would be the nature of the forms themselves. All the examples mentioned so far included languages whose linguistic forms are mainly instantiated by sounds produced in the vocal tract, but that does not need to be the case. There are also full-fledged languages whose linguistic forms are largely, although not exclusively, materialized through hand gestures. It is obvious that if one were to observe people talking, it would not be very hard to see them moving their hands while speaking and, in fact, there has been quite recently a renewed interest in the study of the relationship of speech and gesture, interest likely fostered by renewed interest in sign languages.

The purpose of this dissertation is to document the way that a particular bimodal population with access to elements from one spoken language, Spanish, as well as from a manual one, LSE (acronym for Lengua de Signos Española, Spain’s Sign Language\(^1\)) may or may not combine these elements in a particular speech-gesture relationship, and how this may or may not affect a particular meaning-making process. Following, I review the three research areas that inform this study: (1) gesture studies: the types of hand gestures and their relation to speech with the Vygotskian approach taken by David McNeill (McNeill, 1992); (2) thinking and speaking relationships: a neo-Whorfian thinking-for-speaking patterns approach championed by Dan Slobin to address the issue of linguistic relativity in the field of Linguistics (Slobin, 1996); and (3) cognitive semantics: the work on language typology by Leonard Talmy (Talmy, 2000).

\(^1\) LSE, Lengua de Signos Española, is here being translated into English as Spain’s Sign Language in order to try to avoid any possible confusion with a pan Hispanic sign language modality, as the sign languages used in the various Spanish speaking countries are different in each, and LSE only applies to the sign language used in Spain.
CHAPTER 1
THEORETICAL FRAMEWORK

1.1 Types of gestures

The study of hand gestures has a long tradition that in Western cultures goes back at least to the Iberian Peninsula and Roman times, where Quintilian dedicated the Book XI of his *Institutio Oratoria* to a complete discussion of the role of hand gestures (Kendon, 2004). Quintilian focused his work on rhetoric and he saw the role of gesture as a supplemental device that could be deployed in the delivery of a speech to help reinforce ideas with the aim to convince and persuade or sway an audience. As a teacher, Quintilian looked at hand gestures as something that could be taught and dedicated his discussion to the type of hand forms and configuration that should be used in connection with speech, and how the hands should be placed and moved while combining them with certain words and ideas. Quintilian gestures, thus, were well-thought-out and meticulously studied.

This Roman vision of hand gestures continued throughout the Middle Ages and Renaissance times, and well into the 18th century, which, nevertheless, brought a new interest in the study of gesture within the framework of language evolution. Following, the 19th century produced a new insight on gesture as it related to the development of symbolic communication, as well as some work on sign languages led by Wilhelm Wundt, considered by many to be the father of modern psychology (Kendon, 2004).

Building on those steps, and despite a very prevalent type of linguistic inquiry that focused almost exclusively on written and oral samples of language, gradually, hand gestures and non-verbal communication began to be consider an integral part
of communication, tied to the same psychological realm that informed words and speech. Within this new framework, the work of David Efron (Efron, 1941, 1972), a student of Franz Boas at Columbia University, who comparatively researched the hand gestures of immigrants from southern Italy and Eastern Europe in New York City, was instrumental to show cross-cultural variation in gesture, and more importantly, how these could change within generations.

The notion of variation implied that gestures and body language were not necessarily something that could be taught and/or merely replicated, but rather a more complex feature that could be handled by gesturers to adapt it to their meaning and communication interests, very much like speech. Beginning in the 1970’s the work of Adam Kendon (Kendon, 1972; Kendon, 1980; Kendon, 1983; Kendon, 1988; Kendon, 2004) and David McNeill (McNeill, 1985; McNeill, 1992; McNeill, 2000; McNeill, 2005) came to the conclusion that speech and gesture are two inseparable elements of the same process. In McNeill’s words:

Utterances pose two sides, only one of which is speech; the other is imagery, actional and visuo-spatial. To exclude the gesture side, as has been traditional, is tantamount to ignoring half of the message out of the brain. (McNeill, 2000, p. 139)

McNeill (1992), as well, reviewed the kinds of gestures described by Adam Kendon (1988), and in his honor proposed an ordering called Kendon’s continuum where four different types of gestures are distributed along a set of continua with regard to four features: their relationship to speech, their degree of linguistic properties, their level of idiosyncrasy or regularity, and the character of their semiosis. These four main types of gestures discussed by McNeill are: gesticulation, pantomimes, emblems, and sign languages, with the first and last examples occupying always opposite ends of the continua. Tables 1.1 through 1.4 show the continua as they relate to speech (1.1), linguistic properties (1.2), conventions (1.3), and the character of semiosis (1.4) for gesticulation, emblems, pantomime, and sign languages.
Table 1.1. Continuum 1: Relation to speech

<table>
<thead>
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<th>Continuum 1: Relation to speech</th>
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<tbody>
<tr>
<td>Gesticulation</td>
</tr>
<tr>
<td>Speech must be present</td>
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Table 1.2. Continuum 2: Relation to linguistic properties

<table>
<thead>
<tr>
<th>Continuum 2: Relationship to linguistic properties</th>
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</thead>
<tbody>
<tr>
<td>Gesticulation</td>
</tr>
<tr>
<td>No linguistic properties</td>
</tr>
</tbody>
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Table 1.3. Continuum 3: Relation to conventions

<table>
<thead>
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<th>Continuum 3: Relation to conventions</th>
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<tbody>
<tr>
<td>Gesticulation</td>
</tr>
<tr>
<td>Not conventionalized</td>
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Table 1.4. Continuum 4: Character of semiosis

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<th>Continuum 4: Character of semiosis</th>
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<tbody>
<tr>
<td>Gesticulation</td>
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<tr>
<td>Global and synthetic</td>
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</table>
Following Kendon, McNeill uses the term ‘gesticulation’ to refer to spontaneous, idiosyncratic hand and arms movements that do not possess any linguistic traits, and which are produced in the obligatory presence of speech. On the opposite end of the continua, sign languages are considered as fully conventionalized linguistic systems produced in the obligatory absence of speech. The following category, emblem, refers to those particular hand configurations and movements like the OK or thumbs up signs, produced respectively by making a circle with the forefinger and the thumb while the other fingers extend upward, or by extending the thumb in an upward orientation with the other fingers making a grip. Emblems are recognizable among groups of people and therefore they must follow certain conventions and have constraints in their formation: if we used the middle finger instead of the index to make the circle, that would result “in a gesture with some kind of precision meaning, but is not recognizable as the OK sign” (McNeill, 2005, p. 9). Nevertheless, while emblems can be well-formed or not well-formed, their level of ‘linguisticity’ is limited. As McNeill puts it:

There is no way to reliably reverse the OK sign, for example. Forming it and waving it back and forth laterally (another emblem, that on its own conveys negation) might convey not OK, but it also might be seen as meaning the opposite of negation – waving the hand could call attention to the OK sign, or to suggest that many different things are OK – a flexibility that is basically not linguistic in character (ibid).

Also, unlike the hand configurations displayed in sign languages, emblems do not have linguistic restrictions that impose, for example, at what distance from the chest, or how high or low the hands should be placed when making, for example, the thumbs up sign. Finally, although, it is perfectly possible to say something like “fantastic” or “awesome,” in conjunction with either of these two emblem examples, presence of speech is not obligatory.

The third type, pantomime, similarly to sign languages, must be produced in the absence of speech – although, they may contain onomatopoeic sounds – but, unlike
sign languages, pantomimes lack any linguistic traits, and do not show any degree of conventionalization.

The final feature considered in the McNeillian gesture distribution is the character of their semiosis, how ‘gesticulation’ and ‘sign’ differ in their semiotic principles. The fourth continuum (see Table 1.4) consists of two subcategories: global versus segmented, and synthetic versus analytic. A global semiosis implies that the “meanings of the ‘parts’ are determined by the meaning of the whole” (McNeill, 2000, p. 5) in a downward direction opposed to the upward determination of the meaning of sentences in speech where elements are laid out according to a more or less pre-established plan or distribution. McNeill illustrates this with an example about a character bending back a big oak tree described by a speaker performing a backward hand gesture while saying, “he grabs a big oak tree and he bends it way back.” For McNeill (2000), in that particular instance, “the hand (one of the ‘parts’) equals the character’s hand, the movement (another part) equals the character’s movement, and the backward direction (a third part) equals the character’s backward movement (2000, p. 10). He argues that, in this hand gesture there is not a fixed pairing of meaning and form between the parts of the hand gesture (i.e., the hand does not necessarily have to represent a hand, nor does the backward movement have to represent a backward direction). Therefore, its interpretation is derived in a top-down global fashion, in contrast to the bottom-up interpretation of the independently meaningful segments found in speech and sign languages. Regarding the middle elements in the continuum, pantomime and emblems, McNeill (2000) says that the former seem to be global, while the latter would be segmented, since, for example, in the case of the OK sign, the presence of the precise forefinger thumb contact ‘segment’ is critical to convey the intended meaning of approval or validation.

The synthetic or analytic axis of this last continuum refers to the possibility of concentrating into a single symbol an array of various distinct meanings or spreading
out these meanings in separate units. Gesticulation and emblems would be synthetic examples, while oral and sign languages, as well as pantomime would be analytic examples, although in this last case McNeill (2005, p. 11) asserts that the “lack of definition of pantomime makes the attribution uncertain.”

McNeill points out that a fundamental premise upon which his work operates is the relationship established between the oral and manual modalities of language and their level of linguisticity. As the continuum advances from left to right, the presence of speech declines, while the amount of linguistic properties increases, and idiosyncrasy is replaced by regularity. In other words, the gestural modality can increase its level of linguistic properties, but as it does so, it also decreases its level of functioning with regard to the oral modality. McNeill (2005) points out that “nothing about the visual-manual modality per se is incompatible with the presence of linguistic properties. Yet gestures combined with speech lack linguistic properties” (p. 9). Sign systems, would be the end point of this progression: as the level of linguistic properties increases in the display of the manual modalities, the presence of speech decreases. McNeill’s conclusion is “that speech and gesture combine into a system of their own in which each modality performs its own functions, the two modalities supporting one another” (ibid).

Following this classification of gestures, and as mentioned above, the goal of the present study is to document the gestures of a population with access to Spain’s Sign Language, LSE, as well as an oral language, Spanish. The question that is answered is whether the gestures of these bimodals differ from the expected pattern for unimodal Spanish speakers and if so, how, and what role speech and LSE may play.
1.2 Thinking-for-speaking: A type of cognition facilitated through language

If we viewed language as something separate from cognition we could now ask the question of how the acquisition “affects,” “is affected by,” or “interacts” with cognition. My own view, however is simply that language is a form of cognition; it is cognition packaged for purposes of interpersonal communication (Langacker, 1987a, 1991)(Tomasello, 1999, p.150)

Studying language, whether verbal or nonverbal, in order to understand cognition, immediately raises the question of how these two elements, ‘language’ and ‘cognition,’ interact with each other. Arriving at this question may only happen if one is to regard cognition in its totality as completely independent from language. Contrary to that last point, Vygotsky argued that

[i]t would be wrong, however, to regard thought and speech as two unrelated processes, either parallel or crossing at certain points and mechanically influencing each other. The absence of a primary bond does not mean that a connection between them can be formed only in a mechanical way. The futility of most of the earlier investigations was largely due to the assumption that thought and word were isolated, independent elements, and verbal thought the fruit of their external union. (Vygotsky 1986, p. 211)

In the same line as this Vygotskian view, Tomasello (1999) employs the term ‘linguistic cognition’ to refer to a particular type of cognition that is neither based nor depends simply on our sensory or motor experiences. Rather, the development of language in children provides them with a particular kind of cognition that they otherwise would not have. This view of a separate form of cognition facilitated by language from other forms of cognition is very much in line with the concept of medi-
ation as it is used within a Sociocultural Theory (SCT) approach to psycholinguistics (Vygotsky, 1978).

From a SCT perspective, people interact with the world not directly but indirectly through tools (i.e., we do not cut trees with our hands but using a tool like an axe built for that purpose). The same goes for our cognitive abilities: we do not interact with, and understand the world around us in a direct way, but through the mediation of cognitive tools which are sociocultural in origin. Language is the main and most powerful sociocultural mediator. On this point, Tomasello (1999) states that

> linguistic symbols embody the myriad ways of constructing the world intersubjectively that have accumulated in a culture over historical time (...); internalizing these construals, fundamentally transforms the nature of children’s cognitive representations. (Tomasello 1999, p. 95-96)

Children do not learn ‘language.’ They learn one particular language, and since languages differ from one another, people that use different languages may have different linguistic cognitions. This is precisely the idea behind the notion of ‘linguistic determinism’ or ‘linguistic relativity.’

The idea of linguistic determinism goes back at least to the 19th century and the ideas of Wilhelm von Humboldt, but nowadays, in contemporary linguistics and psychology, it is very often attributed to the work of Edward Sapir and Benjamin Whorf. Whorf (1956) argues that people who speak different languages are pointed by their grammars towards different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world. (Whorf, 1956, p. 221).

More recently, Slobin (1996) coined the term ‘thinking-for-speaking’ to refer to a “special kind of thinking that is carried out, on-line, in the process of speaking” (1996, p. 75). Slobin (1996) is usually associated with what has been called a weak version of ‘linguistic determinism’. Instead of talking about general thought patterns dictated
by language, Slobin replaces the terms “thought” and “language” by “thinking and
“speaking:”

Humboldt-Whorf (...) were concerned to relate language to world-view
or habitual thought. The classic position thus seeks to relate two static
entities, language and thought. (...) I have a more cautious, but more
manageable, formulation - one that seeks to relate two dynamic entities:
thinking and speaking (Ibid.)

Appealing to a dynamic aspect of language, Slobin (1996) also aligns himself
with Jakobson (1959) and especially with Vygotsky (1986) who claimed that “word
meaning is a phenomenon of thought only insofar as thought is embodied in speech”
(Vygotsky, 1986, p. 212). What Vygotsky, Jakobson, and now Slobin discuss is the
thinking that occurs in the process of speaking, and how particular languages force
speakers to pay attention, while speaking, to certain aspects of reality:

Whatever else language may do in human thought and action, it surely
directs us to attend while speaking to the dimensions of experience that
are enshrined in grammatical categories. (Slobin, 1996, p. 71).

For example, Slobin (1996) points out how “in Spanish one has to indicate whether
the man is temporarily or chronically ill” (ibid.). English, for example, does not
require its speakers to signal this aspect in speech, so the same reality is experienced
in different ways depending on the mediational tool, in this case, English or Spanish.

Slobin (1996) studies how children who speak different languages retell the same
story contained in the pictures of the children’s book Frog Where Are You? (Mayer,
1979). The sensory and motor experiences are identical for the children, but when
they talked about the story they construed it with subtle differences that have nothing
to do with the pictures that they saw, but rather with the languages that they used:

I am convinced that the events of this little picture book are experienced
differently by speakers of different languages in the process of making a
verbalized story out of them. For example, there is nothing in the pictures
themselves that leads English speakers to verbally express whether an
event is in progress, or Spanish speakers to note whether it has been
completed. (Slobin, 1996, p. 88).
1.3 Conceptual structure and overt linguistic forms

Talmy (1985) studies the systematic relations between meaning and surface forms in natural languages. Taking a few semantic domains at the cognitive level as a point of departure, Talmy analyzes the kind of semantic information actually present in the linguistic forms at the representational level, and the degree of salience through which the various kinds of information are expressed. Talmy (1985) argues that in a sentence like

(a) The man ran back down into the cellar

English has both packed in and backgrounded the information that the man’s trip to the cellar was accomplished at a run (ran), that he had already been in the cellar once recently so that was a return trip (back), that his trip began at a point higher than the cellar so that he had to descend (down), and that the cellar formed an enclosure that this trip originated outside of (-in) (Talmy, 1985, p.123).

In contrast, in a language like Spanish, it is impossible to convey all that information in one simple sentence that contains only one conjugated verb form, so if speakers consider all this information to be relevant, they have to resort to other resources, and produce a larger discourse including subordinate clauses, in order to make these elements explicitly available to their interlocutors.

Talmy identified a few conceptual domains such as Causation, Aspect, Valence, Personation, or Motion. The study of motion events is the research area that has spawned the broadest amount of study. Talmy (1985) defines a basic motion event an event where one entity moves from one place to another as having four major internal components: one object (the Figure) moving or located with respect to another object (the reference object or Ground). In addition, there are Path, which is “the path followed or site occupied by the Figure object with respect to the Ground object”, and Motion, which “refers to the presence per se of motion or locatedness in the event” (Talmy 2000, p. 25). Associated with the motion event, Talmy adds “one external
Co-event that most often bears the relation of Manner or Cause to it” (Talmy 2000, p. 26).

With this structure in mind and working at the sentence level, in 1985 Talmy studied what semantic information, other than Motion per se, was included in the verb root conflated, in his own terms and initially proposed a language typology with three major groups: Group 1: Motion + Manner/Cause; Group 2: Motion + Path; and Group 3: Figure + Path.

- Group 1: Motion + Manner/Cause

In languages conforming to the first pattern, the verb root expresses both the notion of Motion plus either the Manner in which the motion takes places – rolling, sliding, swinging, etc. – or the Cause of the motion. This last pattern would be formed by “Chinese and all families of Indo-European except (post-Latin) Romance” (Talmy, 1985, p. 62). For instance, in English:

(b) The rock rolled down the hill

‘The rock moved down the hill, rolling.’

- Group 2: Motion + Path

The tendency in the second pattern of languages Semitic, Polynesian, and Romance, is to conflate Path and Motion information in the verb root. Any Manner or Cause information is expressed in an independent constituent, usually in the form of a gerund, flotando (floating) in this example or an adverbial, although in most cases, that type of sentence would sound awkward:

(c) La botella entró a la cueva (flotando)

the bottle MOVED-in to the cave (floating)
The bottle floated into the cave.

- Group 3: Figure + Path

In the third pattern, the verb root conveys Motion plus information about the Figure involved in the event. Navajo, and Atsugewi (and all the other Hokan languages), are examples of this pattern:

(d) /-s- I, > Subject

'-w- - a > 3rd person object

cu > from a linear object moving axially acting on the Figure

staq- > for runny icky matter to move/locate

cis/ > into fire

/-s-’-w-cu-staqcis- a / ⇒ [scustaqcha]

A literal rendition of this example would be: ‘I caused it that runny icky material move into fire by acting on it with linear object moving axially,’ which could be translated into: ‘I prodded the guts into the fire with a stick.’

Later, in 1991, Talmy took Path as the central component of the analysis of motion events and redefined his typology establishing two groups: verb- and satellite-framed languages. Languages that convey Path information in the verb root – i.e., conflated with Motion – are verb-framed languages. The second type describes languages that convey that Path information through what Talmy calls ‘satellites’, particles that combine with the verb root in meaning but appear independently in discourse. Thus, in a verb-framed language like Spanish, with examples like (c) above, speakers would focus on the direction of the Path followed by the bottle without providing information as to in which Manner this movement was accomplished. On the other hand, in English, a representative of satellite-framed languages, the Path information is not
expressed in the verb root but rather in independent satellites, and speakers can include Manner information conflated with the verb root. It is important to note that, throughout time, English has developed a large number of verbs that describe with great deal of detail how a movement takes place. Hence, while in the above Spanish example the listener has no way of knowing whether the bottle has made its way into and out of the cave floating, rolling, sliding, etc., the listener of the English example would have a more specific description of the event.

1.4 Motion events typology and sign languages

Applying linguistic terminology to the analysis of sign languages can be a rather challenging task. For one thing, such elements as gesture, gaze or facial expression seem to have been ignored for a long time in the analysis of various languages, ascribing these features to a subdomain of language, or just simply denying any linguistic quality in them. As a result, linguistic analyses have focused on the description of various ‘parts-of-speech’, the subcomponents that form them, as well as the multiple kinds of relations among these items. But when the time to analyze gestural languages came, the use of such categories as ‘noun,’ ‘verb,’ ‘morpheme,’ or ‘affix,’ became more problematic.

The limitations imposed by the meaning of these categories may not be flexible enough to embrace the representation of sign languages. Quite often, in gestural languages, one can find examples where more than one linguistic category seem to be conflated. For example, and without going into much detail, one recurring feature of sign languages is the use of what is referred to as ‘classifiers’ where particular hand-shapes, usually capitalizing on iconicity, are used to refer back to elements in the narrative. Thus Classifier 1 (or CL:1) that is, an extended index finger with all the other fingers in a fist, can be used to represent one person while displacing it
throughout space, meaning person-moving’, and therefore conflating both ‘noun’ and ‘verb.’

Research on gestural languages raises important challenges, not only about the validity and universality of grammatical categories, but also about the very nature of language and linguistic analysis as well.

The issue of motion events in sign language and its relationship to Talmy’s typology has been a point of discussion in the field of gesture studies. The literature on sign languages does not come to any clear conclusions on how to classify them. For Supalla (1990), although different aspects of an event occur simultaneously, there are circumstances in which the corresponding American Sign Language (henceforth ASL) morphemes must be distributed over a series of separate verbs of motion.” Following that line of thought, Supalla (1990) proposes for ASL a serial verb analysis where one verb would encode the manner information of a motion event, and a second verb, would convey the path information. Supalla (1990) reviewed examples such as ‘A human limping in a circle,’ where the signer first introduces the verb limping’ (the manner), and secondly, uses a verb with a classifier describing the circular trajectory (the path). ASL, thus, would be an example of a manner-type, satellite-framed language.

In a study mainly focused on Sign Language of The Netherlands (henceforth SLN), Slobin and Hoiting (1994), disagreed with Supalla and considered “sign languages [to be] by their very nature, path-type and verb-framed languages in terms of Talmy’s typology” (1994, p. 488). They argue that in a gestural language “space is used to represent space, and motion is used to represent motion”, and because “one cannot separate a moving gesture from the direction in which it moves,” (ibid) the motion verb encoded in that gesture moving from one place in space to another, is, necessarily, a path verb. Although they
agree [with Supalla] that the manner verb + path verb sequence can be seen as a serial verb construction, it is still evident that the core schema—namely, directed motion—is encoded by a verb, and not a satellite. (Ibid)

Slobin and Hoiting (1994) note that using one verb of manner before another one of direction is very typical, “perhaps universal,” in languages with serial verb constructions. Also, seeing “no evidence that the verb of manner is the ‘independent nonserial verb’ in the series” (p. 490), they conclude that “ASL, SLN and spoken serial verbs of [the same] type” are “complex verb-framed languages” (p. 492) in which manner can be encoded both by an independent verb, and inflectionally on a path verb in a serial-verb construction (p. 490). But the most compelling argument these authors invoke in favor of ascribing ASL or SLN to the paradigm of verb-framed languages seems to be the special treatment of boundary crossings. Consider the following examples:

(e) *La botella flotó hacia la cueva.
   The bottle floated towards the cave.

(f) La botella flotó por el canal.
   The bottle floated along the channel.

(g) El hombre entró corriendo a la casa
   The man entered running to the house

(h) El hombre corrió hasta la casa
   The man ran up to the house

(i) El hombre corrió de la calle hasta la casa
   The man ran from the street up to the house

(j) *El hombre corrió de la calle en la casa
   The man ran from the street into the house

In a verb-framed language like Spanish, the verb root conflates the path of movement information with the notion of movement itself, and any manner information,
if given at all in speech, would be on satellites. That is the case in (g) for example. However Aske (1989) notes that, in Spanish, examples like (e), (f), (h) or (i), where a manner verb is followed by a satellite depicting path, thus contradicting Talmy’s vision, are quite common in everyday speech. For Aske, the explanation to this puzzle lies in two different types of paths: he distinguishes, on one hand, locative paths, which simply add the information about the location where the movement happens – e.g., Lou ran in the park –, and, on the other hand, telic paths, which predicate “an end-of-path location/state of the Figure,” (1989: 6) – e.g., Pat swam into the cave. Telic paths would be similar to resultative non-verbal predicates, something that Spanish does not have (and by inference, neither do other verb-framed languages). In Spanish, a sentence like ‘Pat kicked the door open’ would require the ‘openness’ information to be included in the verb, relegating the manner, ‘kicking’ to a prepositional phrase, which happens to be a satellite. Aske (1989) contends that both resultative non-verbal predicates and telic paths form part of a “natural semantic class” that Spanish does not possess; one that “indicates an end state/location, a ‘culmination point,’ which results from a previous activity” (1989, p. 6).

Slobin and Hoiting (1994) seem to have agreed with this idea but also added some modification: for them, the crucial element is the crossing of a boundary. They also change the path types to path-focus and boundary-focus. While in a verb-framed language, as Aske (1989) maintains, it is possible to use a manner verb followed by a path phrase, the crossing of a boundary makes this impossible. That is why (j) is an unacceptable sentence in Spanish: it is an end of location, but to access this location one must go through the door, the boundary. In contrast, (i) is perfectly fine since no boundary is crossed, but one must notice the semantic difference: while in (j), the man, is inside the house, in (i), in most contexts, the figure would still be outside the house. According to Slobin and Hoiting’s data, in SLN, signers must express one verb for each boundary crossing. They also considered Aske’s examples
of resultative nonverbal predicates, noting that both “in SLN, and also in ASL,” a sentence equivalent to ‘He kicked the door open’ “is a two clause construction” (p. 497). Slobin and Hoiting (1994) see the same “characteristic pattern of mapping the conceptual structure of events onto syntactic structure” (ibid) in sign languages and in Spanish, and other languages alike, specifically, “a preference toward verb framing” (ibid).

Finally, Galvan and Taub (2004) and Taub and Galvan (2001) study motion events in ASL. After reviewing both Supalla’s (1990), and Slobin and Hoiting’s (1994) proposals, they “confirm the tendencies that they observed but question whether they involve arbitrary linguistics rules or cognitive heuristics” (2004, p. 207).

As for the issue of considering ASL as a satellite-framed language, as Supalla (1990) does, or a verb-framed language, supporting Slobin and Hoiting’s (1994) stance, Galvan and Taub (2004), seem to take a different perspective. For one thing, they considered that the observation about boundary crossings “gives some support to Slobin and Hoiting’s claim that ASL should be considered a verb-framed language” (2004, p. 212). But taking into account that, according to their data, ASL encodes much more conceptual information than English, a prototypical satellite-framed language, they also claim that

[i]f it is true that verb-framed languages (e.g. Spanish) tend to encode significantly less Path and Manner information than satellite-framed languages, we may conclude that if ASL is a verb-framed language, it is highly atypical. Pending future studies, we maintain neutrality on this issue it may even be the case that we need to expand Talmy’s typology to accommodate languages which can conflate Path, Manner, and Figure into a single verb form. (Ibid)

On the cognitive level, Galvan and Taub (2004) noted that although signers could move their hands in the air describing all the elements of a motion event into one single form, they do not:

A priori, because the articulators of ASL are objects (i.e., body parts) moving in space, one might expect that signers would encode all the con-
ceptual information about a motion event in a seamless flow of iconic representation. That is, all of Talmy’s pieces of a motion event might be conflated into one classifier form. Previous work, however, has made it clear that this does not happen. ASL signers do in fact separate different pieces of the event into different linguistic components. (Taub and Galvan 2001, p.179; Galvan and Taub 2004, p. 205)

They attribute this disparity to our conceptual and perceptual resources for understanding motion events rather than to any linguistic reason.

1.5 Bimodalism: the confluence of oral and manual modalities

In order to try to gain some insight into the type of cognition facilitated by language, there may be some advantages to studying the performance of a population that has access to more than language.

When comparing populations across the world one must take into account that not only linguistic differences are at play, but also different cultural practices and values, educational backgrounds, and various life experiences across the individual populations. Therefore it can be complicated to assign any differences in performance to only linguistic factors.

One way to minimize this problem is to look at the confluence of more than one such inventory in the same individual, who, for the most part, may presumably have one set of life experiences.

There are at least two places where one can try to examine the confluence of more than one language in the same individual and the cognitive effects that this may have on a person: one possibility would be to follow and examine the process of acquiring a second language in adults, who through their struggles to create meaning, can reveal the constraints imposed by the linguistic constructions of their first language and how flexible or resistant to change these constraints may be.
Another relevant area to gain some insight into linguistic cognition is the mind of those individuals who grew up with access from very early on to more than one language, to more than one inventory of symbols. This is the case, for example, of children of immigrants, who, in many cases, may use one language at home with their families, and a different one at school. One position could be to argue that these individuals simply have different codes, and when they use one of them their conceptualization is independent of the other, so one speaker could be interpreting some phenomena in a French way, for example, and later on, another in a German way. Following that view, the bilingual mind would simply be the sum of two monolinguals, or the sum of some parts of two monolingual minds, that, while housed under the same roof, metaphorically speaking, would stay in their independent rooms without talking to each other. But this does not seem to be the case (Grosjean, 1989) and it seems that there is evidence that supports that both languages influence each other creating some type of blend with elements from one language and the other, and the blends tend to vary depending on the languages in question.

For example, let’s consider the case of the confluence of Portuguese and Spanish in the same individual versus the confluence of English and Spanish. Spanish and Portuguese share a larger number of grammatical features than English and Spanish do, and it can be argued that, therefore, the Portuguese and Spanish speaker does not differ that much in their language performance compared to the speakers who only spoke either Portuguese or Spanish. However, if we were to look at the confluence of English and Spanish, we could see, for example, that there is a discrepancy in the way these two languages handle time, and it is not uncommon to see in Spanish-English speakers, the production of distinct features of one language when using the other: the use of progressive constructions comes to mind. In English, it is possible to use the progressive form to indicate something that will happen in the future, but Spanish favors the use of what is called the present tense for this. Nevertheless, it is
quite common to observe an English-Spanish speaker using progressive constructions in Spanish (i.e., ‘El próximo semestre estoy tomando una clase de química’, ‘Next semester, I’m taking a chemistry course’), which in most contexts would probably sound odd to the prototypical Spanish ear.

Gesture studies have also looked at the confluence of different languages and the relationship between gesture and speech. In this type of research both Slobin’s TFS framework as well as Talmy’s typology research have been the focus of attention. For example, McNeill and Duncan (2000) researched the differences in gesturing between Spanish and English, and concluded that Spanish speakers coordinated their path gestures with path verbs, which conflate path and motion itself, and marked manner verbally or with gestures. English speakers, however, coordinated their path gestures with satellites while included manner information in the verb form, which conflated the notion of motion itself plus the manner information.

Following McNeill and Duncan’s (2000) research, there have been quite a number of studies that focus on motion events trying to understand if second language speakers can change their TFS patterns. In these studies they have looked at gesture and they way it is coordinated with speech to see if, for example, a speaker whose first language (L1, henceforth) is a verb-framed language, like Spanish, can adapt and develop second language (L2, henceforth) patterns. If speakers change the way they gesture it could be an indication of a TFS pattern change. The results have so far been mixed. Stam (2001, 2008) argues that she observes in advanced L2 speakers patterns that are closer to the L1 native speakers than to the L2 intermediate learners, seeing, therefore some sort of progression towards a TFS pattern shift. On a slightly similar note, Brown and Gullberg (2008) discuss a bi-directionality of influence, where not only the L1 TFS pattern have an influence on L2 production, but also the other way around. These two authors report, in a similar line to work by Anna Pavlenko (2000) or Cook (2003), some effect of the L2 on the L1 production. Meanwhile, studies by

This dissertation also looks both at hand gestures and at the confluence of more than one language, but there are differences that might set it apart, and therefore it may be useful to set and frame the discussion within the boundaries of bimodalism, that is the confluence of oral and manual modalities, as a particular phenomenon on its own.

The initial differences between oral-oral confluence and manual-oral confluence should be obvious: if one language is primarily expressed through sounds produced in the vocal tract, while the other does this through body movements, in theory and simply from a physical, articulatory point of view, ideas, expressions, etc. could potentially be expressed at the same time through two different languages that use two different production channels. Nevertheless, this dual sign language-oral language production does not seem to happen; “hearing signers find that producing speech and sign simultaneously is disruptive to both” (McNeill, 2005, p. 5).

In the case of English and French, it is not possible to express the same concept or idea at the same time in both languages due to the fact that they use the same articulatory devices, which can produce one sound at a time, not two simultaneously. There may be some possible explanations as to why, despite this non-articulatory conflict, bimodals, that is, people with full access to both a manual and a oral language modality, do not “amplify” their message through two channels. For starters, the difference in linguistic structures could be at play. In an oral language, one sound is produced after another, and likewise, one word after another, but in sign languages sometimes it is possible to have a conflation of elements as it is often done with expressions that involve classifiers. There is syntax as well: in the particular case of LSE and Spanish, while the latter has more room than English for example to
construct sentences with the subject at the end, this is not the most common situation, but rather a marked one where the speakers may want to bring attention to the object by placing it at the beginning of the sentence. However, LSE has constructions where the verb may come at the end and they are not marked but the norm.

But other than linguistic trends, there seems to be something else on the articulatory front. For one thing, while hands play an important role in sign languages, it is not the case that sign language is only fully conventionalized hand gestures with linguistic properties. Other elements like facial expressions, body movements and general disposition, as well as lip beats and mouth vocalizations, do play an important role in sign languages. There is another factor here: if gesture and speech are one monistic system, then, to a certain degree there is indeed an articulatory conflict. Poyatos (1980, 1983) argues that communication does take place through multiple channels both for emission and reception, and following that, a person using an oral language still relies on other mechanisms to construct meaning. In sum, the situation does not seem to be one of 100% manual or 100% oral, and every situation and the particular history that participants bring may have an effect.

If gesture studies as a whole have only recently began to get some traction, the work on bimodalism is even more reduced, with just a few studies conducted in the last few years, and, to my knowledge, without any previous one involving Spanish and Spain’s sign language. Following this, and although, the current study was conducted independently and without having knowledge at the time of two very similar lines of research coming out of the United States and Brazil, I will briefly review their work below as it brings light to the issue at play in this study and it may help frame the discussion.

This very recent research on bimodalism has come, first, from the Laboratory for Language and Cognitive Neuroscience at San Diego State University (Emmorey, K., Borinstein, H. B., Thompson, R., and Gollan T. H., 2008), and even more recently,
from the Development of Bimodal Bilingualism project carried out by Diane-Lillo-Martin, at the University of Connecticut, Deborah Chen Pichler, at Gallaudet University, and Ronice Müller de Quadros, at Universidade Federal de Santa Catarina, Brazil.

The studied population in Emmorey et al. (2008) was similar to the current research: Codas, as hearing children of Deaf adults are usually referred to, who grew up learning an oral language and a signed one. Their research looks at English and American Sign Language (ASL, henceforth) instead of Spanish and Spain’s Sign Language as this current dissertation does. Emmorey et al. (2008) studied the bimodality of this population, and reported that rather than code-switching between languages, as happens for example in language contact situations like Spanish and English in New York City, what Codas did while communicating in English was to use what they called code-blends. In code-switching events, the information provided in one language is not then replicated in the other language, but rather different information is expressed in different languages. However, in code-blends in the majority of instances, the situation is one of semantic equivalence. Therefore the information transferred through the oral modality would be equivalent to the one on the gestural plane. Emmorey et al. (2008) reported how codas rarely code-switch but often code-blend their discourse. One important feature of Emmorey et al. (2008), from the present perspective, is that participants were told explicitly to use both English and ASL when communicating with each other.

Continuing this work from San Diego, Casey and Emmorey (2009) also reported how bimodals, even when communicating with non-signers, still co-blended by introducing ASL signs in their English narratives. In this study, bimodals retold the Canary Row cartoon with Tweety and Sylvester to non-signers whom they did not know, and as mentioned, ASL made its way into their English narrative. That same year, Pyers, Gollan, and Emmorey (2009) reported how, compared to English uni-
modals, ASL-English bimodals, more often had situations where they had problems retrieving a word that they are sure to know, what is often call a tip-of-the-tongue (TOT, henceforth). Bimodals’ TOT performances were equivalent to that of English-Spanish bilinguals. Finally, and more more recently, Casey, Emmorey, and Larrabee (2012) conducted a study with English speaking students of ASL as a second language. They reported not only an increase in their gesture production when speaking English as compared to English-speaking students of a Romance language, but also, the introduction of ASL signs into their English narratives.

Rather than working with adults, the work carried out by the Development of Bimodal Bilingualism project, has centered on the linguistic development of bilingual children, taking ASL and English, and Portuguese and Libras (Brazilian sign language) as the focus languages. Building on previous work by Bishop and Hicks (2008), Emmorey et al (2008), Petitto, Katerelos, Levy, Gauna, Tetreault, and Ferraro (2001), or Van den Bogaerde and Baker (2005), Lillo-Martin, Müller de Quadros, Koulidobrova, and Chen Pichler (2010, 2012) researched the cross-modal influence between ASL and English and between Portuguese and Libras, and reported that the code-blending patterns displayed “by the children are much like the adults studied by Emmorey et al. (2008)” (Lillo-Martin et al., 2010, p. 6).

In their 2012 study, Lillo-Martin, Müller de Quadros, Koulidobrova, and Chen Pichler, looked at question formation in bimodal ASL-English, and Libras-Portuguese children. They again reported the influence of the manual modality in the spontaneous oral performance of the children, as they displayed a higher proportion of of non-fronted WH-structures, that is, structures where the WH-portion of the question was not located at the beginning of the sentence – as both ASL and Libras easily allow – than their unimodals English and Portuguese counterparts. Additionally, they also reported a movement in the other direction, with “an overwhelming tendency for bimodal bilingual children to use WH-initial structures in their elicited production of
ASL and Libras, in contrast to monolingual deaf controls who used a greater proportion of non-WH-initial structures” (Lillo-Martin, Müller de Quadros, Koulidobrova, and Chen Pichler, 2012).
2.1 Participants of the study

The analyzed data for this study comes from the spoken narratives of a group of four bimodals, hearing signers/speakers of LSE and Spanish, which are contrasted with the narratives produced by a set of four non-signing native Spanish speakers.

The non-signing group was formed by Marisol, Rafael, Antonio, and Alberto (all pseudonyms). These four participants had no knowledge of LSE or any other sign language. However, the four of them had an advance proficiency level of English, and two of them, Marisol and Antonio, were also native speakers of Catalan. Furthermore, Marisol had an intermediate level of German, and Alberto had a near native command of Italian. At the time of the study, the four members of this group of non-signers were teaching language courses in Spanish and/or Catalan at a major research institution in the northeastern part of the United States, and they were also pursuing advanced degrees in the fields of linguistics and/or literature.

The bimodal/signing group was formed by four hearing native signers/speakers of LSE and Spanish. The four participants, Elena, Paco, Carmelo, and Marcos (all pseudonyms) were born to deaf parents and grew up learning sign language in their interactions with their parents. Additionally, in all cases, they also had a great deal of contact with their hearing grandparents and other family members with whom they interacted in spoken Spanish. The four participants in this group attended and completed compulsory education in Spanish and wrote and read in Spanish. At the time of the study, all four bimodal participants worked as LSE/Spanish interpreters,
and were taking courses to obtain a newly created official LSE/Spanish interpreter certification that Spain’s authorities had established for sign language interpreters. In their personal relationships, they continued to use LSE with their parents, but most of their communicative interactions were with hearing people or other bimodals. Two of the participants also taught LSE to their children so they could communicate with their grandparents in LSE. Since the bimodal group is the focus of the study a more detailed description of language use by each will be provided in order to contextualize and frame the study.

The first participant in this group, Elena, was born and raised with a hearing father and a deaf mother. Both of her grandparents as well as an aunt and uncle on her mother’s side were deaf too. She was married to a hearing partner, and had two hearing daughters. With her husband, she communicated in Spanish, but she had taught LSE to her daughters so they could communicate with their grandparents in LSE and she still communicated regularly with her daughters in LSE. Elena’s education was exclusively in Spanish, from kindergarten to 8th grade, which marked the end of compulsory education when she attended school. She started working as an LSE/Spanish interpreter after completion of her education. She indicated that her first language had been LSE, and although she communicated regularly in Spanish, she stated that she felt more comfortable in LSE than in Spanish, and in general, aligned more to the deaf community than to the hearing one.

The second and third participants, Paco, and Carmelo, were siblings. Their parents were both deaf, but they also spent a fair amount of time with grandparents and other hearing members of their family. Both attended school until the end of secondary education, and were attending interpreter school, at the same time as Elena, to comply with the new official regulations in Spain. Paco was married to a deaf female and had a hearing son with whom he communicated more in Spanish than in LSE. Although he considered himself to be completely competent in both Spanish
and LSE, he said he spent more time interacting with deaf people than with hearing. Carmelo, three years older than Paco, had the same educational background as his younger brother. He had two hearing children who could communicate in LSE (for example, when grandparents were present, LSE would be the language used). Carmelo did not mention a language preference in general; rather he pointed out that the topic of discussion was the most determining factor, and that for example, he felt more comfortable discussing emotions or abstract concepts in Spanish, while he felt that LSE allowed him to describe objects, people, and locations in much richer detail.

Finally, the fourth participant, Marcos, considered himself completely bilingual, although, if he were forced to chose, he said he would identify LSE as his first language, since he felt that it provided a richer content. Both Marcos parents were deaf, but he had a hearing grandmother who was always at home. He had a hearing girlfriend who was also an interpreter with whom he communicated in Spanish for the most part, and occasionally in LSE.

All of the background information about the participants was obtained through an informal individual conversation with each of the participants where their family upbringing, education, work and personal relationships were the focus of the discussion as they related to their language use. There was an initial set of questions for each participant, but depending on their answers other avenues were explored.

One more important element to point out was the fact that the group of bimodals was aware of two things: first, the person conducting the study had some knowledge of LSE; and second, that deaf participants were also being interviewed. While the data from deaf participants is not being used for my dissertation, data was gathered from two groups of deaf people: one group of four people with minimal or no formal schooling and with very limited command of written Spanish, if any, and another group of four more participants with a high level of formal Spanish schooling from elementary school through the university.
2.2 Data collection

The data being analyzed for this study comes from the individual description of a set of 23 images inspired by Talmy’s motion event examples (2000) (see Appendix A for images used in this research task). Participants sat on a chair and while they were being taped, they were shown the images one by one, and asked to describe them as they saw them. All signing participants described the images, first in LSE, then in oral Spanish, and finally in written Spanish, although the written part is not being used in the analysis because the present work focuses exclusively on the gesturing aspect of the participants during their spoken narratives. Participants were told that the focus of the study was on how people narrated stories and at no point were they told to either include or suppress signing while they conveyed their descriptions in Spanish. Obviously, they signed when they described the images in LSE.

In order to further indicate that the study focused on narratives, participants had previously been asked to perform another task that included co-constructing first and then individually narrating a story taken out of a 1979 children’s picture book by Mercer Mayer: *Frog Comes to Dinner*. This is the focus of a future study that is not part of my dissertation. The story in this picture book has no text, and the participants saw the pictures on transparencies projected onto large screens. Participants sat in chairs facing one another, and each participant initially saw only half the images, either the odd or even numbered pages.

In this other research task, participants were first asked to co-construct this narrative in LSE, and then secondly, participants re-constructed the same story, this time in Spanish, and reversed their seated positions, so that the person who had seen the odd numbered pictures, now saw the even numbered and vice versa. Thirdly, each participant retold the story individually, facing the camera and without any visual input, the entire story, again, first in LSE and then in Spanish. Finally, they were also asked to individually write the frog story in Spanish.
While one of the participants wrote the frog narrative, their partner stood in the room, and described first in LSE and then in Spanish what they saw in the images inspired by Talmy’s work. The latter task is the focus of my dissertation.

Each participant sat on a chair facing the camera, and they were shown the 23 images that were displayed mostly on vertically held letter size sheets of paper. One image at a time was discussed. The pages containing one image only, 19 to 23, were displayed horizontally. Most other pages contained two images, one on the top half of the paper and the other on the bottom half. Images numbered 5, 6, and 7 were on the same sheet of paper, with number 5 being displayed on the top half, and images 6 and 7 located side by side on the bottom half of the paper. Images 16, 17 and 18 were organized in the same way. Two images, 3a, and 3b were both used to represent the same event, and participants were told to consider both of them to describe the same reality. The same can be said for 11, with the same event represented by 11a and 11b. One final consideration regarding this set of images was that images 1 through 18 were in black and white, while images 19 through 23 were in color. On a few occasions, particularly with images 3 and 4, participants expressed some doubts about what exactly the image displayed.

2.3 A microgenetic stance to answer a question

The research methodology of this study was inspired by Vygotskian theory, and in particular by his genetic method of analysis. Even more so, it was inspired by a concept of microgenesis, that was not explicitly mentioned as such by Vygotsky himself, but rather was introduced by James Wertsch (1985), one of the main contributors to the dissemination of Vygotsky’s ideas in the last decades. According to Wertsch

[Vygotsky] argued that when conducting laboratory studies, the investigator should at least be aware of the microgenetic processes involved in the formation and execution of a psychological process. (Wertsch 185, p. 54)
Wertsch (1985) claims that in his writings, Vygotsky seems to have recognized two basic types of microgenesis. The first type would be concerned with the short-term formation of psychological processes, and it would require “observation of subjects’ repeated trials in a task setting” (Wertsch, 1985, p. 55), providing the researcher with data that “emerge when an investigator is trying to train a subject to criterion before beginning the ‘real observations’” (ibid).

The second type of microgenesis, the one concerned in this study, would be “the unfolding of an individual’s perceptual or conceptual act, often for the course of milliseconds” (ibid). Wertsch claims that Vygotsky “was concerned with the transformations in the dialectical movement from thought to speech utterance” (ibid).

Vygotsky (1986) considered that an analysis that would seek “to explain the properties of verbal thought by breaking it up into component elements, thought and word” (1986, p. 211) would fail, because, neither of them taken separately, possesses the properties of the whole” (ibid). For Vygotsky, the “unit of verbal thought [would be] word meaning, [...] a phenomenon of thought only insofar as thought is embodied in speech” (ibid). In Vygotsky’s view, words were not simply representing thought, but rather, thought comes into existence through words themselves.

In this study, the aim is to look at a precise combination of speech and gesture, as the subjects are trying to describe a particular phenomenon; their “words,” would try to bring into existence a thinking process where their history, what they have recently experienced, will be relevant.

The subjects in this study first described the images in LSE, and then in Spanish. The important notion here is to examine if any elements from their LSE descriptions are brought into their Spanish narratives, and if so, the nature of their interactions with oral components. The aim is to look at the thinking process as it unfolds into “words,” speech and gesture here.
It is important to take into account that the methodology used in this research aims at eliciting a particular reaction from the participants through specific circumstances as well. LSE, like ASL, and other sign languages, offers signers certain options to incorporate a rich amount of information in the description of pictures representing motion events. Obviously, Spanish or English can provide rich descriptions as well, but the difference would be in the level of lexical items needed to incorporate the same degree of information. The question that generated this project was whether a bimodal LSE/Spanish population would gesture differently than Spanish unimodals when describing motion events, and if so, what would be the qualitative differences in their gestures. The relevant research issue from this meaning-making perspective is whether participants feel the need to include certain information or not in their narratives, and if so, what communicative resources they use, and how they combine these resources.
CHAPTER 3
ANALYSIS OF DATA

3.1 Transcription conventions

Based on McNeill (2005) and ten Have (2007), the following conventions were used for the transcription of data in this study:

[beginning of gesture phase
(word) gesture description
word word in Spanish
word stroke of the gesture
word gesture hold
WORD LSE sign
? rising intonation
+ pause
: elongation of sound
RH Right Hand
LH Left hand

Additionally, please note that when spatial location regarding the position and movement of the participants’ hands is provided, this should be understood as coming from the point of view of the participants. Thus, a description saying, for example, that “RH moves from the left to the right” should be understood as describing a movement of the participant’s right hand, making a move from left to right from the participant’s point of view.
3.2 Lamp images

The first two images shown to the participants in the study focused on lamps:

Figure 3.1. Man reading.

The second image, below, was the simpler of the two. There were only two elements: the lamp and the table it was on:

Figure 3.2. Lamp on a table

Not surprisingly, probably, and especially considering that the second image was the more simple one, none of the participants, signers and non-signers, displayed any significant gestures related to Figure 3.2 above.
Figure 3.1 displays five elements that speakers could focus on: a man, a book, a table where the book rests, a lamp that illuminates the book, and the beam of light that comes out of the lamp. In their narratives, none of the non-signers displayed any gestures at all, and their verbal depiction focused on three elements at most, either not mentioning the table at all, or simply reducing their focus to the man and the book, or the man and the light.

Below we find four examples from non-signers.

(1) Rafael (Figure 3.1, Man reading)

un hombre y hay una especie de triángulo creo
a man and there-is a type of triangle I-think

‘A man and there is also some kind of triangle, I think.’

(2) Marisol (Figure 3.1, Man reading)

Un hombre leyendo un libro
A man reading a book

‘A man reading a book.’

(3) Alberto (Figure 3.1, Man reading)

una persona que está leyendo un libro y sobre el libro se proyecta
one person who is reading a book and over the book it-is projected
una luz que sale parece de un flexo
a light that comes-out it-seems of a flexi-lamp

‘A person who is reading a book, and what it seems to be a flexi-lamp, projecting light on the book.’

(4) Antonio (Figure 3.1, Man reading)
Un hombre que está estudiando y el libro está iluminado por un flexo

flexi-lamp

‘A man studying with his book being illuminated by a flexi-lamp.’

As mentioned above, none of the non-signers mentioned the presence of the table. The first two examples focus on two elements: the man and the book (Marisol) and the man and the beam of light projected by the lamp (Rafael) although, there was some hesitation by this participant. The other two participants clearly mentioned the man and the book, and most importantly for what is being discussed here, both acknowledged the presence of the lamp.

Two of the bimodal participants mentioned all the elements while the other two, as well as the non-signers, left out the presence of the table in their LSE narratives.

(5) Elena (LSE, Figure 3.1, Man reading)

ONE MAN BOOK LIGHT

‘One man reading a book under the light of a lamp situated to his right, and that leans form the right to the left.’

In transcript (5) above, signing participant Elena lifted her right hand (RH, henceforth) placing her hand a little higher than her elbow in a slight right to left leaning position, and then signed Light. This was accomplished by initially making a fist and rapidly opening the hand with thumb and fingers extended. In this case, the fingers extended downwards describing the orientation of the beam of light. Finally, her RH, maintaining that same extended fingers configuration, descended to the point in space where the book was originally placed, and therefore, described the cone covered by this beam of light.
Another bimodal participant, Marcos, provided a nearly identical rendition, but left out any information regarding the table, as did the non-signers. Finally, the other two bimodals, Carmelo and Paco, provided the same information as Elena and Marcos did, but they also made explicit mention of the presence of the table at the beginning of their signing. This is Paco’s rendition in LSE:

(6) Paco (LSE, Man reading)


‘One men sat at a table reads a book under the light of lamp that is located to his right and which leans from right to left.’

A revealing phenomenon appeared in the spoken Spanish depictions, and the gesturing and its properties at play with the accompanied speech.

First, neither Carmelo nor Elena performed any gestures in their spoken Spanish depiction of the image. Also, in both cases, similar to the non-signing participants, they remarked on the presence of the lamp, but they did not provide any information regarding the exact lamp location or the beam of light.

(7) Carmelo (Man reading)

\[\text{un hombre leyendo un libro y al lado tiene un flexo}\]

a man reading a book and to-the side has a flexi-lamp

‘A man reading a book with a flexi-lamp next to him.’

(8) Elena (Man reading)

\[\text{un señor leyendo un libro y una luz iluminando el libro}\]

a man reading a book and a light illuminating the book

‘A man reading a book illuminated by a lamp.’

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Finally, both Paco and Marcos introduced gestures in combination with their speech, providing in both cases additional information regarding both the location of the flexi-lamp as well as the specific type of light produced by the lamp. Paco, who had also mentioned the presence of the table in his signing narrative, mentioned this element through Spanish speech also:

(9) Paco (Man reading)

\[ \textit{una persona leyendo un libro en una mesa con un flexo} \]

one person reading a book at a table with a flexi-lamp

(LIGHT sign moves upward from lower left to upper right)

\[ \textit{con una luz que ilumina correctamente el libro} \]

with a light that illuminates correctly the book

(RH forms LIGHT sign)

‘A man sat at a table reads a book correctly illuminated by the cone of light produced by a lamp located to his right and which leans from right to left.’

Gesturally, Paco used both hands; his LH was resting at waist line facing upwards with palm open and representing the book being illuminated, while his RH moved from the bottom left to the upper right while uttering the words \textit{con un flexo} (with a flexi-lamp). Paco’s RH stopped its moving trajectory coinciding with the end of the word \textit{flexo}, at which point the RH clearly showed a LIGHT sign, with both forefingers and thumb extended and pointing downwards and to the left toward where the book would be located. That gesture located, first, the position of the lamp with respect to the person that appeared in the image. Paco accomplished this by using his own body to signal the position of the person being described. Then, the signing also marked the cone of light that illuminates the book, and the orientation from which this cone of light is coming: upper right to lower left.
Marcos’ depiction followed the same pattern, as it also signaled through gesture the same location and characteristics of the lamp’s cone of light:

(10) Marcos (Man reading)

una persona leyendo un libro / y está iluminado por una lámpara
a person reading a book and is illuminated by a lamp

‘One person reading a book illuminated by a lamp.’

In transcript 10 above, Marcos’ gesture phase began with y (and). Then at the stroke, coinciding with the last two syllables of iluminado (illuminated), his RH formed the LIGHT sign – the palm of his hand was curved in concave form and the fingers and thumb extended pointing downwards. Also, the arm of his RH adopted a leaning position with the elbow located on the lower right and the wrist on the upper left (Figure 3.4).

One final consideration regarding Marcos’ example is the fact that based on his words it would not be entirely clear what is being illuminated, the book or the person. He used está iluminado (it/he is illuminated) which could refer back to either the book or the person in Spanish, as both would be masculine and singular.
3.3 Tomato images

After the two lamp images, participants were shown another duo of images, focusing on different pieces of tomato. It is worth noting that, unlike English, Spanish does not lexically differentiate between slicing, chopping, or dicing. Spanish uses the verb *cortar* (to cut) followed by phrases like *en rodajas* (in slices), or, *en cuadraditos* (diced).

The two tomato representations were actually formed by three images, as the first two, Tomatoes A, and Tomatoes B, were meant to represent the same reality from two different angles, and participants were told to consider both as representing the same reality.
The second tomato representation shows a bottle of ketchup next to a stack of tomato slices:

For these images, two of the non-signing participants did not display any kind of gestures in their rendition (transcripts 11 and 12 below), while the other two did gesture in combination with their speech (transcripts 13 and 14 below):

(11) Rafael (Stacked tomato slices)
un envase de ketchup de salsa de to: no ketchup Heinz y al lado a container of ketchup of sauce of to: no ketchup Heinz and to-the side una torre de galletitas Oreo a tower of cookies Oreo

‘A container of ketchup, of sauce of to, no, ketchup, Heinz, and next to it a stack of Oreo cookies.’

(12) Marisol (Stacked tomato slices)

Una botella de ketchup y al lado uh: no sé qué es eso:
A bottle of ketchup and to-the side uh: no I-know what it-is that tomates?: una pila de tomates
tomatoes a pile of tomatoes

‘A bottle of ketchup and next to it, I don’t know what that is, tomatoes? ... A stack of tomatoes.’

(13) Antonio (Stacked tomato slices)

/Tomate envasado en una botella y al lado hay como una columna de rodajas de tomate
Tomato contained in a bottle and to-the side there-is like a column of slices of tomato

‘A bottle of tomato sauce and next to it like a stack of tomato slices.’

In transcript 13, while uttering the word tomate (tomato) non-signing participant Antonio held his LH down with his palm and fingers facing upwards and forming a type of container form. At the same time his RH fingers and thumb came together extended and pointing downwards, and the hand made a downward movement as tomate was uttered. It is relevant to note at this point that the previous image
shown to the participants displayed a bowl containing pieces of chopped tomato, which can possibly explain the LH configuration.

![Image](image.jpg)

**Figure 3.8. Transcript 13**

The same hand configurations was maintained while the next words, *envasado en una botella* (contained in a bottle) are pronounced, and now the RH makes an upward movement. Then his RH rested on his LH keeping the same configuration for both hands again. In the next two gesture phases, that coincided, first with the verb form *hay* (there is), and then, with the noun phrase *una columna* (a column) his RH was initially lifted with the verb, and it was held up in the air while uttering *como* (like). Afterwards, his RH moved into a slight stacking up and down motion while being maintained up in the air and not touching his LH that remained in the same place. Figure 3.9 illustrates the column imagery, while Figure 3.10 is an instantiation of the stacking motion to which I have referred.

![Image](image.jpg)

**Figure 3.9. Transcript 13**
A final gesture phase emerged coinciding with *de rodajas* (of slices). Antonio’s RH gesture changed and the fingers and thumb were extended horizontally and away from his chest. With this configuration his RH moved back and forth from left to right.

The revealing factors for analysis are: first, the upward movement of the RH coinciding with the word *botella* (bottle); second the up in the air movement to convey the sense of several elements being stacked up one on top of another; and third, the horizontal left to right movement coinciding with *de rodajas* and signaling how the tomato pieces had been cut. To further illustrate the last point, it is relevant to repeat that unlike English, Spanish does not possess an inventory of verbs forms that convey different types of cuts. Spanish uses a basic form, *cortar*, equivalent to the English “to cut.” Therefore, in Spanish, in order to convey a particular type of
cut, *cortar* must be followed by another lexical element like a prepositional phrase such as *en rodajas* (in slices).

(14) Alberto (Stacked tomato slices)

*A la derecha hay una botella un botellón de cerveza probablemente*  
To the right there-is a bottle a little-bottle of beer probably

*y luego a su izquierda la verdad que no sé que es son como*  
and then to its left the truth that no I-know that it-is they-are like

*[como una especie de fichas [de torre de fichas pues una encima de la]*  
like one type of chips of tower of chips well one on-top of the

*otra*  
other

“On the right there’s a bottle, a small bottle of beer probably, and then to its left, well honestly I don’t know what that is, they are like some kind of chips stacked up one on top of another.’

The fourth non-signing participant, Alberto, also resorted to gestures, although in a slightly different fashion. First, his RH formed a gripping form with forefingers and thumb coming quite close but not touching, signaling the roundness of the object being described.

![Image of a hand gesture](image-url)

**Figure 3.12.** Transcript 14
The second gesture phase maintained the same RH configuration but then there was an upward movement that coincided with the words *de torre* (of tower) and it signaled the verticality of the object, the stack of tomato slices.

The signers’ depictions of the same image had their own specificities.

(15) Carmelo (Stacked tomato slices)

> varias rodajas de tomate apiladas *como* en una *especie* de torre y

several slices of tomato piled like in a type of tower and

> al lado aparece *una botella de bebida*

to-the side appears a bottle of beverage

> “Several tomato slices stacked up in some kind of tower and next to it a drink bottle.’

In transcript 15 above, first, RH, remaining in a lower position, and LH, in a higher, more salient and visible one, coinciding with *como* (like) formed a C-shape form very similar to the one used by Alberto (transcript 14) in his description:

![Image](image.png)

**Figure 3.13.** Transcript 15

Subsequently, a new gesture phase began verbally with the preposition *en* (in/on) and gesturally by raising the LH while maintaining the same hand position:

Then and coinciding with the article *una* (one/a) the RH began to raise as he uttered *especie* (type):
The final gesture stroke coincided with word *torre* (tower) with the RH moving upwards, while the LH remained pretty much in the previous position where both hands had met:

Elena used the same C-shape (see transcript 16 below) with both hands this time.

(16) Elena (Stacked tomato slices)
One bottle and to-the side it-may-be that there is one pile of bottle-caps piled one on-top of other

‘One bottle and next to it there may be a pile of bottle caps stacked one on top of another.’

As in the previous examples, the thumbs were closer to the chest of the speaker than the fingers. Elena placed her RH on top of her LH, and then moved her RH upwards while her LH stayed in its original position, to finally slightly retract downwards. Figure 3.17 shows her final hand position coinciding with apiladas (piled):

(17) Paco (Stacked tomato slices)

Una botella y a su derecha [encontramos forma cilíndrica] [+formando un: un: tubo una columna

a a tube a column
‘A bottle and to its right we find some cylindrical form forming a tube, a column.’

In example 17, Paco used the same C-shape with both hands, and slightly swung his RH back and forth from lower left to lower right, while his LH remained static at waist height. This gesture phase coincided with the words *encontramos forma cilíndrica* (we find cylindrical form). Figure 3.18 shows his hands at the extent of their slight swinging point to the right:

![Figure 3.18. Transcript 17](image)

Right after these words and before uttering *formando* (forming) and coinciding with a speech pause, his RH, with same hand configuration, moved upwards from lower right to top right. That gesture signaled the verticality of the object that was subsequently introduced by speech. Figure 3.19 shows both hands at the beginning of that vertical movement and Figure 3.20, at the end:

![Figure 3.19. Transcript 17](image)
In transcript 18, the final bimodal, Marcos, did not use the same C-shape hand configuration:

(18) Marcos (Stacked tomato slices)

\[\text{Una montaña de rodajas de tomate y un Kétchup}\]

One mountain of slices of tomato and a Ketchup

‘A pile of stacked up tomato slices and a (bottle of) Kétchup.’

Marcos initially placed his RH on top of his LH with his LH situated at his waistline with his palm facing upwards and his RH palm facing downwards on top of his LH:
Then his RH moved upwards from waistline until it reached the height of his shoulders:

![Image](image.png)

**Figure 3.22.** Transcript 18

The common characteristic of the first four image prompts in the study (lamp and tomatoes) was the absence of movement in all of them. These images all focused on the location of objects with respect to others or in the resulting form adopted by an object after having gone through a process of transformation (e.g., being sliced or diced into pieces).

### 3.4 Stairs and slide images

The following images that were presented to participants in the study displayed objects that were in motion with respect to another. First, there was movement up/down a set of stairs formed by four images where one object, the figure, moved with respect to the stairs, or ground.

For the most part, all of the participants described what they saw in these images repeating the same pattern throughout the series. If participants described the first image mentioning the figure first and then the ground, they repeated that same structure with the other images. If they chose to mention first the ground, the set
of stairs, and then the figure, they maintained that pattern. Additionally, in the majority of cases they did not resort to gestures at all, or limited them to the types of gestures characteristic of showing or offering an explanation (i.e., one or both hands in a relaxed mood, open and with palms facing upwards.)

The first image in this set, Figure 3.23, showed a small dog running down a set of stairs.

![Image of a dog running down stairs](image)

**Figure 3.23.** Dog running down the stairs

The only significant gesture from any of the participants came from Marcos (transcript 19 below). In his signing depiction of this image he had used his RH with his index and middle fingers alternatively moving up and down in the air while his right arm went from a higher position to a lower one to mark how the figure, the dog, was going down the stairs. This was followed by a movement where both hands represented the paws of the dog and the motion they performed.

His Spanish depiction of this image with the dog running down the stairs was nearly identical to what he had previously signed:

(19) Marcos (Dog running down the stairs)

*Un perro o un gato bajando unas escaleras*

One dog or one cat going-down some stairs
'A dog or a cat going down the stairs.'

His RH moved as *bajando* (going down) was uttered, and it seems that some elements were introduced. Taking the speech alone and by itself there is no specific manner information as to how the movement down the stairs took place. It can be argued, however, that particularly in the case of a dog or cat, the image displays the most stereotypical way of accomplishing this movement. Nevertheless, Marcos’ RH movement seems to be an attempt to specify that the dog indeed walked down the stairs with his front paws leading the way.

Marcos’ RH went up and then down while uttering *bajando*, but, on its way up it seems that both his index and middle fingers, used previously to represent the legs of the dog, were somehow separated with a higher tension and firmness than the rest of the fingers:

On its way down all his RH fingers seemed to have the same degree of tension:
It appeared that this gesture was an example of an unresolved tension where the speaker-signer was trying to create a symbol that allowed him to mark that manner and orientation of the movement. He was clearly not signaling PAW as he did in LSE, and he clearly was not fully using a V classifier with index and middle finger, but what he did went beyond simple idiosyncratic gesticulation.

Then, two images displayed respectively, a person falling down a set of stairs, and a man going down a waterslide. The retelling of these images provided similar insight about the difference in how bimodals portrayed the position and the manner of movement of the figure.

Figure 3.28 shows a young person falling down a set of stairs because presumably he or she did not see the danger sign warning pedestrians that the stairs were wet and slippery:
As in other examples, two of the non-signers described the image without resorting to any type of gesticulation:

(20) Marisol (Slippery When Wet)

Un chico que se ha resbalado y que se está cayendo por las escaleras.

‘One guy who has slipped and is falling by the stairs.’

(21) Rafael (Slippery When Wet)

Veó a una chica o a un chico con el pelo largo que se ha resbalado y está cayendo rodando por las escaleras y hay una señal de cruce de tren en el fondo

of crossing of train in the background
‘I see one girl or a guy with long hair who has slipped and is rolling down the stairs, and there is a train crossing sign in the background.’

The other two non-signers did show some features with gestures that also emerge in the signers’ gestures, although with important qualitative differences.

(22) Antonio (Slippery When Wet)

Una chica está cayendo porque se está resbalando porque
One girl is falling because to-herself is slipping because
hay líquido o hielo
there-is liquid or ice

‘A girl is falling because she is slipping because there is liquid or ice.’

In transcript 22 above, Antonio has his LH at waist height, with forefingers pointing away from him. His RH is relaxed and forefingers are not completely extended. His LH palm faces his RH but it is also slightly tilted outward. The gesture stroke coincides with the word cayendo (falling) and is executed by moving his RH palm and fingers back and forth. Figure 3.29 shows Antonio’s RH at the end of cayendo:

![Figure 3.29. Transcript 22](image)

The second gesture phase also involved his RH, but in this case the form of his hand was one where the tips of his fingers and thumb came together in a somewhat extended position. The two strokes appeared in conjunction with the words líquido
(liquid) and *hielo* (ice) and in both cases it was achieved with a slight wrist twist. Figure 3.30 shows his hand configuration:

![Figure 3.30. Transcript 22](image)

There was some imprecision on the speaker's part with regard to what caused the person to slip and finally fall. He was unsure whether the cause was liquid or ice, and he aimed to bridge his imprecision with gesture.

In transcript 23 below, Alberto used two gestures to accompany his speech. The first one was produced with both of his hands located at waist height, curled up in a concave form with his fingers pointing toward his waist, and ended with both of his hands rotating outwards and with palms slightly facing upwards.

(23) Alberto (Slippery When Wet)

*una viñeta de dibujos animados en las que una chica está + en la*  
a picture of drawings animated in the that a girl is in the that  
*que una chica está /cayéndose por las escaleras*  
a girl is falling by the stairs

‘One frame of a cartoon where a girl is where a girl is falling down the stairs.’

Figure 3.31 shows both of his hands at the final position:

It is relevant to note in transcript 23 above, how Alberto slightly changed his discourse from *en las que* to *en la que*. The only difference was from *las* to *la*, female
plural versus female singular. Alberto was referring to a frame of a cartoon, using the word *viñeta* which is female. It seems that the gesture he used here could be a result of trying to clarify or rectify his initial speech mismatch, between the initial female singular element and the female plural pronoun he initially used. The hand gesture he used is a very common one used to offer an explanation or to clarify something. A second hand gesture, however, coincides with *cayéndose*, (falling) and this was produced by his RH moving from right to left with his palm facing inward. At the beginning of the stroke, his RH was located to the right side of the speaker, and the palm of the hand was visible:

![Figure 3.32. Transcript 23](image)

Then, at the end of the stroke, the hand is in the center and his palm was facing slightly downward and was no longer visible:
Here, similar to Antonio, there was an intention to mark the trajectory of the movement through the use of gesture.

Transcripts 24 and 25 below illustrate two of the signers’ depictions in Spanish and their gesturing during the description of the Slippery When Wet image.

(24) Paco (Slippery When Wet)

'/una señora que no ha visto una indicación de peligro y total las escaleras están resbaladizas y por-lo-tanto resbala y se está cayendo a una gran velocidad'

‘A woman who has not seen the warning sign, and, in sum, the stairs are slippery and therefore, she slips, and she’s falling down the stairs at a great speed.’

There were a couple of interesting aspects about Paco’s narrative. In his LSE narrative, Paco had made explicit mention of the rate of the speed at which the person falls down the stairs. Then in his Spanish narrative, this speed information was conferred through the final adverbial, a *una gran velocidad* (at a great speed) which, while perfectly grammatical is somewhat odd. Looking at his gestures, there
seemed to be one element that revealed his thinking-for-speaking processing. He began his narrative by acknowledging that the person had not seen the warning sign in order to explain why this person fell down the stairs. His initial gesture, that coincided with una chica (a girl) was simply a beat, that would later lead to the offering of an explanation articulated with y (and) and retracted right before total (in sum). Opening the RH palm and placing it facing upwards produces this offer of explanation:

![Figure 3.34. Transcript 23](image)

The interesting gesture here, however, appeared in connection with resbala, (slips) and it was produced with the RH in approximately the same location. The revealing factor was the tension and the orientation of his hand. Fingers were fully extended, in tension, and pointing away from his body and tilted down:

![Figure 3.35. Transcript 23](image)
To a certain degree, this could have been a way of conveying the position of the person and the orientation of the fall. These same ideas were also incorporated into another signer, Marcos’, Spanish utterances (transcript 25 below):

(25) Marcos (Slippery When Wet)

\[
\text{y } \text{[una chica] } \text{[pues que]} \text{ [incluso con una advertencia de [peligro de]}} \\
\text{and a girl well that even with a sign of danger of}} \\
\text{bajada de escaleras [resbaladizas pues eso cayéndose por las escaleras}} \\
\text{descend of stairs slippery well that falling by the stairs}}
\]

‘And a girl that even with a warning sign about the slippery stairs, well, she is falling down the stairs.’

In transcript 25, there was a clear interaction between the oral and manual modalities. Concrete elements of LSE were brought with a high degree of detail into the spoken narrative. Slippery When Wet showed a person falling down the stairs, but neither a possible description in English such as “to fall down the stairs’” nor a Spanish equivalent as \textit{caer por las escaleras} provides further information regarding certain qualities of the fall, which may or may not be relevant for the speaker. For example, conceivably, the person could fall down the stairs having initiated the movement at the bottom or at the top of the stairs, and that information is not conveyed by \textit{caer por las escaleras}. Likewise, how did the person fall? Did the person land on the chest, the back, or on the side? With the feet facing the bottom of the stairs, the top, or somewhat sideways? That information was clearly marked in LSE, and was also brought into Marcos’ narrative in Spanish in transcript 25 above, as he had previously done in LSE. An analysis of his gestures provides the following insights:

First, coinciding with \textit{una chica} (a girl) his RH was higher than his right shoulder. Then, there’s a little pause, and his RH began to articulate a V classifier, formed with ring and index finger extended.
This initial movement conflates with the following one where the gesture stroke coincides with *incluso* (even). The whole phrase is one where RH was initially lowered to a center mid-level to end up with it again on an upper right side, moving therefore from the center to the outside; his RH palm opened during the movement. Figure 3.37 shows the RH at the end of the phrase:

The idea behind that gesture was to dismiss something; what is being dismissed was the warning sign. The second gesture phase’s stroke occurred at *de bajada* (of descend) and Marcos’ RH “signed” exactly that, descend:
The sign/hand gesture is performed using a V classifier, and this could either represent the descent, the stairs themselves, or the actual person going down the stairs, with the legs being represented by the index and middle fingers. The same hand configuration was used afterwards coinciding with *eso* (that). The motion was amplified, with his RH making a forward and downward movement initiated almost at shoulder height and finishing/ending at his waistline. But the key is the hand configuration, how through this V classifier, Marcos was encoding, in conjunction with his speech, the orientation of the fall: the person fell with her back against the stairs, and her feet were facing forward toward the bottom of the stairs.

There was one more gesture in this example, and it coincided with *resbaladizas* (slippery). What Marcos did was just simply to “sign” the same information again. So, slippery is conveyed simultaneously through manual and oral means. Figure 3.39 shows Marcos signing in his Spanish depiction, *resbaladizas*:

In a similar fashion to Slippery When Wet with a person falling down the stairs, Image 9 below shows a person going down a water slide. There is more than one way in which this movement could be accomplished although some falls may be less common or stereotypical than others.
In Spanish, the non-signers used the verb *tirarse*, (to throw oneself), or *deslizarse*, (to slide oneself). Same as their English counterparts, this usage does not imply how one throws or slides down the water slide, i.e., whether the back or the chest is against the surface, whether you slide feet or head first, or how your arms are positioned with respect to the rest of the body. It could be argued that the default or most typical way is the one shown, but the description using *tirarse* or *deslizarse* does not rule out other possibilities. If anything, *tirarse*, (to throw oneself), seems to imply less control than *bajar*, (go down), but it is not as common. Transcripts 26 and 27 below are from two non-signers, Rafael and Marisol who, as in other examples, did not use any gestures in their narrative:
Rafael (Water slide)

veo un tobogán de agua y un chico con unas bermudas de estilo hawaiano que viene deslizándose por el agua por el tobogán

I see a slide of water and a guy with some swim-trunks of style Hawaiian who comes sliding by the water by the slide

‘I see a water slide and one guy wearing Hawaiian style swim trunks who is sliding down the water slide.’

Marisol (Water slide)

Un tobogán de un parque acuático+ un chico que se está tirando de un tobogán de un parque acuático

A water slide in an aquatic theme park, a guy throwing himself down the slide.

Despite no overt clear manner information in their description, it seemed that for both Rafael and Marisol, the presumed shared knowledge of how this particular type of motion is most commonly performed was enough and they did not resort to any explicit wording or gesturing to specify it. The other two non-signing participants, Antonio and Alberto, did gesticulate:

Antonio (Water slide)

Vemos a un chico que /se está tirando de un tobogán de un parque acuático

‘We see a guy throwing himself down the slide of an aquatic park.’
‘We see a guy who is throwing himself down a slide in an aquatic park.’

Antonio had both hands placed together between his knees, with LH on top of RH and fingers and palms facing downwards. At *tirando*, both hands make a slight clapping downwards movement, signaling the verticality, the path of the movement, but there was no manner information about the quality of this movement.

(29) Alberto (Water slide)

> un hombre que está+ no sé dónde está+ está como tirándose

A man who is, I don’t know where is, is like throwing-himself

> por [un tobogán+ de estos de un parque acuático]

by a slide of those of a park aquatic

‘A man who is, I don’t know where he is, who is like throwing himself down one of those slides at an aquatic park.’

In transcript 29, Alberto made a significant and revealing gesture when he seemed to be attempting to convey both the concavity and verticality of the slide, providing information regarding the ground element in this case. He used both hands to make a revolving movement that began by placing both hands with palms facing inwards at the chestneck border region. At this initial stage both hands are close to the body, but then the movement sees both hands ending up with both palms facing downwards and arms extended, although not fully. Figures 3.41, 3.42, and 3.43 display the hands at the beginning, at somehow mid-level, and at the end of the movement.

During their LSE descriptions, the four signers facilitated information as to how the movement was achieved, namely that the legs of the person were facing downwards. Below we find Elena (Figure 3.44) and Paco (Figure 3.45) signing this information.

If we look at these images, we can see in both cases the position that the LH adopts, as well as its configuration, that of an open palm facing the RH. LH represents there
the inner wall of the slide the person is sliding on. All signers with the exception of Marcos clearly marked the concavity of the slide at the beginning of their LSE description of this image. Figure 3.46 shows Carmelo signing concavity.

Additionally, during his LSE depiction, Carmelo, also indicated the position of the arms of the person (Figure 3.47).
If we look now at their Spanish renditions, we find that Carmelo and Elena did not convey any information, gesturally or orally, regarding the position adopted by the person, the figure, or about the concavity of the slide, the ground.

(30) Elena (Water slide)
A water slide from the water parks and a man throwing himself down the slide.

‘A water slide from the water parks and a man throwing himself down the slide.’

The other two signers gesticulated. Paco’s gestures were essentially beats, but Marcos’ were more meaningful.

‘One person going down a slide in a water park.’

Paco had both hands on his lap, with his fingers crossed the whole time. At bajando (going down) he quickly moved both hands up, and then immediately down,
his fingers were crossed the whole time. This gesticulation marked the downward
direction of the movement, and therefore reinforced gesturally the path information
already provided by his speech. From Paco’s speech and gesticulations, the interlocu-
tor learns nothing about the quality of the movement, or any information regarding
the person, the figure, or the slide, the ground. Figure 3.48, and Figure 3.49 below
show Paco’s hands at the highest and lowest of the movement:

Up ...

![Figure 3.48. Transcript 32](image)

... and down.

![Figure 3.49. Transcript 32](image)

The meaningful gesturing comes from Marcos depiction:

(33) Marcos (Water slide)
Una persona en un parque acuático lanzándose por un tobogán de agua.

‘A person at a water-park throwing himself down a slide.’

In this transcript there are two gestures, and in both cases, their preparation began near the end of a word, acuático and tobogán respectively, and both strokes coincided with a speech pause, Marcos’ gesture (Figure 3.50) involved his arms crossed at chest height and both hands holding their opposite upper arms:

![Image of Marcos with arms crossed](image)

**Figure 3.50.** Transcript 33

Marcos used his body to represent the body of the person going down the slide. For example, by placing his own hands on his upper arms Marcos provided information regarding where the hands of the person going down the slide were located. Additionally, he slightly bent backwards providing as well information as to how the back of the person going down the slide was in contact with the slide surface. All this manner information was provided immediately before he orally uttered the path information. During his LSE depiction, he had also provided that information about the figure.

His second gesture, which, like the previous one, coincided with a speech pause, was performed by his RH making a downward movement with palm facing down and
fingers extended. At the same time, he also held his LH up in the air with the palm facing the RH similar to what Elena and Paco did during their LSE depictions. Below we find three pictures (Figures 3.51, 3.52, and 3.53) that illustrate the whole motion from beginning to end:

![Figure 3.51. Transcript 33](image1)

![Figure 3.52. Transcript 33](image2)

![Figure 3.53. Transcript 33](image3)
If we were to put together all the information conveyed in Marcos’ speech and gesturing, his depiction would be: ‘One person with his arms crossed over his chest and his feet facing downwards is throwing himself down a concave water slide.’

### 3.5 Swirling smoke images

Two images, Figure 3.54 and Figure 3.55, were used to portray the notion of swirling smoke, and participants were told to consider them as representing the same idea.

**Figure 3.54.** Swirling smoke A

**Figure 3.55.** Swirling smoke B
This is one very clear example where Spanish, unlike English, does not encode manner in its verb root and if speakers make any comment about the shape of form the smoke it is through adverbial phrases like *en remolino* (in a swirl) or *en espiral* (in a spiral) although it is common to disregard any information, or just simply move into manual modality.

As they did with all the other images, non-signing participants Rafael and Marisol described the images without gesturing:

(34) Rafael (Swirling smoke)

\[
es\text{ una foto}\text{ de un tornado}
\]

it-is a photo of a tornado

‘It is a photography of a tornado.’

(35) Marisol (Swirling smoke)

\[
Es\text{ humo que sale de no+ no sé si es humo o es fuego}
\]

It-is smoke that comes-out not not know if it-is smoke or it-is fire

\[
pero\text{ es una nube de humo}
\]

but it-is a cloud of smoke

‘It is smoke that comes out of ..., no ..., I don’t know if it is smoke or fire but it is a smoke cloud.’

In both cases the semantic information contained in the nouns they used, *tornado* (tornado) and *nube de humo* (cloud of smoke) conveys to a certain degree a shape and form of the smoke. While it may not be the intended idea, the word *tornado* does encapsulate turning in it. Also, while the upward orientation of the swirling smoke in the picture is not present in Marisol’s description, the word *nube*, (cloud), does signal a bubbly shape which is suitable but only partially describes this swirling smoke image.
The two other non-signers, Antonio and Alberto, did gesture to try to describe the images.

(36) Antonio (Swirling smoke)

\[
\text{Puede ser como un cráter en erupción}
\]

It may be like a crater in eruption

‘It seems like a crater in eruption.’

There is doubt in Antonio’s words as to what exactly the picture shows, and this can be seen both in the choice of the verbal construction \textit{puede ser} (it may be) as well as the three pauses in his speech. Initially, he opts for the word \textit{cráter} followed by \textit{en erupción}, which conveys some kind of an upward explosion of magma or smoke. He reinforces the manner through gesture, a ‘manner fog’ in McNeillian terms. Both hands are moved upwards with palms slightly facing each other although tilted outwards as well, in a sense trying to convey the upward V form of an eruption.

Figure 3.56. Transcript 36

The following transcript is from Alberto’s rendition of the Swirling smoke image:

(37) Alberto (Swirling smoke)

\[
\text{Una especie de humo saliendo de no lo sé la verdad de donde sale al principio es un humo bastante simplemente}
\]

One type of smoke leaving of not it I-know the truth of where leaves to beginning it-is one smoke quite th simply

78
‘It seems some type of smoke coming out of, I don’t really know where is it coming out from, at the beginning is a smoke quite th, simply th, a thin stream of smoke that later begins to take shape.’

There were also doubt in Alberto’s words. There were five gesture phases in his discourse and all of them referred to the shape and form of the swirling smoke. It seems also that he doubts, reaching for the word delgado, (thin), but he just utters not quite the first syllable, just de. Nevertheless, his RH made an upward movement from the waistline to this shoulders height. While gripping the other three fingers, both thumb and index were horizontally extended, leaving a narrow space between them, representing thus, the thin stream of smoke. Figure 3.57 shows Alberto’s RH at the middle of his upward path.

This gesture appeared four times, first is with *al principio es un humo* (at the beginning it is a smoke) and then it coincided with the two following word hesitation occurrences, and it was finally used again with *un hilo de humo delgado* (a very thin stream of smoke).
His last gesture phase in this example was uttered with _que luego ya empieza_ (that later already begins). Alberto made a movement with both hands trying to represent a big V form. He started by placing both hands together at neck height. Then he made an upward and lateral movement that ended with each hand at his head’s height, RH on the right side of the head, and LH on the left side. Figure 3.58 and Figure 3.59 show Alberto’s hands at the beginning of the movement, and at the middle of it.

![Image of Alberto making a movement with both hands](image)

**Figure 3.58.** Transcript 37

![Image of Alberto’s hands at the middle of the movement](image)

**Figure 3.59.** Transcript 37

Looking at the transcripts of this example from the signers now, orally, Paco just articulated the noun _humo_ (smoke) and any other information was through gesture.

(38) Paco (Swirling smoke)

/*Humo*  
Smoke
‘Smoke.’

Both hands were initially resting on his lap with fingers crossed and slightly facing toward his body and upwards. While he uttered *humo*, he raised both hands with fingers still crossed but making a slight swirling motion on its way up. Figures 3.61, 3.62, and 3.63 show Paco’s hands at the beginning, middle, and end of that motion.

![Figure 3.60. Transcript 38](image)

![Figure 3.61. Transcript 38](image)

But Paco felt that his first gesture had not been enough and included a second one to try to make things clearer, a gesture that happened on its own without any speech involved. This time he used his RH to make a swirling upward movement. Paco’s RH adopted a concave form with fingers extended and palm facing upwards. His LH adopted a similar position but stayed on waistline. Figure 3.63 shows Paco’s RH in midair (with LH down at waistline).
Another signer, Marcos, also resorted to gestures and conveyed through them an upward swirling movement.

(39) Marcos (Swirling smoke)

\begin{quote}
\textit{Humo+ [parece ser que sale de un cenicero así:}

\textit{Smoke it-seems to-be that leaves of a ashtray this-way}

\textit{‘Smoke, it seems to be coming out of an ashtray, like ’}
\end{quote}

There was an elongation of sound at the end of Marcos’ speech. It seemed that he wanted to continue with his speech but could not find precise words to describe how the smoke swirls up. He had one gesture phase with one long preparation where he positioned his RH that would move upwards stroking with \textit{cenicero}(ashtray). What Marcos did was to gesturally anticipate the small crisis in trying to find lexical items to describe a swirling motion. He did not complete his speech, and therefore, through 
that channel alone there was no information as to how the smoke was coming out of the ashtray, although speakers may have a prototypical image of how that motion may be. Marcos RH made an upward movement from waistline up to approximately neck height. On his way up fingers were extended upwards and made a tingling motion as they rose, to finally open up the hand up to a concave position, similar to the imaginary representation of the volcano eruption, as mentioned by non-signer Antonio. Figure 3.64 shows Marcos RH in the middle of his way up and at the ‘eruption’ moment. Notice as well how LH in Figure 3.65 he replicates the explosion motion while resting in a lower position.

![Figure 3.64. Transcript 39](image1)

![Figure 3.65. Transcript 39](image2)

Finally, a brief mention about how both the other two signers did not feel the need to gesture to clarify their meaning, and the simple introduction of the word
cenicero (ashtray) seemed to have been enough to produce a prototypical swirling smoke image. Here are Elena, first, and then Carlos transcripts:

(40) Elena (Swirling smoke)

\[
Un \ cenicero \ que \ está \ echando \ humo
\]
One ashtray that is pouring-out smoke

‘An ashtray pouring out smoke.’

(41) Carlos (Swirling smoke)

\[
Un \ cenicero \ y \ como \ si \ saliese \ el \ humo \ de \ un \ cigarro
\]
One ashtray and like if coming-out the smoke of one cigarette

‘One ashtray and like if the smoke was coming out of a cigarette.’

3.6 Bouncing and hopping images

Spanish does not lexically encode a distinction between strictly vertical jumps, where the figure jumping returns to the origin point at the end of the movement, and
horizontal ones, where there is an advancement of position from the original to the end point. The verb *saltar* is used with prepositions like *en*, usually translated for ‘in’ or ‘on’, or *por*, which is roughly equivalent to ‘through’ in English. So a sentence like *Paco salta en la habitación*, implies that Paco may jump in the room, but most likely without changing his location inside the room. But, a sentence like *Paco salta por la habitación*, generally implies that Paco bounces around the room, changing his location from one point to another, and to another, and so on. It is also common for Spanish speakers to supplement their speech with a gesture that indicates the direction of the movement. This is exactly what we see in Alberto’s example:

(42) Alberto (Bouncing baby)

```plaintext
vemos que hay un bebé que parece+ vamos [según los trazos
we-see that there-is one baby that it-seems well accounding-to the lines
der del dibujo parece [como si el bebé estuviese saltando
of-the drawing it-seems like if that baby was jumping

‘We see a baby that seems to be, well, following the picture lines, like if the baby was bouncing.’
```

In 42 above, Alberto used the same hand configuration for his gesture twice. What was different was the direction in which he moved his RH. With the first gesture he moved his RH from the space to the right of him to a space right in front of him. The stroke coincided with the Noun Phrase *los trazos* (the lines) and he seemed to be providing manner as well as path information. On the second gesture, which was articulated in conjunction with the verb form *estuviese*, there was only one arch in his movement. This time he used one single stroke from left to right. His RH was retracted just right before *saltando*, and it seems that the manner of motion was the most important aspect in that gesture. Regarding the hand configuration, it is important to note that this was almost the same one used by the signers: index finger
extended, somehow downward pointing, while the other fingers were retracted in a fist like form. Figure 3.67 shows Alberto’s RH at *los trazos*.

![Figure 3.67. Transcript 42](image)

The gestures from signers are similar.

(43) Paco (Bouncing baby)

\[Un \ niño [saltando y se ve [el+ itinerario]

One child jumping and impersonal-pronoun-form see the itinerary

‘One child bouncing and you can see the itinerary.’

Paco slightly modified his gesture between the first and the second phrases. Initially he held out his RH in a kind of concave arch position, with all fingers semi-extended, and made a bouncing movement that began in front of his chest and ended to his right. In Figure 3.68 we can see his hand configuration:

![Figure 3.68. Transcript 42](image)
Interestingly enough, the second time around, the gesture coincided with a lexical search right at the moment he uttered *el* (the). Paco moved his RH, this time with only the index extended same as Alberto and described in the air the path covered; again, moving away from his chest front to the his right, coinciding with a speech pause while he searched for the next lexical item, *itinerario* (itinerary); see Figure 3.69 below.

![Image](image.png)

**Figure 3.69. Transcript 43**

Carmelo’s depiction was similar to Paco’s. However, he seems to reverse the order of his gesturing. In his first gesture phase, he uses his RH index finger to describe the bouncing arch, moving away from his chest to his right side, and coming back to initiate another gesture phase, but for this second time, with all the fingers involved.

(44) Carmelo (Bouncing baby)

\[ Un \text{ bebé o un niño chico con pañales vemos como que } [\text{como si fuese dando saltos }] \text{ como si fuese rebotando} \]

One baby or one boy small with diapers we-see like that like if was giving jumps like if was bouncing

‘A baby or a child with diapers who is like bouncing around.’

Figures 3.70 and 3.71 display the first and second gesture for Carmelo.

Finally, the fourth signing participant, Elena, seems to have interpreted the movement by the baby as a vertical one. She uses her LH to represent the ground, the
floor, against which the baby bounces, and she did so by opening her hand with her
palm facing upwards. On top of this palm she used her RH to describe an up and
down movement using her index, as did Carmelo and Paco, but also her thumb, as
if she were somehow holding the baby. Her gesture coincides with dando brincos,
literally “giving jumps.”

(45) Elena (bouncing baby)

\begin{quote}
Un bebé \textit{[dando brincos} \\
\end{quote}

One baby giving jumps

‘One baby jumping.’

Figure 3.73 was perceived by some participants as not containing any movement.
Hence, it was simply described through the noun phrase un pingüino (a penguin):
Two signing participants, Carmelo and Paco, assigned some movement to the image.

(46) Carmelo (Penguin)

*Un pingüino como si estuviese saliendo del agua* [como si *estuviese* dando *un salto*]

One penguin like if was leaving of-the water like if was
giving a jump

‘A penguin, like if it was coming out of the water ... like if it was bouncing.’
In Carmelo’s case, he coordinates a bouncing gesture with his RH, moving from his right to his left to mark the horizontality of the movement. He used his RH with the palm facing downwards and with a concave form.

While Carmelo’s gesture contained manner and path information, Paco’s gesture included information about the figure, the penguin, and more specifically, about its feet.

(47) Paco (Penguin)

Un pájaro [terminando el vuelo y llegando a tierra]

One bird finishing the flight and arriving to earth

‘A bird finishing its flight and landing on the ground.’

By the time that Paco uttered vuelo (flight) both his RH and LH have moved from being close together to end up with the fingers of each hand extended and palms facing downwards. The movement seemed to refer to the feet or the wings of the penguin at the moment of landing.

Figure 3.74. Transcript 47

It is relevant to look at accompanying speech in both cases. If Carmelo’s gesture seems to work on the manner and path axis (transcript 46), while Paco’s focuses on the figure (transcript 47), their oral renditions are different as well. In strict terms, it seems obvious that in order for the penguin to come out of the water, as Carmelo was describing, his “jump” could have not been entirely vertical, or it would have
ended exactly in the same place, the water. Carmelo’s gesture seemed to appear in connection, at least to reinforce, this vertical and horizontal movement. As for Paco, it can also be true that spreading out the wings or feet while landing may be the most typical way to do so for a penguin. Note that there was no indication of this information in his speech.

3.7 Chopping /sawing wood images

Figure 3.75 and Figure 3.76 below are similar to the Tomato images, Figures 3.5, 3.6, and 3.7. These images display a figure in the act of separating a larger item into smaller ones.

Both images focus on separating a larger piece of wood into at least two smaller ones. Like in English, the Spanish verb *cortar* (to cut) signifies this act of dividing a larger surface into smaller constituents. Also, as in English, Spanish may use a verb like *serrar* (to saw) that specifies a particular type of cut accomplished with the use of a particular device, the hand saw in figure 3.76. However, Spanish does not lexically specify the result of cutting, as English does. Although a sentence like ‘the
boy is cutting a wood board with a hand saw,’ is a valid option in English, it does not seem to be as common as one involving a verb like ‘to saw’ or ‘to chop.’ Spanish does not favor in its verbs this type of detail, and unlike the *serrar* (to saw) coincidence, there are not clear equivalents to verbs like ‘to chop,’ or ‘to dice’ or ‘to slice.’

In order to specify the type of cutting, Spanish speakers tend to make explicit mention of the device used to cut the material, i.e., *cortar la madera con un hacha* (cut the wood with an axe) or add phrases like ‘en rodajas’ or ‘en cuadraditos,’ literally, in slices, in little dices. Another possibility is to establish the differentiation by being more specific about actors involved in the action, whether the subject or the object. For example, one could say ‘el leñador corta la madera’ (the lumberjack cuts the wood) and the knowledge included in the word *leñador* would lead the speaker to clarify the most prototypical type of cut in that situation. There a few examples of these Spanish uses in the renditions of the non-signers. In transcripts 48 and 49 below, both Alberto and Marisol use the verb *cortar* but include words like *leña* (fire wood), *leñador* (lumberjack), or *hacha* (axe) to disambiguate:

(48) Alberto (Chopping wood)
Un leñador que está cortando una madera con un hacha
One lumberjack who is cutting a wood with one axe
'A lumberjack chopping wood.'
(49) Marisol (Chopping wood)

Un hombre que está cortando leña
One man who is cutting firewood
'One man chopping wood.'

Another participant, Rafael chooses the least specifying verb, cortar:

(50) Rafael (Sawing wood)

Un niño que está cortando una tabla de madera
A child who is cutting a board of wood
'A child is cutting a wood board.'

It could be argued that mentioning the wood board as the element being cut, may imply to certain degree that the cut is done in the manner of sawing, but this is not necessarily so, and therefore it is a likely possibility rather than a must. In order to be specific, using the verb serrando (sawing) would be required as Marisol does in transcript 51:

(51) Marisol (Sawing wood)

Un chico que está serrando una madera
One boy who is sawing a wood board
'A boy sawing a wood board.'

Another way of conveying manner information is to resort to gesture, as Alberto did in the second instance:
(52) Alberto (Sawing wood)

Otra persona que ya está trabajando la madera probablemente la madera que el leñador anterior estaba cortando y [lo está haciendo] pues con un serrucho
doing well with one hand saw

‘Another person who is already working the wood, probably the wood that the previous lumberjack was cutting, and he is doing it, well, with a hand saw.’

The verb here was cortando (cutting) and it was used twice in this interaction which concluded with the word serrucho (hand saw). Before uttering the final word, Alberto gestured with his RH creating a fist gripping form and moving the arm in a back and forth motion, inclined, and therefore up and down, sawing motion, that co-occurred while uttering lo está haciendo (is doing it). Figures 3.77 and 3.78 display his gesture at the highest and closest to his chest point, and at its lowest and foremost front point.

Figure 3.77. Transcript 52

Alberto described both scenes in the same speech utterance. It was a continuous oral performance without significant pauses and where the focus of attention is main-
tained throughout the rendition. Considering this, it seems that his gesture appears as a way of establishing the contrast between the two types of cuts, since he uses the same verb, *cortar*, to describe both actions.

The signing participants gestured as well, and their gestures were similar to the ones used by the non-signers. In their LSE renditions the signs used to describe the type of cut performed are very iconic and these were exported as well to their Spanish depictions. Transcript 53 and 54 are Paco’s and Carmelo’s depictions of Figure 3.76.

(53) Paco (Sawing wood)

*Una persona con un poco [de *pericia* cortando una madera con un* serrucho*

A person with a little of dexterity cutting a wood with a hand-saw

‘A person with some skill sawing a wood board with a hand saw.’

Paco’s RH used a B classifier (open hand with extended fingers) and made a sawing motion:

The gesture stroke coincided with *pericia* (dexterity) right before he uttered the verb form *cortando* (cutting) which was then followed by *una madera con un serrucho* (a wood board with a hand saw). Carmelo’s example followed the same lines, and the type of cut was expressed through gesture before any disambiguating lexical items:
Figure 3.79. Transcript 53

(54) Carmelo (Sawing wood)

Una persona que tiene un tablón y con un serrucho está cortando el tablón

‘One person with a wood board, sawing it.’

There was a rapid hand gesture that coincided with the words y con un, (and with a). Carmelo’s RH, with open palm facing him, and fingers extended – using then the same B classifier previously discussed – stroked exactly with y (and), swiftly moving from front to back. Then, as un (a, one) was uttered, the movement was in the opposite direction from back to front and ended with the gesture retraction. Figure 3.80 shows his RH position at the end:

Marcos followed a very similar pattern to represent these two image prompts, and gestured the type of cut:

(55) Marcos (Chopping wood)

Una persona cortando [tronco] [ch para la leña de su casa eh +

‘A person chopping wood for their home.’
Like the other non-signers, Marcos used the same B classifier hand form in both descriptions. In transcript 55 (image 16) he made two gesture phases: a first one with *tronco* (trunk) with his RH palm slightly facing upwards and moving laterally from his right to his left. Then, as he paused, he made a second, where his LH adopted the same B classifier form, representing the trunk being cut, while the RH went up and then down to “axe” the trunk. Figure 3.81 shows the first gesture, and Figure 3.82 the second one:

Finally, Elena’s depiction of these two image prompts was revealing. When describing Figure 3.75 she did not gesture or bring into play any chopping gesture as she did in her LSE depiction. In transcript 57 below, the subject and the object specified the type of cut:

(57) Elena (Chopping wood)
In transcript 58 we find a clear example of a lexical search, and of the clear inward character of the gesture as she struggles to find in Spanish a verb that can specify the type of cut she is gesturing.

(58) Elena (Sawing wood)

Un niño++ cortando una madera

A boy++ cutting a wood
‘A young boy cutting a wood.’

She begins her depiction introducing the figure, the boy, but, then, stalls, and there is a long pause of more than five seconds where she fully switches to a manual modality. First, as we see in Figure 3.83, she sets out the wood board using her LH with a B classifier configuration (completely open flat palm with extended fingers), with palm facing downwards:

![Figure 3.83. Transcript 58](image)

Then, RH, again with same B classifier configuration initiates the sawing movement, from front (Figure 3.8) to back (Figure 3.85):

![Figure 3.84. Transcript 58](image)

### 3.8 Floating bottles images

The last set of images shown to participants portrayed several motion instances where a bottle or a series of them, depending on the interpretation of the images,
crossed several boundaries, which, as Slobin and Hoiting (1994) have argued, seems to be a defining and conclusive element that separates satellite versus verb framed languages.

Figure 3.86 shows the first image in this bottles series:

![Image of bottles and rock]

**Figure 3.86.** Floating bottle(s)

Depending on the interpretation there could be one or two bottles in this image where the other elements would be the rock or islet as well as the ocean.

In his Spanish depiction, signer Paco accompanies his speech with gesture that captures the roundness of the bottle. It is not quite completely the bottle sign that he and the other signers use. Figure 3.87 shows Paco signing BOTTLE in his LSE description of the Floating bottle(s) image:
In that LSE depiction he used his LH with a B classifier to signal the sea, and then his RH moved from left to right, and up and down at the same time, in a swinging motion to signify ‘floating.’ Later, when he described that same image in Spanish, right before he used the verb *flotar* (to float) and coinciding with the word *botella* (bottle) he used that gesture described above that is not quite the bottle’ sign. While this gesture marked the roundness, it seemed to lose the depth of the object that was displayed in his LSE depiction. In LSE initially ‘floated’ from left to right with his RH placed behind his LH which represented the sea level. Those gestures conveyed the that part of the bottle was above the sea level, and part of the bottle was below the sea level. In his Spanish rendition, besides the roundness, Paco also kept the swinging motion as his RH moved back and forth from left to right as *botella* was uttered. The roundness of the figure as well as the swinging and floating had been introduced and reinforced in the oral modality, but the path was still missing, and that was what he introduced in the next gesture phase that coincided with a speech pause right after *en el mar* (in the sea). With that same not-quite-bottle-sign gesture, Paco moved his RH from left to right same path he covered in LSE. Here is the transcription of this description and two images showing his RH at the beginning and at the end of the path covered in that speech pause right after *en el mar*:

(59) Paco (Floating bottle(s))
‘Una botella flotando en el mar con un islote en el fondo’

‘One bottle floating in the sea with an islet in the background.’

Figure 3.88. Transcript 59

Figure 3.89. Transcript 59

Carmelo’s depiction was similar although with a few differences. First one was lexical: although he mentioned that the water was in the sea, the verb he used was *desplazarse* (to move) and therefore there was no explicit manner information conveyed in the verb. Looking to the manual modality, there was no floating motion in his gesture either, which simply described the path covered by the bottle, and he did so using a gesture much more like the BOTTLE sign displayed in LSE. Here’s Carmelo’s depiction and an image of his hand gesture uttered with the verb form *desplazando* (moving):
(60) Carmelo (Floating bottle(s))

una roca y hay dos ah bueno y una botella que se desplaza
one rock and there-are two ah good and one bottle that to-itself moves

\[ \text{que se va desplazando en el mar} \]

that to-itself goes moving in the sea

‘One rock and there are, oh well, there is one bottle that moves in the sea.’

Figure 3.90. Transcript 60

Figure 3.91 below shows either one bottle or a series of bottles floating into a cave:

Figure 3.91. Bottle(s) floating into a cave

Transcript 61 below is bimodal Elena Spanish depiction of Figure 3.91:

(61) Elena (Bottle(s) floating into a cave)
Una botella flotando en el agua que se está [introduciendo] dentro de un túnel

‘A bottle floating on the water and that is entering a tunnel.’

Same as in Figure 3.86, Elena talked about just one bottle and did exhibit one gesture whose stroke matched perfectly the cross-boundary verb form *introduciendo*, (introducing). Comparing to her LSE depiction there was one important difference. In LSE she maintained, as expected in LSE, the BOTTLE sign with her RH as she was describing how it floated into the cave. On her Spanish rendition, she just simply “signed” TO ENTER, although maintained her LH on top to signal that the item entering the cave did move in under the cave roof. Figure 3.92 below is Elena’s RH moving backwards just right before uttering *introduciéndose* (entering-itself), and then, the RH stroke in Figure 3.93.

![Image of hand gesture](image.jpg)

*Figure 3.92. Transcript 61*

There was ground information conveyed through her gesture, but no figure information or manner for that matter. The information about the item entering the cave being a bottle and accomplishing that movement in the manner of floating was provided in her speech, and not replicated through her gesture. What her gesture
did, however, was to perfectly match what Spanish speakers and other verb-framed language speakers do: coordinate the gesture with the boundary-crossing verb.

In transcript 62 below, Marcos interpreted the image to display several bottles in motion:

(62) Marcos (Bottle(s) floating into a cave).

Una fila de botellas que salen de de de de una cueva+ no /que
A line of bottles that leave of of of of a cave no that
se dirigen hacia una cueva
to-themselves direct toward a cave

‘A line of bottles that leave from from from from a cave no: that direct themselves toward a cave.’

First gesture phase began with both his LH and RH adopting a 5 classifier position, that is, an open hand position with fingers extended and where each finger represents an item. In this particular instance the fingers pointed upward, each finger representing one of the bottles floating in the water mentioned in speech, the figure in this event. Initially and coinciding with una fila (a line) the movement was from the low front center to the upper back left, with his RH going further up and back, and with its palm facing him, while his LH palm faced away from him and did not
reach that high or far back as his RH (Figure 3.94).

Figure 3.94. Transcript 62

Then, and coinciding with *de botellas* (of bottles) the movement, maintaining the same hand form, was from back to the front with a slight upward movement while advancing to the front. Both hands were retracted right after *botellas* was pronounced. Here is the gesture at *botellas* in Figure 3.95:

Figure 3.95. Transcript 62

The important element to notice in this instance is how the signer used the same classifier sign that he had used in his LSE depiction to represent the figure, the bottles, in this event. The verb form he used right after his hands were retracted was *salen* (they leave) which matched perfectly with the whole motion the participant gave to the event: first locating the bottles on a right back position, and then bringing them out to the front. But, there was some hesitation regarding the direction the bottles
were taking: out of or into the cave. In the end this participant opted for the heading into the cave option, and this time his gesture represented also this new direction. His RH palm faced away from him, and his LH palm was placed toward him, exactly the opposite as before. The movement direction also represented the perspective change: while, previously the path covered was from the right back to the center front, now the originating point was located of the left back to end up again in the center front. Figure 3.96 shows the final position of the hands right before initiating their retraction:

![Image of hands in a gesture](image)

**Figure 3.96.** Transcript 62

To complete this point, it is also crucial to emphasize that the stroke coincided with *se dirigen* (they direct themselves) the verb form, as one would expect in verb-framed languages. But unlike what would normally be used in Spanish, here, Marcos provided Figure information: what the objects were that were directing themselves to a particular location and how they were conducting this movement: in single file one after another.

The following image in the series, Figure 3.97, showed the opposite perspective to the previous one, that is, the bottle (or bottles) is (are) floating out of the cave:

Marcos continued the narrative he had used for Figure 3.91:

(63) Marcos (Bottle(s) floating out of a cave)
That line of bottles leaves through the other part of the cave.

‘That line of bottles leaves through the other side of the cave.’

He continued with a formation of bottles in a single line, and his gestures followed the same pattern displayed on the previous image. Participant stroke at fila (line) sale (leaves) and parte (part).

The first one that coincided with fila (line) saw Marcos using again the fingers extended to represent each finger one of the bottles. He used both RH and LH to incorporate information about the bottles (figure 3.98).
The next two gesture strokes were revealing. For the first one, coinciding with verb form *sale* (it leaves/come out) a cross-boundary verb, Marcos brought both hands all the way back to his left side from the initial position they had right in the center front.

![Figure 3.99. Transcript 63](image)

Upon close observation, we may notice that although in this image the fingers were somehow retracted on his RH, that was not completely the case on his LH.

For the third gesture phase, Marcos brought both hands completely to his right side, and fingers were clearly extended, each representing one bottle.

![Figure 3.100. Transcript 63](image)

It seems that what Marcos was doing was to perfectly coordinate his second gesture with the cross-boundary verb. But in order to express the contrast that at that time the bottles were leaving through the other side, and not the one they used on the previous image, Marcos moved his hand with the verb to the opposite side where
he would eventually place the bottles at the end with his third gesture. That also explains why the fingers were not extended on the second gesture: he stills managed to include some information on the figure at least to some degree through his LH but the focus at that moment was to locate the leaving bottles, and do so in the opposite place to where the bottles finally were on the third gesture. With that final third gesture, then, the bottles needed to be clearly shown.

Another participant also shared with Marcos the plurality of the bottles (transcript 64 below), and his gesturing followed a remarkably similar path to the one shown by Marcos.

(64) Carmelo (Bottle(s) floating out of a cave)

se ve la parte digamos como que la otra parte del impersonal-pronoun see the other let’s-say like that the other part of-the túnel en el mar como que las botellas [van+] [van saliendo del tunnel in the sea like that the bottles go go leaving of-the túnel de la+ de ese túnel que hay en el mar tunnel of the of that tunnel that there-is in the sea

‘You can see like the other part of that tunnel in the sea and how the bottles are coming out.’

Just as Marcos, Carmelo used his extended fingers to represent the single line of bottles – same as he had done in LSE –, and he did also coordinate, as expected, his gesture with the verb form. First, while there was some pause and hesitation, the hands remained down at waist level (Figure 3.101).

But after the initial struggle, he continued with van saliendo, literally ‘go leaving,’ and hands move to accompany the speech. Both hands are lifted from the space they occupied just a brief instant ago, although, his dominant RH clearly makes the boldest move.
The next image in the bottle series, Figure 3.103, shows a water channel with a tunnel covering a great deal of it, and through which the bottle(s) floats in and out.

Both Marcos and Carmelo continued to depict this image as including several bottles and their gestures, and its coordination with speech, played along the same lines that they had done in the previous images.
The other two signers, as they had previously done, interpreted the image as to contain only one bottle floating. Let’s begin with Elena:

(65) Elena (Bottle(s) floating through tunnel)

la botella que está en unos canales donde está la botella entra
do por un túnel y al mismo tiempo se ve como sale

‘The bottle that is in some kind of channels set and is entering a tunnel, and at the same time you can see how it leaves the tunnel.’

There were three main gesture phases in Elena performance. In a first moment she struggled to describe the place the bottle was in, and she switched completely into a manual modality while looking for the words in Spanish. There was a pause where she gestured with both hands in a clear inward process, describing the tunnel that the bottle went through. Both hands adopted a C classifier form — holding fingers together without the thumb touching them and forming some kind of a C letter and after initially being placed together with palms facing downwards, then her RH moved away from her LH describing the tunnel and the path it covered.

That hand gesture was slightly modified in the subsequent phrase gesture coinciding the stroke with the word canales (channels). Significantly, as the palms did not face downwards, representing the tunnel covering form as they had previously done. At that moment, both of her hands, each forming a C shape, were placed in a horizontal position with both of her hands again initially facing each other to end up separated after the lateral path covered by her RH (Figure 3.106).
The third gesture phase here sees Elena using the LH again to represent the structure that covers the floating bottle, but this time, unlike in the previous two images, now she is also “signing” BOTTLE with her RH, stroking right at *entrando*, that is, with the boundary-crossing verb. She maintains the gesture to cover the movement path all the way out of the tunnel. Here are two images where we can see the bottle entering the tunnel, and all the way at the end of the path.
Another significant factor about this gesture is the fact that while, information regarding the figure, the bottle, as well as the ground, the tunnel, is included in the gesture, and subsequently, the path covered is also indicated in the gesturing, this final movement is fully accomplished in a straight line, without any “floating” information included in the movement. While it is perfectly physically possible to move a hand, with a particular figure information as BOTTLE in this case, from left to right, and at the same time, do so by also incorporating a floating motion, that was not the case, and the floating information was not included, neither manually, nor orally (although it had been included in the previous images just a few seconds ago, and Elena is, indeed, referring to the same bottle.)

In transcript 66, Paco included in his gesturing the same BOTTLE sign he had previously used:

(66) Paco (Bottle(s) floating through tunnel)
En una zona verde de cesped vemos que hay un río y el río está tapado por un túnel y la botella pues va por+ por el agua va tapado por un túnel y la botella pues va por+ por el agua va llevando el+ el sentido+ el cauce del río.

‘In a green area we see a river covered by some tunnel and we see the bottle floating and following the course of the river.’

His first gesture phase sees the stroke at río (river) although the gesture, rather than representing the river itself seems to focus on the tunnel that covers it.

In following gesture phases, Paco’s gesture seems to be in line with the BOTTLE sign in LSE although the tension of the gripping point between his thumb and the fingers seems rather looser. Despite the hand configuration, though, it is the fact that while in speech there is no indication here of the “floating” motion of the bottle, Paco includes that in his next BOTTLE gesture phase, that sees he RH moving a somehow floating motion that combines both a horizontal left to right movement with a vertical up and down one. Figures 3.110 through 3.112 show Paco’s RH at three different points on its floating trajectory: at beginning, at middle, and toward the end.
On the following gesture phases he kept the RH configuration but got rid of the floating motion and just concentrated on the path covered by the bottle. There is also some hesitation on his wording, and while he searched for what he considered the best lexical item, ultimately *cauce* (course) his RH produced a few gestures covering the trajectory of the movement but without adding any floating information.
The last image of this ‘bottle set,’ Figure 3.113, shows a small islet around which the bottle or bottles floated:

![Image of bottle(s) floating around an islet](image)

**Figure 3.113.** Bottle(s) floating around an islet

Let’s continue with Paco and his view as just one bottle in the images:

(67) Paco (Bottle(s) floating around an islet)

\[ Una \ botella \ dando \ vueltas \ en \ el \ mar+ \ a \ un \ islote \]

One bottle giving rounds in the sea to a islet

‘A bottle going around an islet.’

Paco uses the same gesture twice, but this time there is no mention of the bottle through gesture or of the floating mention either through speech or gesture. What Paco does is to use his RH index finger pointing downwards while the rest of the fingers are retracted forming some kind of fist, and makes a circular movement in the air:

The gesture did not appear during his LSE depiction of Figure 3.113, as he marked the going-round the island by the bottle using the BOTTLE sign making a circle up in the air. Nevertheless, that index downward pointing gesture did in fact appear in another signer’s, Carmelo, LSE depiction of this same image, and Carmelo actually transferred that gesture as well to his Spanish description (Figure 3.115).

(68) Carmelo (Bottle(s) floating around an islet)

117
Una isla desierta con una palmera y aparecen [como que
One island deserted with a palm-tree and they-appear like that

varias botellas alrededor de la isla
several bottles around of the island

‘A deserted island with a palm tree and like several bottles circling the island.’

During his LSE description, Carmelo signed BOTTLE and he also indicated that there were several bottles before using the same sign/gesture as he then used in Spanish. Putting both things together, it does not seem that Paco’s gesture is intrinsically assigned to a singular item in this case.

What about Marcos, who also interpreted these series of images as containing a plurality of bottles? Marcos did maintain the same gesture that he had previously
used with extended fingers representing the bottles, and used that in two gesture phases:

(69) Marcos (Bottle(s) floating around an islet)

[Y el grupo de botellas [que se reúnen todas donde empezaron]

and the group of bottles that themselves gather all where began

las dos botellas

the two bottles

‘And the group of bottles, that all gather themselves where the two bottles started.’

In a first gesture phase he introduced the figure, the bottles, and did so by initially bringing both hands away from each other with finger extended and palms facing inwards. Then on the second phrase he brought both hands closer although not touching to represent the bottles gathering around the island, with the space between the hands being occupied by the island. This gesture stroke coincided again with the verb form, reúnen (gather). Figure 3.116 below shows Marcos RH and LH at botellas.

Figure 3.116. Transcript 69
CHAPTER 4
CONCLUSIONS

Data analysis in this dissertation seems to reveal that, again, for a very specific task and under a specific set of circumstances, the gestures displayed by the bimodal population qualitatively differ from those of the Spanish unimodals. Through the use of classifiers bimodals seem to be capable of including information regarding the figure and ground in their signing. This is information that otherwise would not be conveyed in speech. As shown in the examples reviewed this information can be about the general disposition of the figure, or its position and location in space with respect to the ground.

From the present perspective, the gestures displayed by bimodals seem to go beyond simple semantic equivalence between the orally and gesturally coded information. While there are instance where there is semantic equivalency, as with Marcos signing SLIPPERY while uttering exactly this information in Spanish in his rendition of Slippery When Wet, in other instances, both gesture and speech complement each other providing each modality a unique contribution to the total meaning of the utterance.

The findings presented in this dissertation seem to point toward the same direction as those presented by Emmorey et al. (2008) and Casey and Emmorey (2009). It is important to emphasize again that the study of bimodalism is a very recent project. To my knowledge, this is the first bimodal gesture study looking at LSE and Spanish. Obviously, more research is needed in this area to confirm the very initial findings of this dissertation.
Data analysis also seems to suggest that there may be an inward regulatory cognitive use of the signing in participants’ spoken narratives. In Spanish, for instance, the lexical searches by Elena in transcripts (55) or (63), or the sentence completion through gesture by Paco or Marcos in transcripts (37) and (38), illustrate how these gestures have a primarily inward regulatory direction. Even if gestures seem to have a primarily outward communicative use, it seems obvious that the outward function does not exclude an inward cognitive regulatory function as well. Research conducted in ASL and English by Casey and Emmorey (2009) seems to confirm that Codas do indeed bring elements of sign language into their spoken interactions. This point seems to be further enhanced by the subsequent study by Casey, Emmorey and Larrabee (2012) where ASL learners ended up introducing signing into their English narratives, and also by the work with children by Lillo-Martin, Müller de Quadros, Koulidobrova, and Chen Pichler (2010, 2012).

4.1 A few limitations and questions for future research

One of the limitations of the present study is the commonality of some of the images used as prompts for data gathering. This fact might have been an issue that may have affected the results. For instance, when designing future research projects it could be potentially beneficial to show participants less prototypical examples of a sliding motion in the case of images 7 and 9. To be more precise, if the person in Image 9 had performed the sliding down movement with chest against the surface of the slide and his head facing forward, would this have affected the orientation of the classifier use by Marcos in his transcript) (32) in Spanish?

Working with less prototypical depictions of motion events may help to confirm that information contained in participants’ gestures does indeed convey the orientation information portrayed in these images. This eliminates the possibility that the gesture is simply being used as a general going down gesture as a monolingual
would do, without really relevant information regarding the figure position. Another potential benefit of using less prototypical images is that participants would probably struggle to make meaning out of these uncommon motion events. Creating this little Vygotskian crisis would put the researcher in a privileged vantage point to see the mechanisms used by participants’ to unlock meaning through hands and voice. The resolution of this mini-crisis in research is one of the keys of personal development from a SCT point of view.

A second potential limitation of the present study is that signing participants were aware that the researcher had some knowledge of LSE. Thus, it cannot be completely ruled out that this might have had some effect in their performance. Nevertheless, it is also true that the interaction between the participants and me as the researcher was minimal. It was reduced to the researcher showing the images to participants., Then, the researcher moved away from participants’ eyesight so they could focus in describing the image to the camera as they have been asked to do. So in this respect, their interlocutor was the video camera and not the researcher. Still, by virtue of being present in the room, the researcher was part of the communicative situation.

For future research projects in this area, there is a need to continue to explore TFS pattern conflict in bimodal communication. This is one of the most studied areas in gesture research. This could have been an area of potential trouble for speakers and signers in the present study, but it did not seem to be the case. This may be explained offering two reasons. The first one is that both Spanish and LSE are both verb-framed languages, and LSE, if we are to accept Slobin and Hoiting (1994) that all sign languages are verb-framed. Thus, the situation here would be one with two languages, which belong to the same type, avoiding any conflict on this regard. The second reason for the perceived lack of a TFS boundary-crossing tension in the analyzed data is that when bimodals use the spoken modality, the constructions and conventions of the oral language set the initial stage upon which the manual modality
performs. For example, the “bottle” images series as well as other examples like the Penguin image in the present study shows how the gesture speech coordination in the bimodals performance mimics that of the Spanish unimodals.

For the future, it could be interesting to conduct a study specifically focusing on the boundary-crossing notion including a satellite-framed language like English as the oral modality. It could be revealing to look at both English as well as ASL narratives, since, for example, in the confluence of Spanish and English, it is not unlikely to find bilinguals struggling to incorporate into their Spanish narratives manner information that they do not seem to be able to find in Spanish. Following that idea, it would be interesting to see if English-ASL codas narratives in ASL are influenced by the possibility of multiple boundary crossings that English facilitates. It is also critical to determine how this motion event would be constructed by bimodals. Would codas provide richer and more manner specific renditions than ASL unimodals?

### 4.2 A final thought

I started this work describing the idea of language as an inventory of signs where each speaker would grab different items and combine them in order to make sense of their experience. This first venture into the confluence of LSE and Spanish seems to suggests that bimodals may have developed a use of gesture that, at least for some specific tasks, as in descriptions of pictures depicting motion and location, goes beyond the idiosyncratic gesticulation performed by Spanish unimodals.

For bimodals, it seems to be meaningful where in space the gesture takes place as well as the gestures themselves. These bimodals’ gestures seem to be partly conventionalized. They also seem to show some linguistic characteristics. It’s seems that Bimodals are not signing when they speak, but their gesturing, at least for the particular description of images analyzed and under the circumstances described, seems to be far more complex than the idiosyncratic gesticulation of Spanish unimodals.
APPENDIX
IMAGES

Man reading

Lamp on a table
Tomatoes A

Tomatoes B
Stacked tomato slices

Dog running down the stairs
Ball on stairs

Slippery When Wet
Cinderella

Water Slide
Unicycle

Swirling smoke A
Swirling smoke B

Rushing smoke
Chopping wood
Sawing wood

Hammer
Floating bottle(s)

Bottle(s) floating into a cave
Bottle(s) floating out of a cave

Bottle(s) floating through tunnel
Bottle(s) floating around an islet
BIBLIOGRAPHY


