Instrument Syntactic Realization in Italian and LIS
A Cross-modal Comparative Study and Implications for Interpreting Practice

Lara Mantovan
Università Ca' Foscari Venezia, Italia

Alice Suozzi
Università Ca' Foscari Venezia, Italia

Abstract   This study compares how instruments are syntactically realized in Italian and LIS, using a cross-modal comparative approach. In Italian, Instruments are syntactically realized only when they are not recoverable from the verb. Three Instrument types are identified: shadow, default, and open. Only shadow Instruments are incorporated into the verbal root. As for LIS, our analysis reveals that shadow Instruments are preferred and finer-grained compared to Italian, probably due to visual modality. This has implications for Italian-to-LIS interpretation, as interpreters might make a wrong choice when Italian does not specify, but LIS requires a shadow Instrument.

Keywords   Instruments. Italian. Italian Sign Language. Semantic incorporation. Semantic recoverability.

Summary   1 Introduction. – 2 Typological overview. – 3 Instruments in Italian. – 3.1 Syntactic Realization of Instruments. – 3.2 Shadow, Default, and Open: Accounting for Instrument Optionality. – 4 Syntactic Realization of Instrument in LIS. – 4.1 Methodology. – 4.2 Results. – 4.2.1 Instrument Realization in LIS. – 4.2.2 Comparative Analysis Between Italian and LIS. – 4.2.3 Instruments in Cross-modal Translation. – 5 General Discussion. – 6 Conclusions.

1 Introduction

An Instrument is defined as the semantic participant that somehow contributes to the realization of the event it is implied by, being manipulated by the Agent (Rissman 2013). Its syntactic realization has received much attention in both spoken and sign language linguistics, yet little or no studies exploit a cross-modal comparative approach. Our study aims to fill such a gap through the comparison of Instrument realization in Italian Sign Language (LIS) and Italian.

In Italian, Instrument realization is ruled by semantic recoverability, i.e., the less the Instrument is recoverable from the verb meaning, the more it is bound to be syntactically realized. Based on this observation, three types of Instruments are identified (Suozzi, Cardinaletti, Lebani, forthcoming): shadow, default, and open Instruments, which are progressively less recoverable and more likely to be realized. As for LIS, no systematic investigation of the syntactic realization of Instrument has ever been performed.

In this paper, we present a preliminary study based on elicited data to determine: i) what syntactic strategy is used in LIS to realize Instruments and ii) whether the tripartition of Instruments proposed for Italian also holds for LIS. Once a clear understanding of Instrument realization in LIS is established, we propose a comparative analysis between LIS and Italian to investigate whether possible differences between the two languages impact cross-modal interpreting. So far, there has been little discussion about interpreting processes between Italian and LIS: hopefully, our study will inform professional translators and interpreters of possible challenges and solutions and prompt future research in this field.

The paper is structured as follows: in Section 2, a typological overview of Instrument realization in spoken and sign languages is sketched, while Section 3 focuses on Instruments in Italian. Section 4 is devoted to our study: first, the methodology is described; then, we focus on the results, highlighting similarities and differences between LIS and Italian and possible implications for interpreting practice. Section 5 is dedicated to the general discussion of the results: particular attention is devoted to the challenges that the realization of Instruments may pose for Italian-LIS interpreters, and possible solutions are put forth. Finally, preliminary conclusions are drawn in Section 6.

88

Annali di Ca' Foscari. Serie occidentale | e-ISSN 2499-1562
57, 2023, 87-112

2 Typological overview

Little cross-linguistic variation is found across spoken languages with respect to Instrument realization: they tend to be "expressed in the least variable way" (Haspelmath 2014, 9).

Two strategies are found for the Instrument syntactic expression, i.e., case and adpositional marking (Van Hooste 2018): the former is found in languages that display a morphological case system, the latter in languages that do not. Instances of instrumental case marking are found in (the majority of) Slavic languages, Georgian (Kartvelian), Hungarian (Uralic), Lithuanian (Baltic), Turkish (Altaic), and Quechua (Quechua).[1] Romance and (the majority of) Germanic languages are among those that realize Instruments via prepositional marking, as well as, e.g., Bulgarian (Slavic), Irish (Celtic), Persian (Indo-Iranian), Hebrew (Semitic), and Modern Greek (Hellenic). Some languages, e.g., German, Icelandic (Germanic), Ukrainian, and Czech (Slavic) use a combination of the two strategies.

Some languages can additionally realize Instruments via Noun Incorporation (NI), defined as the combination of an N root with a V root to which N is thematically related, resulting in a derived V root used to indicate a unitary activity (Mithun 1984; Baker 1988; De Reuse 1994; Johns 2017; McKenzie 2018). An example of Instrument incorporation (Nahuatl, Uto-Atzecan) is given in (1).

(1) Ya$^?$ ki-**kočillo**-tete$^?$ki panci. (Mithun 1984, 861)
     He 3sS-knife-cut   bread
     'He cut the bread with a knife.'

Incorporation is never the only available strategy for the realization of Instruments in a language (Mithun 1984; Johns 2017). In other words, NI is displayed by languages that more frequently express Instruments via either adpositional or case marking. In Nahuatl, for instance, Instruments can be realized via NI and postpositional marking: -*ka* and -*ika* 'with' are used in Tetelcingo, Huasteca, and North Puebla Nahuatl (Tuggy 1979; Beller, Beller 1979; Brockway 1979). In Chukchi (Chukotko-Kamchatkan), Instruments are realized via NI and case marking (Dunn 1999), through the ergative/instrumental case.

In sign language linguistics, Instruments have received considerable attention and have been addressed in several studies on different sign languages (ISL, Israeli Sign Language: Meir 2001; NGT, Nederlandse Gebarentaal/Sign Language of the Netherlands: Zwitserlood

---

[1] Other languages use non-instrumental cases to syntactically realize Instruments, e.g., Basque (Isolated) and Estonian (Balto-Finnic) use the comitative case, Finnish (Uralic) uses the adessive case.

2003; 2012; ASL, American Sign Language: Benedicto, Brentari 2004; TSL, Taiwan Sign Language: He 2011). Overall, sign languages also show little cross-linguistic variation in Instrument realization: in the visual modality, languages typically resort to incorporation, while case and adpositional marking are not recognized as options.

Looking more closely at sign language data, we see that Instruments are typically realized as classifier handshapes, i.e., particular configurations of the hand denoting a class of entities with some common properties.[2] Classifiers are generally considered to be morphemes with a non-specific meaning (Zwisterlood 2012). When handshapes are used as classifiers, they represent entities by denoting salient characteristics, such as i) the whole entity (e.g., a flat hand with extended fingers may be used to refer to a table or a car), ii) a body part (e.g., a fist may be used to refer to a head), iii) a physical property of the referent (e.g., two hands with extended index and thumb may be used to refer to the perimeter of a mirror), or iv) how the entity is held or manipulated (e.g., a fist may refer to the handling of a carafe). Specifically, the classifier types in i) and iv) may be used to realize Instruments; in this case, they simultaneously combine with a V root (i.e., a movement), forming a morphologically complex predicate. For illustrative purposes, (2) is an example from NGT showing a polymorphemic predicate with an incorporated Instrument. The handshape (closed G) is used as a handling classifier, since it represents how the Instrument (a fishing rod) is held. The classifier is combined with a backward movement (V root) to form a complex predicate meaning, 'to fish with a fishing rod'.[3]

(2)   CL(closed G): 'fish with a fishing rod'. (Zwitserlood 2012, 169)

---

[2]   More details on classifiers in sign languages are provided, e.g., in Benedicto, Brentari (2004).

[3]   In this paper, classifier predicates are presented following the annotation conventions commonly used in sign language linguistics. Namely, they are reported as follows: CL(handshape): 'meaning conveyed by the whole construction'.

Given the uniform pattern observed across different sign languages, LIS data are expected to align with it, realizing Instruments through classifier incorporation.

The brief typological overview sketched above shows that the two modalities mainly differ in that incorporation is the cross-linguistically rarest strategy for the realization of Instruments in spoken languages (and it is never the only available strategy), while it is the most frequent strategy in sign languages, where adpositional and case marking are not attested.

3 Instruments in Italian

In this section, an overview of Instruments in Italian is laid out: first, the main strategies used for their syntactic realization are presented (§ 3.1); then, a recent hypothesis aimed at accounting for their syntactic production/omission is described (§ 3.2).

3.1 Syntactic Realization of Instruments

In Italian, Instruments are most frequently realized via prepositional marking, i.e., they are the internal complements of the preposition *con* 'with', as in (3). In addition, they can be realized via the clitic pronoun *ci*, as in (4).

(3) Laura toglie la scheggia [$_{PP}$ con le pinzette].
     'Laura removes the splinter [$_{PP}$ with tweezers].'

(4) (Con le pinzette$_i$,) Laura ci$_i$ toglie la scheggia.
     (With tweezers$_i$,) Laura with.it$_i$=removes the splinter
     '(With tweezers$_i$,) Laura removes the splinter with them$_i$.'

Instruments are always syntactically optional when realized via *con*-PPs (5a) and the instrumental *ci* (5b).

(5) a.   Laura toglie la scheggia (con le pinzette).
          'Laura removes the splinter (with tweezers).'

     b.   (Con le pinzette$_i$,) Laura (ci$_i$) toglie la scheggia.
          (With tweezers$_i$,) Laura (with.it$_i$=)removes the splinter
          '(With tweezers$_i$,) Laura removes the splinter (with them$_i$).'

Instruments can also be realized as the internal complement of the verb *usare* 'to use' (Lakoff 1968 for English), as in (6). They cannot be omitted in this position (7).

91

Annali di Ca' Foscari. Serie occidentale   e-ISSN 2499-1562
57, 2023, 87-112

(6) Laura usa [$_{DP}$ le pinzette] per togliere la scheggia.
'Laura uses [$_{DP}$ tweezers] to remove the splinter.'

(7) Laura usa *(le pinzette) per togliere la scheggia.
'Laura uses *(tweezers) to remove the splinter.'

We will not consider the *use*-structure in (6)-(7) for two reasons: first, the *con*-PP is the most prototypical way of realizing Instruments in Italian as well as cross-linguistically; second (and perhaps most importantly), the *use*-structure does not tell anything about the semantic and syntactic relation between a verb and the entailed Instrument: in *use*-structures, the Instrument is semantically entailed by the verb of the *to*-infinitival clause, despite being the syntactic complement of the verb *usare* 'to use'.

3.2 Shadow, Default, and Open: Accounting for Instrument Optionality

In Italian, unless they are realized via the *use*-structure, Instruments can always be omitted without the sentence being ungrammatical, as in (5). Because of their optionality, they have often been classified as adjuncts (Bresnan 1982; Dowty 1982; Rappaport-Hovav, Levin 1988; Jackendoff 1990; Rissman, Rawlins 2017). However, they are semantic arguments of verbs that semantically require them, e.g., *tagliare* 'to cut', *bucare* 'to pierce', etc. (Koenig, Mauner, Bienvenue 2003; Koenig et al. 2008; Barbu 2020 for English; Barbu 2020 for Turkish, Romanian, and Spanish; Suozzi, Cardinaletti, Lebani, forthcoming for Italian). This is confirmed by psycholinguistic evidence (Schütze 1995; Barbu 2020) and by various syntactic diagnostics for argumenthood, according to which they behave as arguments or quasi-arguments/secondary complements (Ono 1992; Schütze 1995; Barbu 2020; Russo 2021 for English; Russo 2021 for Turkish; Suozzi, Cardinaletti, Lebani, forthcoming for Italian).

Considering Instruments as pure adjuncts causes a mismatch between semantics and syntax, since this would be the only case where the semantic structure of a verb does not determine its syntactic behavior (Rissman 2013). Hence, it has been proposed that Instruments should be classified as arguments/quasi-arguments, and that their syntactic omission should be treated as an instance of argument omission, not as a proof of them being adjuncts (Suozzi, Cardinaletti, Lebani, forthcoming for Italian).

Argument omission is ruled by semantic recoverability (Resnik 1993; Conklin, Koenig, Mauner 2004; Cappelli, Lenci 2020), i.e., an argument can be omitted only when the verb alone allows for it to be interpreted. Semantic recoverability relies on the amount of in-

formation that a verb provides about its arguments and *vice versa*: the more information a verb provides about an argument, the more the argument is recoverable from the verb alone (and the less it is informative with respect to it) and is likely to be syntactically omitted.

Capitalizing on Pustejovsky's (1995; Jezek 2017 for Italian) tripartition of arguments, based on the informativity of arguments with respect to the verb, three types of Instruments are identified in Italian: shadow, default, and open Instruments (Suozzi, Cardinaletti, Lebani, forthcoming).

Shadow Instruments are semantically incorporated[4] into the verb meaning and root, completely recoverable from the verb meaning alone and interpreted as a single instrumental item. Examples of verbs entailing shadow Instruments (henceforth, shadow verbs) in Italian are reported in (8).

(8) a. spazzolare 'to brush'⟹ INST: spazzola 'brush'
     b. martellare 'to hammer'⟹ INST: martello 'hammer'
     c. segare 'to saw'⟹ INST: sega 'saw'
     d. avvelenare 'to poison'⟹ INST: veleno 'poison'

Since they are uninformative with respect to the verb, shadow Instruments are syntactically omitted if not further modified, in order to avoid redundancy (cf. *Non-Redundancy Constraint*, Fabrizio 2013), as shown below: (9a) is acceptable and the omitted shadow Instrument is interpreted as a single instrumental item, i.e., *martello* 'hammer', while (9b) is redundant; however, (9c) is acceptable again, since the shadow Instrument is modified by *più vecchio* 'oldest'.

(9) a. Luca martella il chiodo.
         'Luca hammers the nail.'
     b. ?? Luca martella il chiodo con il martello.
         'Luca hammers the nail with the hammer.'
     c. Luca martella il chiodo con il martello più vecchio.
         'Luca hammers the nail with the oldest hammer.'

Notably, shadow Instruments are syntactically realized when the speaker refers to a subtype of the instrumental item entailed by the verb, as in (10b): the shadow verb *pattinare* 'to skate' only allows for the shadow Instrument *pattini* 'skates' to be interpreted (10a), but does not provide enough information for any subtype to be interpreted. We claim that this is the maximum level of granularity reached by shadow verbs in Italian and that it is prone to cross-linguistic variation.

---

4 We only refer to 'semantic' incorporation, without entering the debate about the syntactic (Baker 1988) or morphological process that may underlie this kind of structure.

93

Annali di Ca' Foscari. Serie occidentale   e-ISSN 2499-1562
57, 2023, 87-112

(10) a.   Luca pattina.
          'Luca is skating.'⟹ INST: pattini 'skates'

     b.   Luca pattina {con i pattini a rotelle/in linea/da ghiaccio}.
          'Luca is skating {with roller/in-line/ice skates}.'

Default Instruments are selected by the verb as a small and semantically coherent set of entities. They are recoverable from the verb alone and interpreted as the entire set; in this case, they are uninformative with respect to the verb. Examples of verbs entailing default Instruments (henceforth, default verbs) are given in (11).

(11) a.   tagliare 'to cut'⟹ INST: {cutting objects}
     b.   sparare 'to shoot'⟹ INST: {firearms}
     c.   mangiare 'to eat'⟹ INST: {cutlery}
     d.   disegnare 'to draw'⟹ INST: {tools for drawing}

As mentioned above, default Instruments are uninformative with respect to the verb when the speaker wants to refer to the entire class selected by the verb itself; in this case, their syntactic realization is redundant and, therefore, avoided. On the contrary, when the speaker wants to mention a single instrumental item belonging to the set, default Instruments become informative with respect to the verb and their syntactic realization is allowed. As an example, the verb *tagliare* 'to cut' can be considered, which entails the set of {cutting objects} (11a). The acceptability of (12a), where the entire set is syntactically realized, is degraded, while (12b), where a single instrumental item is mentioned, i.e., *coltello* 'knife', is completely acceptable.

Default Instruments are occasionally shadowed by the co-composition between the verb and its internal argument, as in (12c), where the Instrument is interpreted as a single instrumental item and depends on the object of the verb *tagliare* 'to cut'. Thus, default Instruments are syntactically realized when a single instrumental item is mentioned, provided that they are not shadowed, as with *disegnare* 'to draw' (12d), where the default Instrument does not depend on what is being drawn.

(12) a.   ?*Taglia con gli oggetti per tagliare!
          'Cut with the cutting objects!'
     b.   Taglia con il coltello!
          'Cut with the knife!'
     c.   Luca taglia {$_1$il pane/$_2$il prato/$_3$i capelli a Sara}.
          'Luca cuts the bread/the lawn/Sara's hair.'
          ⟹ INST: {$_1$coltello 'knife'/$_2$tagliaerba 'lawn mower'/$_3$forbici 'scissors'}

d.   Luca disegna {un cane/un gatto/una giraffa} con la matita.
      'Luca draws {a dog/a cat/a giraffe} with the pencil.'
      ⟹ INST: {tools for drawing}

Open Instruments are unrecoverable from the verb alone, which se-
lects for a broader and not (always) semantically coherent set of en-
tities, and, as such, they are maximally informative with respect to
the verb itself. Examples of verbs entailing open Instruments (hence-
forth, open verbs) are given in (13).

(13) a.   rompere 'to break'⟹ INST: {martello 'hammer', mazza 'bat', etc.}
      b.   giocare 'to play'⟹ INST: {palla 'ball', bambola 'doll', etc.}
      c.   sporcare 'to soil'⟹ INST: {cioccolato 'chocolate', fango 'mud', etc.}
      d.   andare 'to go' ⟹ INST: {treno 'train', aeroplano 'airplane', etc.}

Being unrecoverable from the verb (14a), open Instruments are more
bound to be syntactically realized (14b) than shadow and default
ones.[5]

(14) a.   Luca ha distrutto la parete.
            'Luca destroyed the wall.'
            ⟹ INST: {martello 'hammer', mazza 'bat', fuoco 'fire', etc.}
      b.   Luca ha distrutto la parete con la dinamite.
            'Luca destroyed the wall with dynamite.'

In Italian, the behavior of Instruments is represented by the pat-
tern in (15).

(15) Semantic recoverability: Shadow > Default > Open
            ↓
      Syntactic omission: Shadow > Default > Open

Semantic recoverability and syntactic omission are maximal for shad-
ow Instruments and decrease for default and open ones. This was con-
firmed by a comprehensive analysis conducted on two large corpora
of spontaneous speech (Suozzi, Cardinaletti, Lebani, forthcoming).

---

5   A comprehensive corpus analysis, conducted on two corpora of spontaneous speech
in Italian, showed (i) that Instruments are scarcely syntactically realized in sponta-
neous speech and (ii) that they tend to co-occur more frequently with open verbs than
with shadow and default verbs (Suozzi, Cardinaletti, Lebani, forthcoming).

4   Syntactic Realization of Instrument in LIS

As mentioned above (§ 2), sign languages display a uniform pattern: Instruments are commonly realized as a classifier handshape incorporated into a polymorphemic predicate. This section presents a preliminary study on Instrument realization in LIS, which in principle is expected to resort to classifier incorporation, like other sign languages.

4.1   Methodology

This study is based on the data collected from two LIS informants: one is a deaf native signer from a deaf signing family, while the other is a deaf near-native signer, who has been exposed to LIS since the age of 4. At the time of data collection, they lived in the same region (Veneto) and had a similar age (40 and 41). Crucially for the aim of the study, they are bimodal bilinguals and use LIS and Italian on a daily basis.

Both informants participated in two elicitation sessions guided by one of the authors of this paper, who is a hearing fluent signer. To avoid memory bias, the two sessions were at least two weeks apart. The first session included two different tasks: a picture naming task aimed at eliciting 45 Instruments in LIS **[fig. 1]**, and an elicited translation task in which the informants were asked to translate into LIS a battery of 45 Italian verbs presented one by one in written form **[fig. 2]**.

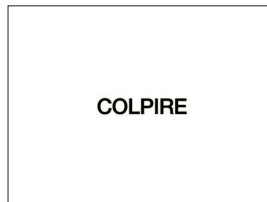**Figure 1**   Picture naming task (target: SMARTPHONE)

Figure 2   Elicited translation task (target: COLPIRE, 'to hit')

96

Annali di Ca' Foscari. Serie occidentale   e-ISSN   2499-1562
57, 2023, 87-112

The Italian verbs included in the second task were balanced for type: 15 shadow verbs (e.g., *segare* 'to saw', *pattinare* 'to skate'), 15 default verbs (e.g., *tagliare* 'to cut', *sparare* 'to shoot'), and 15 open verbs (e.g., *colpire* 'to hit', *accompagnare* 'to accompany').

For each verb, the informants were asked to provide the equivalent LIS sign(s). The translation itself only represented the starting point for an in-depth discussion in LIS between the informant and the researcher, in which the equivalent signs were tested in different contexts and with different Instruments. All the possible realizations coming from introspection were video-recorded and analyzed afterwards.

The second elicitation session also consisted of two different tasks. One was a semi-guided sentence production in which the informants were asked to produce 15 sentences built on 15 LIS verbs selected from the elicited translation task. Once the sentence was spontaneously produced by the informants, the researcher tested the possibility of overtly producing the instrumental lexical sign (e.g., SCISSORS) and sign order changes (e.g., PAPER SCISSORS CL: 'cut with scissors' vs SCISSORS PAPER CL: 'cut with scissors').

The other was a sentence-by-sentence translation task, with the aim to simulate possible challenges in the interpreting process. The informants were shown two connected sentences in written Italian, one after the other. After each sentence, they were required to provide the translation into LIS. For example, they were first shown the sentence in (16) including the Italian default verb *tagliare* 'to cut', and they were asked to translate it into LIS.

(16) Per favore, prova a tagliare questo nastro.
      'Please, try to cut this ribbon.'

Shortly afterwards, the task was repeated for the sentence in (17).

(17) Uffa, con il coltello è impossibile tagliarlo. Dobbiamo cercare le forbici.
      'Ugh, it's impossible to cut it with a knife. We need to look for scissors.'

Both the sentences include one of the verbs from the elicited translation task: overall, we selected 3 shadow verbs, 3 default verbs, 3 open verbs, and 3 fillers. Crucially, the Instrument is overtly expressed only in the second sentence (e.g., in (17), *coltello*, 'knife').

4.2   Results

In this section, we first present the linguistic strategies employed to express Instruments in the LIS data analyzed (§ 4.2.1). Then, we compare Instruments in Italian and LIS using a cross-linguistic and

cross-modal approach (§ 4.2.2). In § 4.2.3, we examine whether cross-linguistic differences may impose difficulties in the process of meaning conversion from one language to the other, in particular from Italian to LIS.

4.2.1   Instrument Realization in LIS

The qualitative analysis conducted on the data from the four tasks described in § 4.1 shows that LIS aligns with other sign languages, since it does not resort to either adpositional or case marking. Instrument is generally realized as a classifier handshape, which is simultaneously combined with a V root to form a polymorphemic predicate. In such a construction, Instrument consists of a static handshape and is a bound morpheme: it cannot occur in isolation and must combine with a V root to become a well-formed sign.

Two types of classifiers were identified in our data. The handshape can either represent the general shape of the Instrument (whole-entity classifier), as in (18a), or how it is held (handling classifier), as in (18b).

(18) a. CL(L): 'dry one's hair with a hairdryer'   b. CL(closed 5): 'sweep with a broom'

As mentioned above, the informants were allowed to provide multiple renditions for the same item. In a few cases, the informants offered both a whole-entity classifier translation and a handling classifier translation for the same Instrument. For example, 'to saw' has two possible versions in LIS: a predicate including a whole-entity classifier (19a), or a handling classifier (19b). Further work needs to be carried out to establish whether these are cases of true optionality, or the choice of the classifier is driven by specific factors.

(19) a. CL(B): 'saw'   b. CL(closed 5): 'saw'

In the aforementioned examples, a V root unspecified for the hand-shape is simultaneously combined with an affix, represented by the instrumental classifier handshape. Because the incorporated Instrument is a classifier, it selects a salient property of a class of entities. This class may vary in size: it could entail a single instrumental item, or more. Below, we show examples of different classifier handshapes referring to Instrument sets of different sizes. The first case is that of classifier handshapes entailing a single instrumental item. For example, the V handshape (extended index and middle fingers) combined with a 'cutting' V root only refers to scissors.

(20) CL(V): 'cut with scissors' ⟹ INST: scissors

In this case, the classifier handshape and the corresponding Instrument (SCISSORS) display a very similar phonological form. When the classifier handshape clearly refers to a single instrumental item, the omission of the instrumental lexical sign is obligatory (21a), unless it is focalized or further specified (21b).

(21) a.   IX$_3$ SHEET (*SCISSORS) CL(V): 'cut with scissors'
            'She cut the sheet of paper with scissors.'

      b.   IX$_3$ SHEET SCISSORS NEW CL(V): 'cut with scissors'
            'She cut the sheet of paper with the new scissors.'

A second case is that of classifier handshapes entailing a group of instrumental items that share inherent properties, thus forming a semantically coherent class of entities. For example, a closed 5 handshape combined with a 'cleaning' V root may entail different instrumental items, which share a common property (i.e., being cleaning tools), thus belonging to the same semantic domain.

(22) CL(closed 5): 'clean with a cleaning tool'
⟹ INST: {paper towel, sponge, dust cloth, soap, old piece of cloth, etc.}

When the classifier handshape refers to a semantically coherent set of instrumental items, the instrumental lexical sign is optional (23).

(23) IX$_3$ WALL (SPONGE) CL(closed 5): 'clean with a cleaning tool'
'He is cleaning the wall (with a sponge).'

In the third and last case, the classifier handshape entails a group of instrumental items that do not constitute a semantically coherent set of entities. For example, the curved open 5 handshape combined with a 'hitting' V root may refer to different instrumental items, possibly belonging to different semantic domains (24).

(24) CL(curved 5): 'hit with a small object'
INST: {smartphone, small toy, ornament, small box, cookie, etc.}

When the classifier handshape refers to a broader and not (always) semantically coherent set of instrumental items, the instrumental lex-

ical sign is overtly produced, as in (25a). If it has already been mentioned and is salient in the discourse, it may be omitted, as in (25b).

(25) a.   IX$_{3a}$ STATUE$_{3b}$ SMARTPHONE $_{3a}$CL(curved 5): 'hit with a small object'$_{3b}$
       b.   IX$_{3a}$ STATUE$_{3b}$ $_{3a}$CL(curved 5): 'hit with a small object'$_{3b}$ (*Salient INST*: smartphone)

   'He hit the statue with a smartphone.'

Despite the homogenous syntactic realization, LIS data show that the semantic recoverability of Instruments varies depending on the classifier handshape. Namely, classifier handshapes may entail: i) a single instrumental item, and possibly subtypes of it (thus realizing a shadow Instrument), ii) a restricted and semantically coherent set of entities (thus realizing a default Instrument), or (iii) a set of entities that do not share inherent common properties (thus realizing an open Instrument). According to our informants' judgments, the degree of semantic recoverability of Instruments impacts the production of the instrumental lexical sign. The easier it is to recover, the more likely it is to be omitted.

4.2.2   Comparative Analysis Between Italian and LIS

Turning to the comparative analysis between Italian and LIS, for the sake of clarity, we consider each category (shadow, default, and open Instruments) separately.

   As for shadow Instruments, Italian and LIS behave alike in most cases (12/15 shadow verbs): Instruments are maximally recoverable from the verb alone in both languages.[6]

Table 1   LIS counterparts of Italian shadow verbs (SV)

Verb	Italian	LIS	Verb	Italian	LIS
Evidenziare ('to highlight')	SV	SV	*Pettinare* ('to comb')	SV	SV
Incollare ('to glue')	SV	SV	*Insaponare* ('to soap')	SV	SV
Avvelenare ('to poison')	SV	-	*Incoronare* ('to crown')	SV	-
Colorare ('to color')	SV	SV	*Bastonare* ('to club')	SV	DV
Profumare ('to perfume')	SV	SV	*Ammanettare* ('to handcuff')	SV	SV
Salare ('to salt')	SV	SV	*Telefonare* ('to telephone')	SV	SV
Segare ('to saw')	SV	SV	*Pattinare* ('to skate')	SV	SV
Sciacquare ('to rinse')	SV	SV			

---

6   For reasons of space, in the tables, we use the following acronyms: SV (Shadow Verbs), DV (Default Verbs), OV (Open Verbs).

101

Annali di Ca' Foscari. Serie occidentale
57, 2023, 87-112

e-ISSN 2499-1562

In one particular case, the two languages diverge: the equivalent of *bastonare* 'to club' in LIS seems to be a default verb, as it is compatible with a set of semantically coherent instrumental items (long-shaped tools that can be used to beat someone), e.g., a stick, a club, a bar, a baseball bat, a truncheon, etc.

Two verbs, *avvelenare* 'to poison' and *incoronare* 'to crown', were excluded from the analysis because the LIS counterparts seem to involve a regular object-verb combination (POISON GIVE and CROWN CL(curved open 5): 'move a round object'), rather than a construction including an Instrument.

Interestingly, in a few Italian and LIS verb pairs, the classification is the same (shadow verb), but the incorporated Instrument is different. For example, the Italian verb *sciacquare* 'to rinse' incorporates the substance with which the action is performed (*acqua*, 'water'), while the LIS counterparts, e.g., (26a) and (26b), incorporate the actual tool conveying the substance, which is not necessarily water.

(26) a. CL(closed G): 'rinse with a garden hose'
      b. CL(curved open 5): 'rinse with a faucet'

The same difference between the two languages is attested with *colorare* 'to color', *profumare* 'to perfume', *salare* 'to salt', and *insaponare* 'to soap'. Notably, in some cases LIS shows a finer-grained classification of Instruments. For example, *pattinare* 'to skate' in Italian does not specify the type of skates that are used to perform the action. In LIS, however, signers must specify this information by selecting the corresponding handshape classifier. A flat hand with extended fingers (B handshape) and a downward palm refers to roller skates (27a); the same handshape with the palm in a contralateral position refers to in-line skates (27b). This is an example of how the morphophonological features associated with the classifier may drive the Instrument realization.[7]

---

[7] Other cues that may favor Instrument identification in LIS are the V root, mouth gestures, and world knowledge. A comprehensive review of all these elements is out of the scope of this paper.

(27) a. CL(B): 'skate with roller skates'   b. CL(B): 'skate with in-line skates'

Another similar case is *segare* 'to saw', for which LIS differentiates between hand-saw and chainsaw.

As for default Instruments, LIS and Italian diverge more significantly.

Table 2   LIS counterparts of Italian default verbs (DV)

Verb	Italian	LIS	Verb	Italian	LIS
Scrivere ('to write')	DV	SV	*Cucinare* ('to cook')	DV	DV+SV
Chiamare ('to call')	DV	DV+SV	*Asciugare* ('to dry')	DV	DV+SV
Ascoltare ('to listen to')	DV	SV	*Bucare* ('to pierce')	DV	DV+SV
Mangiare ('to eat')	DV	DV+SV	*Cancellare* ('to erase')	DV	DV+SV
Tagliare ('to cut')	DV	SV	*Saltare* ('to jump')	DV	SV
Disegnare ('to draw')	DV	SV	*Sparare* ('to shoot')	DV	SV
Lavare ('to wash')	DV	DV+SV	*Correre* ('to run')	DV	SV
Pulire ('to clean')	DV	DV+SV			

As shown in Table 2, two main patterns emerge. In some cases, a category mismatch emerges between the two languages (7/15 default verbs): Italian opts for default verbs, while in LIS shadow verbs are obligatorily used. In these cases, signers need to specify the Instrument through a particular classifier handshape. For example, in Italian the default verb *sparare* 'to shoot' entails a restricted set of instrumental items (i.e., firearms), and the type of firearm is not specified in the verb. In LIS, however, a default option is not available: a specific classifier handshape needs to be chosen according to the firearm type (28).

(28) a. CL(U): 'shoot with a rifle'

b. CL(L): 'shoot with a gun'

c. CL(curved open 5): 'shoot with a bazooka'

d. CL(G): 'shoot with a cannon'

In other cases, Instruments in LIS may be expressed through a specific classifier handshape, but a default verb is also available (8/15 default verbs). For example, the verb EAT is a default verb, since it is compatible with all the instrumental items that can be used to eat. LIS signers could also opt for a shadow verb to express the Instrument in an explicit way (e.g., eating with the fork, with the spoon, with the hands, with chopsticks, etc.).

Similarly to default Instruments, open Instruments show several category mismatches between Italian and LIS.

Table 3   LIS counterparts of Italian open verbs (OV)

Verb	Italian	LIS	Verb	Italian	LIS
Prendere ('to take')	OV	OV+SV	**Colpire** ('to hit')	OV	OV+SV
Portare ('to carry')	OV	OV+SV	**Accompagnare**('to accompany')	OV	OV+SV
Seguire ('to follow')	OV	OV+SV	**Uccidere** ('to kill')	OV	OV+SV
Aprire ('to open')	OV	SV	**Rompere** ('to break')	OV	OV+SV
Guardare ('to look at')	OV	SV	**Sporcare** ('to soil')	OV	OV+SV
Lavorare ('to work')	OV	OV+SV	**Venire** ('to come')	OV	OV+SV
Raccogliere ('to collect')	OV	OV+SV	**Salire** ('to go up')	OV	SV
Chiudere ('to close')	OV	SV			

104

Annali di Ca' Foscari. Serie occidentale   e-ISSN 2499-1562
57, 2023, 87-112

Table 3 shows two main patterns, as already observed with default verbs. On the one hand, a few open verbs in Italian correspond to shadow verbs in LIS (4/15 open verbs). This means that signers are required to choose among different classifier handshapes specifying the instrumental items. For example, the Italian open verb *salire* 'to go up' does not have an equivalent open verb in LIS. Signers must make explicit reference to the instrumental item used to go up (e.g., regular stairs, spiral stairs, escalator, elevator, car, bike, etc.), as in (29).


(29) a. CL(U): 'go up spiral stairs'   b. CL(B): 'go up by a four-wheel vehicle'

For other verbs, LIS offers two options (11/15 open verbs): signers can either use an open verb, as in Italian, or specify the Instrument through a particular classifier handshape (shadow realization). One such case is *venire* 'to come', which can be expressed in LIS by the lexical verb COME (open verb) (30a), or by several forms of incorporated Instruments, e.g., the equivalent of 'come on escalator' (shadow verb) (30b).
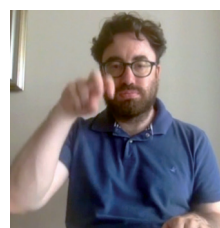
(30) a. COME   b. CL(curved open V): 'come on escalator'

4.2.3   Instruments in Cross-modal Translation

The sentence-by-sentence translation task was conceived to investigate possible implications for interpreting. We identified three conditions, with different predictions:

1. if Instruments belong to the same category in the two languages (category match), translation is not challenging;
2. if Instruments belong to different categories in the two languages, i.e., default or open Instrument in Italian and shadow Instrument in LIS (category mismatch), translation is challenging;
3. if two options are available in LIS, i.e., default/open Instrument and shadow Instrument, the category mismatch is eluded, and the non-shadow realization is preferred.

In (31), we provide an example of the first condition, involving a shadow Instrument in both languages (*telefonare* 'to phone' in Italian/PHONE in LIS).

(31) a. La Rettrice ha **telefonato** alla Ministra.
          'The Dean phoned the Minister.'

      b. Durante la telefonata, all'improvviso, il **cellulare** della Rettrice si è spento perché era scarico.
          'During the call, the Dean's mobile phone suddenly turned off because it ran out of power.'

The Instrument (mobile phone) only appears in the second sentence and falls in the scope of the verbs in the two languages. As expected, in the category match condition, we did not observe either a reaction of surprise or a reanalysis attempt after the disclosure of the Instrument.

In the second condition, the two languages diverge in that Italian does not require a shadow Instrument, while LIS does. The example in (32) includes the default verb *tagliare* 'to cut', which corresponds to several shadow verbs in LIS depending on the instrumental item used to cut.

(32) a. Per favore, prova a **tagliare** questo nastro.
          'Please, try to cut this ribbon.'

      b. Uffa, con il **coltello** è impossibile tagliarlo. Dobbiamo cercare le forbici.
          'Ugh, it's impossible to cut it with a knife. We need to look for scissors.'

The Instrument (knife) is overtly expressed only in the second sentence. It falls in the scope of Italian *tagliare*, but crucially not in the scope of the LIS predicate initially chosen by our informants, meaning 'to cut with scissors'. After the disclosure of the Instrument, both informants had a surprised or puzzled reaction and had to reanalyze the first sentence and provide a different translation, including a clas-

sifier predicate meaning 'to cut with a knife'.[8]

The last condition (two options in LIS) is exemplified below. The Italian open verb *accompagnare* 'to accompany' may be translated into LIS with an open verb (ACCOMPANY) or a number of shadow verbs explicitly expressing the Instrument.

(33) a.　La nonna **ha accompagnato** il nipote a scuola.
　　　 'Grandma accompanied her grandson to his school.'

　　 b.　Sono saliti insieme in **autobus** e hanno chiacchierato per tutto il viaggio.
　　　 'They got on the bus together and they chatted all the way through.'

Since the first sentence did not provide enough details to infer the Instrument, both informants opted for the open verb. As a consequence, no surprised reactions and no reanalysis attempts were observed after showing the second sentence, in which the Instrument (bus) was overtly expressed.

5　General Discussion

In this study, we showed that both Italian and LIS allow for Instruments to be semantically incorporated into predicates. While there is no agreement on the exact nature of incorporated Instruments in Italian (e.g., nouns, bare roots, etc.) or on the underlying process (e.g., syntactic or morphological operations), incorporated Instruments in LIS are classifiers (e.g., CL(curved 5) in the equivalent of 'to hit with a small object'). Focusing on LIS, classifiers select subsets of potential instrumental items that vary in size. Depending on the number and type of entailed instrumental items, the resulting polymorphemic predicates may correspond to shadow, default, or open verbs. The set of potential instrumental items can be restricted by pragmatic constraints, discourse prominence, or morpho-phonological features associated with the classifier. The results from the semi-guided sentence production task and the following discussion with informants suggest that the more restricted the set of potential instrumental items is, the less likely signers are to overtly produce the instrumental lexical sign.

---

[8]　An anonymous reviewer suggests that the sign corresponding to 'cut with scissors' could be seen as evidence that this sign is an entry in the frozen lexicon meaning just 'cut'. If that were the case, a reanalysis and substitution (replacing the sign corresponding to 'cut with scissors' with that corresponding to 'to cut with a knife') would have not been necessary. In this task, however, both informants reported that the predicate included in their first attempt ('cut with scissors') was not correct given the full context, and a substitution was therefore necessary.

Our analysis showed that the tripartition of Instruments proposed for Italian (§ 3.2) also holds for LIS, even though the classification of predicates is not always straightforward. For instance, there are predicates (e.g., *pattinare* 'to skate') that were classified as shadow verbs in both Italian and LIS, but the two languages show a different degree of specificity: while LIS differentiates the incorporated Instruments according to distinct subtypes of the same instrumental item (e.g., roller skates, in-line skates), Italian does not. To account for gradual nuances and unclear boundaries between categories, we suggest that shadow, default, and open Instruments are to be intended as prototypes to which Instruments may converge to different degrees.

Overall, the comparative analysis between Italian and LIS (§ 4.2) showed that shadow realizations are more frequent in LIS than in Italian. In the LIS data we analyzed, almost all of the items encode a shadow Instrument, and in many cases this is the only available option (23/45). Some recurrent comments from our informants were "There are many possible signs" and "It depends on the tool I am using".

We strongly believe that the preference for shadow Instruments in LIS is not accidental, therefore we propose two possible explanations to account for it. The first is a structural explanation: the two languages have different mechanisms to express Instruments. Although Italian has the possibility to semantically incorporate Instruments, the most frequent strategy used to realize them is prepositional marking (§ 3.1). LIS, on the other hand, is a language that always realizes Instruments through incorporation. The tendency for signers to use shadow-like mechanisms, where Italian opts for default and open Instruments, may be due to the fact that LIS relies on morpho-syntactic devices (such as classifiers) that do not exist in Italian. However, further studies are necessary to fully understand the association between shadow realizations and classifier constructions. The second explanation is linked to iconicity. Differently from spoken languages, sign languages show a dimensional continuity with gestures, actions, and crucially object manipulation (which is strictly connected with the concept of Instrument). Both signs and object manipulation share the same medium, namely the use of hands in space. Also, it is well known from literature that iconicity is an economic source for the creation of signs (a.o., Pietrandrea 2002), so it comes with no surprise that signers frequently select physical features of Instruments and encode them in polymorphemic predicates. According to Cuxac (2000), signers have the choice of telling without showing (*dire sans montrer*, i.e., using lexically stabilized forms, which are comparable to spoken languages' words) or telling by showing (*dire en montrant*, i.e., resorting to highly iconic structures such as classifiers, which are unique to the signed modality). As our data showed, in some cases both options are available. However, in other cases, the deliberate intent of show-

ing prevails, leading signers to produce shadow realizations. Therefore, such a difference may be explained as a modality effect.

Results from the sentence-by-sentence task (§ 4.2.3) demonstrate that the preference for shadow Instruments in LIS poses a major challenge for Italian-to-LIS interpreting. When Instruments are not recoverable from the verb meaning in the source language (Italian) but must be specified within the predicate in the target language (LIS), misinterpretations may occur. In this scenario, Italian-LIS interpreters risk choosing the wrong Instrument. They could consciously accept this risk producing one of the possible shadow Instruments, typically the most plausible one. If they later find out that the wrong choice was made, they may backtrack and provide the correct interpretation. A possible escape hatch consists in increasing the lag time between the source text and the target text (*décalage*) to extract as much information as possible in order to infer the Instrument. The drawback is that interpreters could get too far behind the speaker, possibly compromising the quality of the interpretation. However, interpreting techniques that may be effective are available: reformulations and three-sign lists. For instance, if the source text includes a sentence like "They played a sweet melody", in which the musical instruments are not specified, interpreters may reformulate it replacing the cause with the effect (e.g., "I heard a sweet melody coming from them"). Alternatively, interpreters may cope with Instrument underspecification in Italian by producing a list of three random instrumental items in LIS (e.g., PIANO, VIOLIN, FLUTE) with the purpose to activate a superordinate category, i.e., musical instruments.[9]

In the other interpreting direction, from LIS to Italian, no particular complication is expected, since the source language (LIS) is typically more informative with respect to the Instrument, therefore interpreters are not forced to make a blind choice selecting one instrumental item from a set of possible ones.

6 Conclusions

Our comparative analysis showed that the set of entities that can be encoded in predicates as Instruments may vary in size across different languages and modalities. Overall, LIS differs from Italian in that (almost) all of the tested items can encode shadow Instruments and, in many cases, this is the only available option. We accounted for the preference for shadow-like mechanisms in LIS suggesting it may be due to structural reasons or modality effects.

---

[9] An overview of the formational strategies adopted by sign languages to realize hypernyms is provided, e.g., in Zeshan, Sagara 2016.

Through a specifically designed task, we demonstrated that asymmetries in Instrument realization between Italian and LIS pose a major challenge to interpreters, especially when they interpret from Italian to LIS, i.e., from the language with the lowest to the language with the highest degree of Instrument specification. Some of the strategies that interpreters could adopt to overcome category mismatches have been outlined.

Although contrastive linguistics and translation studies developed as distinct disciplines, they have several elements in common and can fruitfully interact (Vandepitte, De Sutter 2013). We believe that this study is an example of how these two fields may interact and fuel each other.

Bibliography

Baker, M.C. (1988). *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.

Barbu, R.M. (2020). *On the Psycholinguistic of Argumenthood* [PhD Dissertation]. Ottawa: Carlton University. https://doi.org/10.22215/etd/2020-14146.

Beller, R.; Beller, P. (1979). "Huasteca Nahuatl". Langacker 1979, 199-306.

Benedicto, E.; Brentari, D. (2004). "Where Did All the Arguments Go? Argument-changing Properties of Classifiers in Asl". *Natural Language and Linguistic Theory*, 22(4), 743-810. https://doi.org/10.1007/s11049-003-4698-2.

Bresnan, J. (1982). "Control and Complementation". Bresnan, J. (ed.), *The Mental Representation of Grammatical Relations*. Cambridge: MIT Press, 292-390.

Brockway, E. (1979). "North Puebla Nahuatl". Langacker 1979, 142-98.

Cappelli, G.; Lenci, A. (2020). "PISA: A Measure of Preference in Selection of Arguments to Model Verb Argument Recoverability". Gurevych, I.; Apidianaki, M.; Faruqui, M. (eds), *Proceedings of the Ninth Joint Conference on Lexical and Computational Semantics*, 131-6. https://aclanthology.org/2020.starsem-1.0.

Conklin, K.; Koenig, J-P; Mauner, G. (2004). "The Role of Specificity in the Lexical Encoding of Participants". *Brain and Language*, 90(1-3), 221-30. https://doi.org/10.1016/S0093-934X(03)00435-8.

Cuxac, C. (2000). *La Langue des Signes Française (LSF). Les voies de l'iconicité*. Paris: Ophrys. Faits de langues 15-16.

De Reuse, W. (1994). "Noun Incorporation in Lakota (Siouan)". *International Journal of American Linguistics*, 60(3), 199-260. https://doi.org/10.1086/466232.

Dowty, D. (1982). "Grammatical Relations and Montague Grammar". Jacobson, P.; Pullum, G.K. (eds), *The Nature of Syntactic Representations*. Dordrecht: Reidel, 79-130. Studies in Linguistics and Philosophy 15. https://doi.org/10.1007/978-94-009-7707-5.

Dunn, M.J. (1999). *A Grammar of Chukchi* [PhD Dissertation]. Canberra: Australian National University. https://doi.org/10.25911/5d77842288837.

110
Annali di Ca' Foscari. Serie occidentale
57, 2023, 87-112

e-ISSN 2499-1562

Fabrizio, C. (2013). "The Meaning of a Noun Converted into a Verb. A Semantic Exploration on Italian". *Rivista di Linguistica*, 25(2), 174-219. `https://hdl.handle.net/11564/641419`.

Haspelmath, M. (2014). "Arguments and Adjuncts as Language-Particular Syntactic Categories and as Comparative Concepts". *Linguistic Discovery*, 12(2), 3-11. `https://doi.org/10.1349/PS1.1537-0852.A.442`.

He, J. (2011). *Instrument Classifier Predicates in Tianjin Sign Language* [PhD Dissertation]. Hong Kong: The Chinese University of Hong Kong. `https://repository.lib.cuhk.edu.hk/en/item/cuhk-327542`.

Jackendoff, R. (1990). *Semantic Structures*. Cambridge: MIT Press.

Jezek, E. (2017). "Generative Lexicon Theory and Lexicography". Hanks, P.; De Schryver, G.M. (eds), *International Handbook of Modern Lexis and Lexicography*. Berlin; Heidelberg: Springer, 1-21. `https://doi.org/10.1007/978-3-642-45369-4`.

Johns, A. (2017). "Noun Incorporation". Everaert, M.; van Riemsdijk, H. (eds), *The Wiley Blackwell Companion to Syntax.* 2nd ed. Hoboken: Wiley, 1-27.

Koenig, J.-P.; Mauner, G.; Bienvenue, B. (2003). "Arguments for Adjuncts". *Cognition,* 89(2), 67-103. `https://doi.org/10.1016/s0010-0277(03)00082-9`.

Koenig, J.-P. et al. (2008). "What With? The Anatomy of a (Proto)-Role". *Journal of Semantics*, 25(2), 175-220. `https://doi.org/10.1093/jos/ffm013`.

Lakoff, G. (1968). "Instrumental Adverbs and the Concept of Deep Structure". *Foundations of Language*, 4(1), 4-29. `http://www.jstor.org/stable/25000311`.

Langacker, R.W. (ed.) (1979). *Studies in Uto-Atzecan Grammars.* Vol. 2*, Modern Aztec Grammatical Sketches*. Arlington: Summer Institute of Linguistics Publications in Linguistics, 56-2.

McKenzie, A. (2018). "Mediating Functions and the Semantics of Noun Incorporation". *Natural Language & Linguistic Theories*, 40(2), 505-40. `https://doi.org/10.1007/s11049-021-09511-4`.

Meir, I. (2001). "Verb Classifiers as Noun Incorporation in Israeli Sign Language". Booij, G.; van Marle, J. (eds)*, Yearbook of Morphology 1999*. Dordrecht: Springer, 299-319. Yearbook of Morphology 7. `https://doi.org/10.1007/978-94-017-3722-7`.

Mithun, M. (1984). "The Evolution of Noun Incorporation". *Language*, 60(4), 847-94. https://doi.org/10.2307/413800

Ono, N. (1992). "Instruments: a Case Study of the Interface between Syntax and Lexical Semantics". *English Linguistics/Journal of the English Linguistic Society of Japan*, 9, 196-222. `https://doi.org/10.9793/elsj1984.9.196`.

Pietrandrea, P. (2002). "Iconicity and Arbitrariness in Italian Sign Language". *Sign Language Studies*, 2(3), 296-321. `https://www.jstor.org/stable/26204859`.

Pustejovsky, J. (1995), *The Generative Lexicon*. Cambridge: MIT Press.

Rappaport-Hovav, M.; Levin, B. (1988). "What to Do with Θ – Roles". Wilkins, W. (ed.), *Syntax and semantics*. Vol. 21, *Thematic Relations*. San Diego: Academic Press, 7-36. https://doi.org/10.1163/9789004373211.

Resnik, P. (1993). *Selection and Information: A Class-Based Approach to Lexical Relationships* [PhD Dissertation]. Philadelphia: University of Pennsylvania. `https://repository.upenn.edu/dissertations/AAI9413894`.

Rissman, L. (2013). *Event Participants Representations and the Instrumental Role: a Cross-linguistic Study* [PhD Dissertation]. Baltimore: John Hopkins University.

Rissman, L.; Rawlins, K. (2017). "Ingredients of Instrumental Meaning". *Journal of Semantics*, 34(3), 507-37.

Russo, L. (2021). *Arguments, Adjuncts and Instruments in English and Turkish* [MA Thesis]. Ottawa: Carlton University. `https://doi.org/10.22215/etd/2021–14666`.

Schütze, C. (1995). "PP Attachment and Argumenthood". *Papers on Language Processing and Acquisition*, 26, 95-151.

Suozzi, A.; Cardinaletti, A.; Lebani, G. (forthcoming). *On the Argument Status of Instruments in Italian*.

Tuggy, D.H. (1979). "Tetelcingo Nahuatl". Langacker 1979, 1-140.

Van Hooste, K. (2018). *Instruments and Related Concepts at the Syntax-Semantics Interface*. Düsseldorf: Düsseldorf University Press. Dissertations in Language and Cognition 5. `https://doi.org/10.1515/9783110720365`.

Vandepitte, S.; De Sutter, G. (2013). "Contrastive Linguistics and Translation Studies". Gambier, Y.; van Doorslaer, L. (eds), *Handbook of Translation Studies,* vol. 4. Amsterdam: John Benjamins Publishing Company, 36-41.

Zeshan, U.; Sagara, K. (2016). *Semantic Fields in Sign Languages: Colour, Kinship and Quantification*. Berlin: De Gruyter Mouton.

Zwitserlood, I. (2003). *Classifying Hand Configurations in Nederlandse Gebarentaal* [PhD Dissertation]. Amsterdam: Landelijke Onderzoekschool Taalwetenschap.

Zwitserlood, I. (2012). "Classifiers". Pfau, R.; Steinbach, M.; Woll, B. (eds), *Sign Language: An International Handbook*. Berlin: De Gruyter Mouton, 158-86. `https://doi.org/10.1515/9783110261325`.