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DOCTOR OF LANGUAGES

Discourse Markers in French Belgian Sign Language (LSFB) and Catalan Sign Language (LSC): BUOYS, PALM-UP and SAME
Variation, functions and position in discourse

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Award date:
2017

Awarding institution:
University of Namur

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Discourse markers in French Belgian Sign Language (LSFB) and Catalan Sign Language (LSC):

BUOYS, PALM-UP and SAME

Variation, functions and position in discourse

Dissertation submitted by Sílvia GABARRÓ-LÓPEZ
for the degree of Doctor of Philosophy

21st September 2017

Board of examiners: L. MEURANT (supervisor), G. BARBERÀ (co-supervisor)
O. CRASBORN, L. DEGAND, M. VERMEERBERGEN

Als meus pares,

a l'Ángel,

a totes les persones signants,

i entre elles, a la més especial, el Pedro.

The human brain does not discriminate between the hands and the tongue. People discriminate, but not our biological human brain.

Dr. Laura-Ann Petitto (*Gallaudet Today*, Spring 2012)

Acknowledgements

My first contact with a deaf person was when I was a newborn baby and my deaf granduncle held me in his arms. For years during my childhood and my adolescence, I would go to my grandparents' place every day, where he still lives at present, and we would use gestures and family signs to communicate. My granduncle and I have always had a special connection, which made me decide to take a sign language course when I was an adult. I did it in the deaf club *Asociación de Personas Sordas de Terrassa*, which is near my home town. I found LSC so fascinating that one year later I took my Master's degree at the Universitat de Barcelona. And after that, the PhD adventure began. During these five years, I have met many people I would like to acknowledge in what follows.

First of all, I would to thank my supervisors. In 2012, Laurence Meurant trusted me and gave me the opportunity to come to Belgium to pursue my dream. Some time later, Gemma Barberà got on board this ship that was navigating through the sea of discourse markers. Laurence and Gemma are just outstanding, not only as professionals but also as individuals. They have always been willing to listen, to discuss, to help, to do anything I needed with endless enthusiasm. I have no words to tell you how grateful I am.

I am also thankful to the members of the board of examiners. Myriam Vermeerbergen and Onno Crasborn have constituted my advisory panel from the very beginning of this project. Their comments during the confirmation test and while I was writing this dissertation were enriching and made me see things from a different perspective. Liesbeth Degand accepted the challenge of being the only 'spoken language linguist' in this story as a specialist in discourse markers. Her works have greatly inspired me and discussions with her were extremely interesting and useful for my research.

PhD theses are considered to be solitary journeys in which PhD candidates are alone with their computers. In my case, this is only partially true. This dissertation was

mostly written in the LSFB-Lab at the Université de Namur, where I had the chance to meet many colleagues: Anthony Cleve, Alysson Lepeut, Aurélie Sinte, Aurore Paligot, Bruno Sonnemans, Christophe De Clerck, Gauthier Raes, Ingrid Notarrigo, Joseph Terrazzino, Mathilde Collin, Maxime Gobert, Raphaël Volon, Sibylle Fonzé and Susana Sánchez. Besides, the advantage of belonging to the Department of Romance Languages but having the office in the building where the Namur University Press is based makes this list of colleagues longer. With each of them I have had a nice talk in the morning, a relaxing lunch break and/or an enjoyable scientific trip somewhere. Thank you for your support!

I also gained some colleagues from the meetings and conferences at Louvain-La-Neuve. In particular, I would like to thank Catherine Bolly, Ludivine Crible and Andrea Pizarro with whom not only did I share the same research interests, but also spent good moments here and there. Conversations with them have always been very interesting and have made me find additional pleasure in academic life!

During this journey through the sea of discourse markers, my ship stopped three times at the Universitat Pompeu Fabra in Barcelona, particularly in the LSC-Lab, directed by Josep Quer. Thank you for hosting me and making me feel like another member of such a wonderful team! Thanks to the LSC-Lab members (or somehow related people) – Alexandra Navarrete, Cristina Gelpí, Delfina Aliaga, Fabiola Otárola, Gemma Barberà, Giorgia Ziorzi, Jordina Sánchez, Lali Ribera, Santiago Frigola, Sara Cañas and Xavier Álvarez – and to the colleagues from La Nau for the time I spent with you and for everything I learnt from you! The three research stays allowed me to participate in workshops, conferences and courses that strengthened my academic education.

This research was funded by a research grant within the Incentive Grant for Scientific Research (n° F.4505.12) entitled *Creation of a referential corpus for the study of French Belgian Sign Language (LSFB)* (2012-2013) and a Research Fellow grant (2013-2017), both of them awarded by the FRS-FNRS. My research stays at the Universitat Pompeu Fabra as well as my participation in conferences to disseminate my results were also funded by the FRS-FNRS. The COST Action IS1312 *TextLink: Structuring Discourse in Multilingual Europe* paid for my travel expenses to conferences and training courses organised within the action.

Remerciements

Je voudrais remercier tous les sourds qui m'ont appris la LSFB depuis mon arrivé en Belgique. D'abord, mes collègues de bureau qui se sont montrés très patients avec moi quand je leur posais mille questions sur les nuances de tel signe ou de telle phrase. Je voudrais remercier tout spécialement Bruno pour toutes les données qu'il m'a fournies et les échanges précieux que nous avons eus au cours de ces cinq années; et Sibylle et Christophe pour tous les lunchs qu'on a partagés ensemble et qui m'ont permis d'apprendre une large palette des registres de leur langue.

Ensuite, je suis très reconnaissante aux professeurs de langue des signes que j'ai eus à l'Institut Technique de Namur en promotion sociale: Jean-Philippe Imbert, Dominique Meunier, Fabienne Van Bol et Catherine Wauthiers. J'espère que vous continuerez votre tâche avec le même enthousiasme que celui qui agrémentait vos cours tous les mardis et les vendredis pendant deux ans.

Finalement, je voudrais dire un grand merci à tous les informateurs du Corpus LSFB qui ont rendu cette recheche possible, et particulièrement: Hyppolite Rasquinet (†), Constant Denis, Jean-Pierre Adnet, Nathalie Degueldre, Amandine le Maire et Ludivine Descamps. Vous avez certainement élargi mes connaissances sur la LSFB et sur la communauté sourde.

Agradecimientos

Para empezar, quisiera dar las gracias a los profesores de LSC que he tenido en la Asociación de Personas Sordas de Terrassa y en el Máster en Comunidad Sorda, educación y lengua de signos de la Universitat de Barcelona: Guillem Peiró, Noelia Hernández, Antonia Barea, Santiago Póveda y Josep Aliaga. Ellos potenciaron de una forma u otra mi pasión hacia su lengua que se ha traducido en esta tesis doctoral.

Por otro lado, quisiera agradecer a los colegas sordos de la Universitat Pompeu Fabra (Delfina Aliaga, Santiago Frigola y Xavi Álvarez) su ayuda con los datos que he tratado en LSC y todo lo que me han enseñado durante las estadas que he realizado en esta institución. Otra fuente muy importante de aprendizaje y enriquecimiento han sido los informantes del Corpus LSC, concretamente: Carmen Sala, Jaime Cabañero, Cristina Sánchez, José Manuel del Valle, Berta Frigola y Pau Escudero. ¡Gracias por vuestra participación!

Aunque no pertenecen a la Comunidad Sorda, aprovecho esta sección (por una cuestión puramente de lengua) para hacer mención de la gente que he conocido durante estos años en Namur. Sois muchos y todos me habéis aportado cosas, pero quisiera destacar en especial a la familia Mesa Martínez, a la familia Saura Sprekelsen, a la familia García Dupety y a la familia Burton Rahmani (*merci beaucoup pour tout!*). Muchas gracias por todos los momentos que hemos compartido durante estos años alrededor de unas pizzas, una raclette o una barbacoa en los que me olvidaba de que tenía una tesis por escribir.

Agraïments

Vaig començar a estudiar l'LSC l'any 2009. Llavors treballava a l'Institut de Dret i Tecnologia (IDT) de la Universitat Autònoma de Barcelona. Durant el temps que vaig passar allà, a banda de conèixer gent excepcional, vaig tenir la sort de poder combinar la feina amb la meva passió. De l'IDT en vaig aprendre molt, a tots els nivells, i estic molt agraïda a totes les persones que em vaig trobar; en especial al Pompeu Casanovas i a la Marta Poblet (*thanks again for welcoming us in your Aussie*

home!), a l'Albert Meroño (*¡no me escucha, no me escucha! Póngase ahí.*), i a la Maria Jesús Espuny (gràcies per recordar-te de mi!).

També vull agrair a la família i amics el seu suport durant aquests anys. En primer lloc als meus pares, a qui dedico aquesta tesi doctoral, i que per mi són models de perseverança i esforç. Vosaltres m'heu ensenyat la importància de la feina ben feta i de tantes altres coses que m'han portat fins on sóc. Gràcies per tot el que m'heu donat (i pel que no sabeu que m'heu donat!) i pel vostre suport en totes les decisions que he pres a la vida. Sempre heu sabut donar-me la resposta que necessitava des de ben petita, fins i tot quan preguntava per què servia la llum de la porta del cotxe o volia dir una dita!

En segon lloc, mil gràcies a la Yaya Sisca i al Yayo Visiedo, que han estat els millors iaios del món. Tot i que no sempre han entès gaire el que faig i per què ho faig, han estat orgullosos de mi en tot moment. Gràcies també al Jordi, a l'Alexandra, a la Tía Isabel, al Chacho Pepe i a tota la resta de tiets, tietes, cosins i cosines pels bons moments i per les seves atencions amb mi. Un agraïment molt especial al Pedro, que és en certa manera la raó de ser d'aquesta tesi i la motivació per tirar-la endavant en les etapes més difícils. De tu he après moltes coses, no només de la LSC, sinó de la vida en general. A tu també et dedico aquest treball, que és el meu granet de sorra per fer que les persones sordes siguin més visibles i per contribuir al reconeixement de les llengües de signes.

El temps passa volant: ja fa gairebé 10 anys que l'Ángel em va convidar a una barbacoa a Òrrius i que em va regalar una segona família. Estic convençuda que no podria haver tingut més sort, ja que des del primer moment em van acollir com una filla, com una germana, com una neboda i com una cosina. Gràcies per totes les bones estones junts i per tots els detalls que heu tingut, en especial als meus sogres, l'Ángel (padre) i la Dori, que s'han desviscut per mi.

No puc oblidar-me de tots els amics que han seguit de ben a prop l'evolució d'aquesta tesi. Per començar, els de la uni, que sempre heu estat presents des que vaig començar a estudiar Traducció i interpretació a la UAB. Gràcies per totes les festes, sopars, instants de complicitat i un llarg etcètera; en concret, a la Cris i a l'Estefa per mantenir el contacte en tot moment. A l'Albert i a l'Anna, els meus reis, que fan que la distància no es noti i que sempre tenen un bon consell a donar-me. *¡Espartanos, ahú!* I a la tropa de Mataró, que també venia amb el pack regal de l'Ángel. Gràcies per les visites a Bèlgica, per les barbacoes, per les sortides i per ser com sou.

Per acabar, no tinc paraules per agrair a l'Ángel que hagi estat el millor company de viatge que mai hauria pogut imaginar en aquesta i tantes altres aventures! Moltes gràcies per encarregar-te del disseny de la portada i d'altres qüestions tècniques, pel teu suport incondicional, per tot el que hem construït i construirem junts, per fer-me riure a totes hores, per fer-me creure més en mi mateixa i per tantes altres coses que farien aquests agraïments inacabables. És incert el que vindrà després d'aquesta tesi i on, però el que sé de ben segur és que *home is wherever you are with me.* T'estimo.

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List of acronyms and other abbreviations

Abbreviations of sign languages:

ABSL	Al-Sayyid Bedouin Sign Language
AdaSL	Adamorobe Sign Language
ASL	American Sign Language
Auslan	Australian Sign Language
BSL	British Sign Language
DGS	*Deutsche Gebärdensprache*, German Sign Language
DTS	*Dansk tegnsprog*, Danish Sign Language
FinSL	Finnish Sign Language
HKSL	Hong Kong Sign Language
HZJ	Croatian Sign Language
ISL	Irish Sign Language
ISL	Israeli Sign Language
JSL	Japanese Sign Language
LIS	*Lingua dei Segni Italiana*, Italian Sign Language
LIU	*Lughat il-Ishaara il-Urdunia*, Jordanian Sign Language
LSC	*Llengua de signes catalana*, Catalan Sign Language
LSE	*Lengua de signos española*, Spanish Sign Language
LSF	*Langue des signes française*, French Sign Language
LSFB	*Langue des signes de Belgique francophone*, French Belgian Sign Language
LSQ	*Langue des signes québécoise*, Quebec Sign Language
LSV	*Lengua de señas venezolana*, Venezuelan Sign Language
NGT	*Nederlandse Gebarentaal*, Sign Language of the Netherlands
NTS	*Norsk tegnspråk*, Norwegian Sign Language
NZSL	New Zealand Sign Language
PJM	*Polski Język Migowy*, Polish Sign Language
STS	*Svenskt teckenspråk*, Swedish Sign Language
SZJ	*Slovenskega znakovnega jezika*, Slovenian Sign Language

TÍD	*Türk İşaret Dili*, Turkish Sign Language
VGT	*Vlaamse Gebarentaal*, Flemish Sign Language

General abbreviations:

BDU	Basic Discourse Unit
C1	First LSFB sub-corpus
C2	Second LSFB sub-corpus
C3	LSFB and LSC sub-corpus
DM	Discourse Marker
LH	Left Hand
PDTB	Penn Discourse Treebank
PrU	Prosodic Unit
QUD	Question under Discussion
RH	Right Hand
RST	Rhetorical Structure Theory
SDRT	Segmented Discourse Representation Theory
SL	Sign Language
SpL	Spoken Language
SyU	Syntactic Unit

Annotation conventions

General annotation of sign language data:

APPLE	Fully-lexical sign
CHANGE-MIND	A gloss composed of two English words
HAVE-NOT	A sign whose parameters change when it is negated
SAINT.ENOUGH	A gloss for a sign whose parameters resemble the word after the period
SAME(7)	A sign for which a different handshape from the canonical is used
SCHOOL-2H	A gloss for a sign whose canonical form is one-handed but the signer uses the two hands
LEAVE++	Reduplication of the sign LEAVE
DE:WOW	A gloss for an idiom
DS:GO-UP	Depicting sign followed by a tentative description
FS:MUM	Fingerspelling of the word 'mum'
NS:PETER	Sign name of a person whose name is Peter (it can be used for countries, brands, etc.)
FXD:HOUSE	False start of the sign HOUSE
PT:FBUOY	Pointing sign directed to a fragment buoy (the gloss after the colon changes depending on the sign that is pointed at)
PT:DET	Determiner
PT:LOC	Pointing sign towards a location
PT:POSS1	First person singular possessive pronoun
PT:POSS2	Second person singular possessive pronoun
PT:PRO1	First person singular pronoun
PT:PRO2	Second person singular pronoun
PT:PRO3	Third person singular pronoun
PT:PRO4	First person plural pronoun
PT:PRO6	Third person plural pronoun
LBUOY(3):THIRD	List buoy with the handshape in parenthesis and digit pointed at after the colon
DBUOY	Delimit buoy
DPBUOY	Depicting buoy

FBUOY	Fragment buoy
PBUOY	Point buoy
PTBUOY	Pointer buoy
TBUOY	Theme buoy
GSIGN	Gesture
as-g	Gaze directed to the addressee
sp-g	Gazed directed to a position in space or within a role shift
fl-g	Floating gaze, i.e. neither directed to the addressee nor to a locus

Annotation of clauses, functional sequences and basic discourse units:

ag	Left adjunct
insert	Insertion
md	Discourse marker
SAdj	Adjectival sequence
SAdv	Adverbial sequence
SN	Nominal sequence
SO	Object sequence
SPrep	Prepositional sequence
SPron	Pronominal sequence
SRd	Right-governed sequence
SRg	Left-governed sequence
SS	Subject sequence
SV	Verbal sequence
urv	Verbal dependency unit
ura	Averbal dependency unit
ure	Elliptical dependency unit
-I	Interrupted dependency clauses (added after the type of clause)
+	Dependency clauses with a nondependent element (added after the type of clause)
<xxxx>	Delimits an adjunct
[xxxxxx]	Delimits a clause
(xxxxxx)	Delimits a functional sequence (within examples)
//	Intermediate prosodic boundary (original segmentation model)
///	Major prosodic boundary (original segmentation model) or end of a basic discourse unit (adaptation of the model to signed data)
§<u>xxxxxx</u>	Text overlapping with what interlocutor says

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Chapter 1

Introduction

Las lenguas de signos son, en el conjunto de las lenguas humanas, una fuente de expresión que supera en muchos aspectos a las lenguas orales, por su carácter tetradimensional. A partir de la fonación el lenguaje perdió su carácter somático, reduciéndose al semántico. [...] Por eso, para mí, la reivindicación de las lenguas de signos es la reivindicación de una comunidad, pero también la de una forma de expresión, semántica y somática.

Ángel Herrero (2007)

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General objective of this chapter

This chapter aims to contextualise this research. To begin with, the objectives and goals of this dissertation will be presented followed by an outline of some important points about sign language research. Afterwards, the two languages under study, French Belgian Sign Language and Catalan Sign Language, will be described by giving an account of the number of signers, the variants, the contact with surrounding sign languages, research and teaching. The differences and similarities between the two languages will also be summarised. The last section of this chapter details how this dissertation is organised.

1.1 Objectives and goals

Natural languages allow individuals to communicate. Communication is a complex process in which different linguistic and contextual elements participate to render the exchange between speakers possible. Linguistic elements include words and chunks of discourse that verbalise our message as well as words or phrases that allow us to connect and organise our ideas, and manage the exchange with other speakers. Let's see the following conversation in example (1), which was originally in Catalan, with its English translation alongside.

(1)

- ***Però*** *què he de dir a la gent quan em pregunta què fas?*	'**But** what should I tell people when they ask me what you do?'
- ***Doncs*** *els dius que estudio com el discurs s'estructura en llengua de signes,* ***o sigui*** *quines partícules l'organitzen.* ***Per exemple,*** *"en primer lloc", "perquè", etc.* ***Saps?***	'**So** tell them that I study how discourse is structured in sign language, **I mean** which particles organise it. **For instance**, "to begin with", "because", etc. **You know?**'
- ***Bé****... D'acord.*	'**Well**... All right.'

This conversation contains many words or phrases that connect ('o sigui', 'per exemple'), structure ('però', 'doncs') or manage the exchange ('saps', 'bé'). And as it can be observed in the translation, these devices do also exist in English. Despite their different forms and functions, they are all discourse markers (DMs). Sign languages (SLs), as fully fledged languages, also have these devices that are used by signers in their productions.

Nowadays, there is a large amount of research on these devices in spoken languages (SpLs). However, the controversy on what to call them (pragmatic markers, conjunctions, text relational markers, etc.), how they should be defined, which devices are included in the DM category and which ones are not, etc. among other issues (see section 2.2 in the following chapter) is still of concern in the scientific community. This dissertation aims to contribute to this field by investigating three items that are potentially good DM candidates, namely buoys, PALM-UP and the sign SAME, in French Belgian Sign Language (LSFB) and in Catalan Sign Language (LSC).

Two reasons motivate the choice of the three items in these two SLs. On the one hand, buoys and PALM-UP exist in many SLs and SAME seems fairly common at least in urban Western SLs, so studying will lay the foundations for typological research from the point of view of DMs. On the other hand, the three items are situated in different parts of the continuum that is drawn between gesture and sign (see sub-section 1.2.2). That is, they have different degrees of conventional specification (Johnston, 2015) that need to be taken into account for a comprehensive study of manual DMs in any SL. SAME is a fully-lexical sign that belongs to the two SL lexicons and PALM-UP is a gesture that the surrounding hearing communities also

use, which means that both items are at separate ends of the continuum. Buoys are partly-lexical signs (i.e. a part of their meaning depends on context). They are in the middle of this continuum as even though part of their meaning is lexical, they are also used as co-speech gestures by speakers.

The main goals of this dissertation are fivefold:

G1. To establish a set of criteria that allow the discourse-marking tokens of buoys, PALM-UP and SAME to be teased apart from those that have other non-discourse-marking functions. The identification of DMs in both SpLs and SLs remains a tricky issue because the same item can have a discourse-marking function in a particular context and a non-discourse-marking function in another. For instance, 'saps' is the second person singular form of the verb 'saber' (to know) in Catalan. As a verb, it is usually the nucleus of a predicate as in 'saps la veritat?' (do you know the truth?) and does not have a discourse-marking function; but it can also function as a DM in other contexts such as that of example (1). Although there are different definitions in the literature about DMs, none of them were conceived for the signed modality or include signed examples. Moreover, the three types of manual activity mentioned above (i.e. fully-lexical signs, but also partly-lexical signs and gestures) need to be included. On the basis of a definition of DMs in spoken discourse, I will propose some features that any item in a SL must fulfil in order to be considered a DM.

G2. To come up with a segmentation methodology that allows the study of the position of DMs. Research on DMs in SpLs has shown that the functions of some DMs seem to be related to a particular position in discourse. However, there is no segmentation model for signed discourse at present that allows units that are relevant at the level of discourse (understood as what is beyond the clausal or sentential level) to be delimited, and in which the position of DMs can be analysed. This dissertation will come up with a segmentation model that fills this gap and that ultimately enables an investigation of the function in relation to the position.

G3. To study the variation in frequency of discourse-marking tokens of buoys, PALM-UP and SAME across genres and signers, their functions in discourse and the possible existence of a function-position paradigm in LSFB. The description of buoys, PALM-UP and SAME that have a discourse-marking status will include different genres and signers in order to illustrate linguistic variation that may affect the use of DMs. The functions will be annotated following existing annotation protocol(s) in order to ensure consistency and reproducibility to other signed or spoken data.

G4. To perform a cross-linguistic study about the variation of the three selected DMs across genres and signers, their functions in discourse and the expected existence of a function-position paradigm in LSFB and LSC. LSFB data will be supplemented with comparable LSC corpus data that was made

available to me. Contrastive studies on DMs can bring new insights on their meaning and usage in discourse, and contribute to linguistic typology.

G5. To compare two SLs on a topic that does not fall under the scope of what is usually associated with the typical features of the visual-gestural modality (namely, the use of space, iconicity and simultaneity). Buoys and PALM-UP also exist as co-speech gestures in SpLs. As a lexical sign, SAME does not exploit the specific affordances of the visual-gestural modality either. In the literature, it has been claimed that SLs are more similar to each other than SpLs due to modality effects (Meier et al., 2002). Exploring the comparison between two SLs on the use of non-modality-specific elements will contribute to knowing whether this effect of homogeneity is limited or not to the properties of the modality. This comparison will eventually show whether SLs are more alike in the use of DMs than SpLs when modality issues are discarded, and will cast light on whether the same type of variation found in SpLs exists in SLs as well.

1.2 Sign language research

Sign languages are the natural languages of deaf and deafblind people, and their use is a characteristic of the identity shared by people belonging to a deaf community. Nowadays, there is research on different linguistic domains (i.e. phonology, morphology, syntax, semantics and pragmatics) that proves that SLs are neither a random combination of gestures nor a copy of the language spoken by the surrounding hearing community. Although these misconceptions together with the belief that there is a universal SL are still fairly common, SLs are languages in their own right and they are gaining more and more visibility in our society.

The study of SLs provides a better picture of what human language capacity is about. The advent of SL research changed the old idea that the only full communication systems to be used by humans are SpLs. SpLs are audio-phonatory languages, which means that a message is uttered by the phonatory apparatus and received by the auditory apparatus. Conversely, SLs are visual-gestural languages, which means that the two hands as well as non-manual articulators (the eyes, the facial expression, the head and the body) are in charge of producing messages. The difference in modality implies that SLs have several articulators (the two hands, the head and the body) that can be used at the same time, whereas SpLs have one articulator and speech is produced sequentially. In SLs, the modality also favours the use of simultaneous structures to produce utterances, iconicity to depict entities and places and space for both topographic and syntactic purposes.

1.2.1 A little bit of history

The first investigations into SLs only date back to the last century. Bernard Tervoort's dissertation (1953) was the first research devoted to the study of SL structure, in particular, of Dutch deaf children's productions. Since then, the field has seen

how scholars from other disciplines such as psycholinguists, psychologists, theoretical linguists, computational linguists, sociolinguists and many others have become interested and directed their investigations towards SLs. However, linguistic research is still in its infancy and most SLs remain understudied. Despite the youth of the field, the history of SL linguistic research can be roughly "divided into three periods characterised by different theoretical objectives" (Perniss et al., 2007, p.3).[1]

The first period, also called the 'modern period' (Woll, 2003), begins in the middle of the last century. Because of the existing prejudices and misconceptions about SLs, researchers had to provide evidence about the linguistic status of SLs by showing that despite the modality, SLs had the properties of SpLs (Vermeerbergen, 2006). The seminal work of William Stokoe (1960) about the structure of American SL (ASL) proved that, in opposition to gestures, signs can be broken down into parameters (location, handshape and movement) just as words can be broken down into phonemes. Along the same lines, several studies followed showing that not only do SLs have a phonological structure, but they also have a morpho-syntactic structure as SpLs do. At that time, research was mostly focused on ASL.

The second period or 'post-modern area' (Perniss et al., 2007) starts in the 1980s. Scholars focused on the specificities of the signed modality (the use of simultaneity, iconicity and space) in contrast to the spoken modality. Research expanded to other SLs and saw a growth in the number of publications. Because of the partial knowledge on SLs, the modality was thought to favour the school of thought that SLs were more alike than SpLs. The areas that were mostly explored were phonology, including phonetics and prosody, and morphosyntax (see Klima and Bellugi, 1979; Fischer and Siple, 1990; Meier et al., 2002; Sandler and Lillo-Martin, 2006; Pfau et al., 2012 and Baker et al., 2016 for a synthesis and the most relevant references). Discourse studies would come later (more or less at the time of the third period in the history of SL linguistics) partly because large amounts of data have only recently become available. Some representative works include Baker (1977), Bono et al. (2014) and Casillas et al. (2015) on the organisation and perception of turn-taking; Winston (1999), Perniss (2007), Ferrara and Johnston (2014), Hodge and Johnston (2014) on the analysis of narratives from different points of views; Sallandre (2003) on the study of genres; and Zimmer (1989) on the study of registers, just to compile a short list.

The third period, characterised by an increasing interest in SL typology, starts at the end of the 1990s. Non-Western SLs were added to the picture and their study revealed that SLs might not be as typologically homogeneous as it was thought. The first initiative in this respect was the volume edited by Baker et al. (2003). After the *7th Conference on Theoretical Issues in Sign Language Research (TISLR 7)* held in 2000 in Amsterdam, they selected several papers on different linguistic domains (lexicon and phonology, morphosyntax, pragmatics and psycholinguistics) that adopted a cross-linguistic perspective in which different SLs, or SLs and SpLs, were compared.

[1] This division into three periods does not imply that all publications on SL linguistics followed the predominant theoretical objective of their time. Note also that there are contemporary books cited in what follows that synthesise previous works from the other periods.

Some time later, Perniss et al. (2007) edited a volume in which different topics regarding the syntactic structure of at least two SLs (mouthings, pronouns, negation, interrogatives, word order, modal meaning and reported action) were contrasted.

In addition to these two volumes, there are other works on different domains of linguistics devoted to cross-linguistic studies. Some of them are listed below and they deal with:

- Phonology and prosody: phonological variation and change in Australian SL (Auslan) and New Zealand SL (NZSL) (Schembri et al., 2009), and visual intonation in Israeli SL and ASL (Dachkovsky et al., 2013).
- Morphosyntax: the numeral system in LSC and Spanish SL (LSE) (Fernández-Viader and Fuentes, 2008), reflexive pronouns in the SL of the Netherlands (NGT) and Russian SL (RSL) (Kimmelman, 2009), numeral-incorporating roots in LSC and Argentinian SL (LSA) (Fuentes et al., 2010), the expression of subject in Auslan and NZSL (McKee et al., 2011), modal and focus particles in German SL (DGS), NGT and Irish SL (Herrmann, 2013), object marking in Swedish SL (STS), Al-Sayyid Bedouin SL (ABSL) and Israeli SL (Börstell, 2017), and impersonal reference in LSC and LSE (Barberà and Costello, forth.).
- Discourse: the use of space in DGS and Turkish SL (TİD) (Perniss and Özyürek, 2008), and issues related to Information Structure in NGT and RSL (Kimmelman, 2014) such as doubling (Kimmelman, 2012, 2013), topic prominence (Kimmelman, 2015) and weak hand holds (Sáfár and Kimmelman, 2015; Kimmelman et al., 2016).
- Sociolinguistics: phonological, lexical and syntactic variation in British SL (BSL), Auslan and NZSL related to origin, age and gender (Schembri et al., 2010).

Although cross-linguistic studies in which two or more SLs are compared are still scarce, this type of studies as well as upcoming research covering different linguistic levels are necessary to cast light on the extent and the nature of the converging and diverging points between SLs. The differences and similarities between SLs will let us know more about what is related to the modality and what is ultimately related to the human language capacity.

1.2.2 Back to the origins and moving on

Nowadays, we are moving towards a new era in the history of SL linguistics in which the relations between gesture and sign are being revisited. Goldin-Meadow and Brentari (2017) offer an excellent overview of the issue in which they point out that "the study of language is undergoing a paradigm shift – the full communicative act includes, at the least, both categorical (speech or sign) and imagistic (gesture) components" (p.17). In the modern period, scholars had to demonstrate that SLs were not a mere combination of gestures. Now the pendulum is taking another turn as it has been acknowledged that signers also use gesture, just like speakers do. Moreover,

some signs have gestural components that naive non-signers use likewise when they communicate.

While the separation between speech and gesture is clear cut because they are produced by different channels, the frontiers between sign and gesture are fuzzy. A continuum could be drawn from the most imagistic pole to the most categorical pole. In the light of this current discussion on the relations between gesture and sign, this dissertation studies three items – namely buoys, PALM-UP and SAME – from the perspective of DMs. The three items can be situated at different points of the continuum: while PALM-UP – a gesture that has already been described as grammaticalised or lexicalised – would be closer to the imagistic pole, SAME – a lexical sign – would be closer to the categorical pole. Buoys are somewhere in between as they have both categorical and imagistic components.

In order to make the distinction between these three places in the continuum, I use Johnston's (2015) classification of manual activity. He says that manual activity in SLs has different degrees of conventional specification and, therefore, can be divided into (i) fully-lexical signs, which are items that belong to an SL lexicon such as SAME, (ii) partly-lexical signs, which are items with a part of their form that is filled in context such as buoys, and (iii) non-lexical signs, also called gestures, which are manual items that are sometimes shared with the hearing community such as PALM-UP (see section 5.1 in chapter 5 for a detailed definition with examples).

In addition, buoys and PALM-UP are instances that speakers also use as co-speech gestures (Müller, 2004; Kendon, 2004; Vermeerbergen and Demey, 2007). However, PALM-UP has a more general meaning when it is used by either signers or speakers than buoys, which seem to be restricted to counting, pointing and depicting entities (Vermeerbergen and Demey, 2007). SAME is a sign that belongs to the lexicon of different Western SLs and that has lexical equivalents in SpLs. The three items are thus modality-independent in the sense that they do not exploit the properties restricted to the signed modality such as simultaneity, iconicity and space.[2]

All in all, the interest and the originality of studying buoys, PALM-UP and SAME as potentially good DMs is threefold:

1. **This is the first attempt to describe these three items from the point of view of DMs, which is an area in SL linguistics that has received little attention so far** (to the best of my knowledge, existing studies are restricted to Roy, 1989; McKee, 1992; Metzger and Bahan, 2001; Pérez, 2006; Johnston and Schembri, 2007; Villameriel, 2008, 2010; Hoza, 2011; and Jarque, 2014; see section 2.3 in the following chapter). However, describing the use of DMs in context is crucial to know more about how human communication takes place as not only do they make productions coherent, but they also manage the exchange between interlocutors.

[2]It could be argued that buoys are instances in which these three properties are exploited. However, when I refer to these three properties, I include SL usages that cannot be found in SpLs. In the case of buoys, it cannot be claimed that the three properties are exploited more than in any SpL if speakers use buoys as co-speech gestures.

2. **This research takes a cross-linguistic approach at the discourse level, which is a linguistic level that has scarcely been described from a contrastive perspective** (see sub-section 1.2.1 in which most contrastive studies are devoted to phonology, prosody and morpho-syntax). Furthermore, the two SLs under scrutiny, namely LSFB and LSC, have never been compared before. They are both urban Western SLs that share many similarities from the point of view of their grammars (see section 1.3 below), so it will also be informative from a typological perspective to know whether they are that similar beyond the level of the sentence.

3. **The three selected items are not modality specific, which will uncover the converging or diverging points between SLs that are not related to the modality but to the human language capacity.** It has been hypothesised that the modality is what makes SLs more alike than SpLs. However, the modality may not be the only reason why SLs resemble one another (or not). The analysis of modality-independent items will cast light on universal language phenomena that apply to the variation of DMs. This is noteworthy because empirical evidence will be given showing to what extent SLs are more similar between themselves than SpLs in the use of DMs.

1.3 Languages of study

Although LSFB and LSC are two urban Western SLs from Europe, little is know about their (un)relatedness. On the basis of lexicon, Anderson (1979) traced the relationships between SLs using a family tree in which LSFB and LSC are part of different language families but ultimately have shared ancestry. In addition to the mistakes that Woll et al. (2001) point out in this family tree, there is no evidence for any urban Western SL from Europe that they share ancestry in terms of grammar. Since this dissertation is about discourse grammar and discourse studies are still scarce, (un)relatedness needs to be addressed in terms of what it is known about LSFB and LSC grammars. In what follows, I present the two SLs under scrutiny before giving an account of some points that have been (partially) described about their syntaxes.

1.3.1 French Belgian Sign Language

Belgium is a multilingual country in which there are three official SpLs (French, Dutch and German) and two SLs that, even if recognised, do not have an official status. French Belgian Sign Language (LSFB, *langue des signes de Belgique francophone*)[3] and Flemish Sign Language (VGT, *Vlaamse Gebarentaal*) were recognised by decree of the Parliament of the French Community of Belgium in 2003 and by decree of the Flemish Parliament in 2006 respectively. LSFB is used by deaf and

[3]Other denominations can be found in early publications such as Sign Language of Southern Belgium, 'langue des signes belge' and 'langue des signes française de Belgique'. However, the official denomination is 'langue des signes de Belgique francophone' or French Belgian Sign Language, which are the names used at present.

deafblind people living in the southern part of Belgium (Wallonia), VGT is used in the northern part of the country (Flanders), and both SLs are used in the region of Brussels. This situation of monolingualism[4] in the southern and northern regions and of co-existence of the two SLs[5] in the capital resembles the hearing community that uses French as the official language in Wallonia,[6] Dutch in Flanders and both SpLs (bilingually or not) in Brussels.

LSFB and VGT are the evolution of the Belgian Sign Language that was used by the deaf in Belgium before the 1970s. Due to the federalisation of the country, the national Deaf Federation, NAVEKADOS, split into the *Fédération Francophone des Sourds de Belgique (FFSB)* and the *Federatie van Vlaamse Dovenorganisaties (Fevlado)* in 1977. The existence of these two institutions that organised (and still do) their own activities meant that the contact between deaf signers from the northern and southern regions became less and less frequent and, as a result, both SLs evolved separately (Meurant et al., 2013).

Even though it is officially recognised, the situation of LSFB is that of a minority and minoritised language. It is a minority language because the number of signers is quite limited, i.e. 25,000 people (FFSB, 2014), and the presence of the language in society is rare. Despite the small number of users, it has seven principal variants: four from the region of Brussels (Berchem-Sainte-Agathe, Bruxelles-Ville, Uccle and Woluwé), one from Liège, one from Ghlin and one from Bouge; which correspond with the places where the first schools for the deaf were established (Sonnemans and Haesenne, 2009). In addition, the four variants from Brussels display many similitudes with the VGT variant from the Flemish Brabant.

LSFB is a minoritised language because of its co-existence with spoken French. Deaf people have had (and some still have) a negative view of LSFB because of the oralist tradition in which LSFB was disregarded. Another stigma for some signers is the lack of knowledge of 'official signs', which are artificial signs that copy some features from French such as letters or structures (Centre Francophone de la Langue des Signes, 1989, 1991, 1993, 1997, 2002) for ease of teaching and communication between deaf and hearing. The ultimate goal of this unification policy that started in the late 1970s was to create an LSFB standardised variety that, according to the spirit of the times, was 'as rich as spoken French' (Haesenne et al., 2006; Huvelle and Haesenne, 2006; Sonnemans and Haesenne, 2009). Nowadays, it seems that the perception of most deaf individuals (especially young people) of their language is starting to change thanks to a more recent trend that started in 2006 and that tries to highlight the importance of keeping regional variants and structures that are typical of LSFB.

[4]Here the term 'monolingualism' refers to the use of a preferred SL by the majority. Most deaf people are bilinguals (French - LSFB and Dutch - VGT) and some of them are even multilingual individuals (they master different SLs and/or SpLs).

[5]Some individuals only know one of the SLs, whereas others can switch from one SL to the other depending on the situation.

[6]German is only spoken by a minority in nine of the eleven municipalities of the so-called East Cantons (province of Liège).

Teaching and learning materials are still limited. A basic descriptive grammar that aims to cover the most important aspects of the language is being developed. So far, there is a first volume available as a DVD (Sonnemans, 2014) and as a book (Sonnemans, 2015) covering some topics. Another resource is the online LSFB dictionary (Sonnemans, 2016) that contains all the regional variants of some signs. Signs are searchable by alphabetic order, by handshape or by topic, and the database is constantly being updated. On the other hand, there have been other initiatives to try to set standards for teaching LSFB. For instance, a three-day seminar has been organised annually for six years (2011-2017) by deaf teachers in different institutions that provide LSFB courses such as the University of Namur (2011-2015), SUR'Cité (2016)[7] and IRSA (2017).[8] The main objective is that LSFB teachers meet in order to share practices and to create new materials adapted to different levels.

Research on LSFB began in 2000, so it remains an understudied language in comparison to others. However, some works have been published and four doctoral theses have been written so far in the fields of:

- Phonology: weak hand drop/prop in relation to register (Paligot, 2017a,b).
- Morphosyntax: anaphora and deixis (Meurant, 2004, 2007, 2008a,b,c), the expression of time in LSFB (Sinte, 2010b, 2013, 2015) and its comparison with spoken French (Sinte, 2010a).
- Discourse: simultaneity (Meurant, 2010), (dis)fluency (Notarrigo and Meurant, 2014; Notarrigo, 2017) and reformulation (Meurant and Sinte, 2016).
- Corpus studies (Meurant and Sinte, 2013; Meurant et al., 2016a,b,c).
- Mutual intelligibility with other SLs (Sáfár et al., 2015).
- Interpreting in a bilingual educational setting (Brillant et al., 2016).
- Education for the deaf in a co-enrolment setting (Meurant and Zegers de Beyl, 2009; Ghesquière et al., 2015; Ghesquière and Meurant, 2016).

1.3.2 Catalan Sign Language

Catalan Sign Language (LSC, *llengua de signes catalana*)[9] is used by deaf and deafblind individuals who live in Catalonia, the north-eastern autonomy in Spain, whereas Spanish Sign Language (LSE, *lengua de signos española*) is used in the rest of the country. The term *llengua de signes catalana* was coined in 1988 to denote a different sign language from that of the rest of Spain. One of the reasons that made

[7] It is a deaf club located in Liège (`http://www.surcite.info/`). Not only is it a meeting point for deaf and hard of hearing people of the province, but it also organises different types of courses and activities aimed to promote deaf and hard of hearing individuals.

[8] It is a school based in Brussels that welcomes pupils with special needs including deaf and hard of hearing (`http://www.irsa.be/`). Traditionally, IRSA has been one of the main boarding schools for the deaf in Belgium. At present, it still has boarders and day pupils.

[9] Other denominations were used before the 1980s such as *mimics*, *hands* and *signs* (Frigola, 2010).

Catalan deaf people aware of the difference was a national theatre event that took place in 1978, in which Catalan deaf actors could not be understood by the other Spanish deaf people in the audience (Frigola, 2010). In 2007, the Spanish Parliament passed a law in which both LSE and LSC were recognised even though they are not official languages.

The Spanish Constitution establishes that Castilian is the official language of the country and that other languages will be co-official in those communities in which their statutes of autonomy include them. The Catalan Statue of Autonomy considers both Catalan and Spanish as co-official, which is why both languages are used for education and most people are bilingual. Moreover, the text passed in 2006 also includes the right to use LSC, which is further reinforced by the bill approved by the Catalan Parliament in 2010 to regulate the use of LSC in the areas of public life (Quer, 2010). The linguistic situation of the Deaf Community differs from the hearing in that there is not a situation of bilingualism between LSC and LSE: signers living in Catalonia only use LSC together with Catalan and Spanish (Barberà, 2012a).

However, LSC is still a minoritised language not only because of the co-existing SpLs in the territory, but because of the initiatives to promote LSE in Catalonia. In this respect, the linguistic situation of the Catalan Deaf Community resembles the Catalan hearing community: Spanish prevails over co-official languages just as the majority SL (LSE) is promoted to the detriment of the minority SL (LSC) (Quer, 2010). On the other hand, LSC is also a minority language because, according to the estimates of the Catalan Federation for the Deaf (FESOCA), there are 12,000 deaf users out of a total of 25,000 signers (including deaf and hearing) in Catalonia.

LSC has three different varieties: west, central and coastal. Some authors like Frigola (2010) talk about a fourth variety, which is the one used in Menorca (Balearic Islands). The coastal variety is used in the capital (Barcelona) and seems to be the most standardised because it is where the FESOCA is based and where most deaf people live, so the majority of deaf clubs and schools are there. Conversely, the dialect in Lleida, belonging to the west variety, seems to be the most different for two reasons. The first is that there was a school for the deaf that was established there in the middle of the 20th century. Since it was far from Barcelona, deaf pupils would not have contact with others from the education centres based in the capital. The second reason is that this western variety has more contact than the other varieties with LSE because the region of Lleida is next to another Spanish autonomy. So far there is not a standardised LSC variety yet, although indirect planning is being carried out through the internet media called Webvisual[10] (Barberà, 2012a) and LSC is taught at different institutions including deaf clubs, foundations, interpreting service companies, vocational training schools and universities.

[10]Webvisual (`http://www.webvisual.tv`) is an LSC TV channel where current news is put up on a daily basis as well as other kinds of videos including interviews, documentaries, etc. Other resources available on this website are information about free-time activities for the members of the Catalan Deaf Community or tales for children told in LSC. Most of the time LSC videos have a translation into written Catalan and Spanish.

The materials to teach and learn LSC are limited but existent, and include manuals and visual resources to study and practice the language for both general LSC learners (DOMAD, 2002a,b,e,f; Codorniu et al., 2002; Fernández-Viader et al., 2006, 2007; García and Codorniu, 2007; Roura and Martín, 2008) and interpreters (DOMAD, 2002c,d). Different dictionaries have been published including general ones (Martín and Alvarado, 1996; Perelló and Frigola, 1998; Martín and Alvarado, 2004; Segimon et al., 2004; Quijo and Viana, 2007), one specialised (Riera et al., 2008) and one etymological (Ferrerons, 2011) as well as a basic descriptive grammar with its corresponding exercises (Quer et al., 2005; Frigola et al., forth.). Finally, there is a long list of other resources that can be found on the internet as well as a website hosted by the Institute of Catalan Studies fully devoted to LSC (`http://blogs.iec.cat/lsc/`), in which a bibliography and other related links can be found.

Even though research on LSC began in the 1990s, there is a considerable number of published works (particularly on morphosyntax and recently on discourse) including some doctoral theses. Some representative studies (organised by domain) include the following:

- Phonology: transcription systems (Massone et al., 2003) and the phonology of compounds (Bosch i Baliarda, 2005).
- Lexicography (Ribera, 2007; Barberà and Ribera, 2010).
- Morphosyntax: word order (Jarque et al., 2007), agreement (Morales-López et al., 2005; Quadros and Quer, 2008; Barberà and Mosella, 2014), verbs (Ribera, 2015), negation (Quer and Boldú, 2006), possessives (Quer and GRIN, 2008), classifier constructions (Benedicto et al., 2007, 2008), wh-questions (Alba, 2010, 2016), polar questions (Cañas, 2015), relative clauses (Mosella, 2012), conditionals (Quer, 2016), argument drop (Quer and Roselló Ximenes, 2013), metaphor (Jarque, 2005) and role shift (Quer and Frigola, 2006; Quer, 2011).
- Discourse: cohesion (Barberà, 2007), reference (Barberà, 2012c; Barberà and Quer, 2013; Barberà and Cabredo Hofherr, 2016), indefiniteness and specificity (Barberà, 2012b, 2016), the use of space (Barberà, 2012a, 2014) and Information Structure (Navarrete, 2016).
- Machine translation (Massó and Badia, 2010; Massó, 2012).
- Lexical access in production (Baus et al., 2008).
- Corpus studies (Barberà et al., 2015).
- Sociolinguistics (Gras, 2006; Morales-López et al., 2002).
- Education for deaf children in a bilingual setting (Sánchez Amat, 2015) and for deaf adults in a deaf club (Pérez Aguado, 2017).

1.3.3 Comparison between LSFB and LSC

LSFB and LSC are urban Western SLs from Europe that are related in terms of their grammars, which present many similarities in their use of agreement auxiliaries, negation, question formation, conditionals, space and role shift structures as I explain below.

SLs have developed strategies such as the use of agreement auxiliaries in order to signal the source and the goal in a sentence containing a plain verb (i.e. verbs that do not change their phonological properties of orientation and/or direction of movement to signal who the subject and the object are). Steinbach and Pfau (2007) propose a classification of auxiliaries into indexical auxiliaries, auxiliaries that derive from verbs such as GIVE and auxiliaries that derive from nouns such as PERSON. The three strategies are integrated in the LSFB and LSC linguistic systems (Meurant, 2008a; Quadros and Quer, 2008).

Similarly to all SLs studied so far, the existence of a headshake to express negation has been reported in LSFB and LSC. Zeshan (2006a) classifies SLs into those with a manual system of negation, i.e. they encode sentential negation with a negative headshake that needs to appear with a manual negator, and those with a non-manual system of negation, i.e. the headshake alone is obligatory and sufficient to express sentential negation. LSFB and LSC belong to this second group of SLs. Despite having a non-manual dominant system of negation, negative manual particles exist in both SLs as well as what Zeshan (2004a) calls irregular negatives, i.e. verbs that incorporate negation such as KNOW-NOT, IMPOSSIBLE or HAVE-NOT (Quer and Boldú, 2006; Sonnemans, 2015).

When it comes to question formation, Zeshan (2004b) finds that the use of non-manual markers in questions is quite similar across SLs. There is more variation in other aspects such as the use of question particles and the structure of wh-word paradigms. There are some SLs in which questions are formed exclusively by means of non-manual marking (i.e. no question particle is produced), whereas others also have manual signs at their disposal. LSFB and LSC are included in this last group. Zeshan also claims that wh-word paradigms can be of three types: (i) there is one general sign meaning 'what' that covers the whole wh-word paradigm, (ii) this general sign only covers part of the paradigm, and (iii) in addition to the general sign, there are also wh-words that constitute a complex wh-word paradigm. Both LSFB and LSC have a complex wh-word paradigm of the third type.

As in many other SLs such as ASL, DGS, NGT and Italian SL (LIS), eyebrow raise is used in conditional clauses in both LSFB and LSC to mark the antecedent (Sonnemans, 2015; Quer, 2016). This part of the conditional clause can optionally be introduced in the two SLs under scrutiny by the sign IF, which adds emphasis. The main difference between LSFB and LSC in the expression of condition is related to non-manual marking. Signers lean their body forward at the same time as they raise their eyebrows to mark the antecedent in LSFB (Sonnemans, 2015), whereas this feature has not been found in LSC.

The use of space in SLs can be topographic, i.e. it depicts meaningful locations of objects and their spatial relations, or syntactic, i.e. it establishes arbitrary locations to identify the arguments of a verb. In LSC, impersonal reference is encoded in upper locations of the frontal plane (Barberà, 2012a,c; Barberà and Quer, 2013). In LSFB, it seems that signers intuitively do not use space in the same way; but this needs to be confirmed by further research on the topic.

Role shift (also known as role taking or constructed dialogue, among other terms) is a mechanism used by signers in all the SLs that have been studied so far to quote the words and thoughts of others, and to represent actions. LSFB and LSC are no exception to the rule. The formal properties of role shift include the interruption of eye contact with the interlocutor in order to direct the gaze towards a locus in which the reported interlocutor is placed (Quer and Frigola, 2006; Meurant, 2008c). There are also other formal properties that can be found in this type of structures such as a shift in the upper body, a head movement and changes in facial expression related to the quote or to the representation of the action. While the change in gaze direction is obligatory in the two SLs, the other nonmanuals are optional.

Because of all the similarities in terms of syntax, LSFB and LSC are not isolates but are indeed related. However, the degree of inter-comprehensibility between the two SLs is low because the lexicon is very different. Furthermore, one can conclude from the sociolinguistic descriptions given above that the two SLs diverge in some aspects such as the number of signers and the amount of research, but also converge in others such as regional variation and coexistence with another recognised SL.

On the one hand, the first thing that both LSFB and LSC have in common in sociolinguistic terms is regional variation. Such variation, lying basically at the lexicon level, is acknowledged in both SLs but has not been studied so far. It seems that LSFB presents more dialectal variation than LSC because there were many schools for the deaf spread across Wallonia and Brussels, whereas in Catalonia they were concentrated in Barcelona and in Lleida. In any case, further research is needed to prove this intuition.

LSFB and LSC co-exist with other recognised SLs in the same country. In Catalonia, there is not a situation of bilingualism with the other SL of Spain, i.e. LSE, and only LSC is used by the Catalan Deaf Community. In Wallonia, LSFB is also the only SL used by the Deaf Community. However, both LSFB and VGT are used in Brussels. Before getting to the present situation, the two SLs from Belgium and the two SLs from Spain originated from a common language. The reasons why these common languages split into two are different in each country, but are connected to politics: the federalisation process in Belgium and the return of regionalisms after the dictatorship, which was reflected in the willingness of Catalan deaf individuals to have a different regional identity from the rest of Spanish deaf individuals.

On the other hand, LSFB and LSC are different in terms of the number of signers: the first SL doubles the number of the latter. Even though these population figures

are given by the FFSB and the FESOCA, they are estimates and they do not come from an official census (as for most SLs in the world). As a result, it is possible that the figures are either closer or further apart. Still, the difference is not as striking as it would be if one of these SLs was contrasted with another SL with more than 200,000 deaf users such as ASL. Hence, the LSFB and LSC communities are fairly similar in size.

Since research on LSC started in the 1990s and on LSFB in the 2000s, it is not surprising that the former has been described in more linguistic domains than the latter. Nevertheless, this situation is not linguistically relevant to this dissertation because the discourse aspects explored before this dissertation neither include buoys nor the other items (i.e. PALM-UP and SAME) under study; so the investigation has to start from scratch in this respect.

Most of the linguistic aspects that are already known about the two SLs and that were summarised above show that what makes SLs look more alike than SpLs is not restricted to modality-specific features. This research will not only tell us more about the relatedness between LSFB and LSC from the perspective of discourse, but it will also cast light on the similarities in the use of three items, namely buoys, PALM-UP and SAME, that both languages have grammaticalised to some extent as DMs.

The choice of these two SLs is also pragmatically motivated. On the one hand, I have had contact with both deaf communities and my signing in LSFB and LSC is fluent. On the other hand, a referential corpus is being or has been collected for each SL. This is very convenient because the data are already partly annotated by deaf signers and partially comparable (see sub-sections 3.1.1 and 3.1.2 in chapter 3). In addition to the interest of carrying out cross-linguistic research in the area of DMs, which has scarcely been described in the SL literature, this dissertation can serve as a first step to see to what extend variation in the use of DMs is modality specific or not as the three selected items are modality independent (see section 1.2).

1.4 Organisation of this dissertation

The study of buoys, palm-ups and SAME from the point of view of DMs requires that different theoretical and methodological issues are tackled. The upcoming chapters are organised as follows:

Chapter 2 presents a state of the art on DMs that introduces the reader to the topic by addressing some of their core features and existing approaches. This chapter also includes a summary of all known studies on DMs in SLs that have been carried out so far.

Chapter 3 is devoted to methodological issues. It explains what SL corpus linguistics is about and focuses on the description of the LSFB Corpus and the LSC Corpus as the main data sources of this dissertation. A previously selected LSFB small-scale

corpus that was used to start this research is presented as well. The annotation template with its tiers is detailed before moving to the annotation process.

Chapter 4 fulfils the second goal (G2) of this research by combining theory and methodology. On the one hand, it summarises the different segmentation methodologies that have been used to segment discourse, either spoken or signed. On the other hand, it proposes an adaptation of the Basic Discourse Unit Model (Degand and Simon, 2005, 2009a,b) to the signed modality with LSFB corpus data. This adaptation is set out as a methodology that will be applicable to other SL studies making every step explicit and dealing with special cases.

Chapter 5 also combines theory and methodology in order to fulfil the first goal (G1) stated earlier. Previous research on the selected DM candidates (buoys, PALM-UP and SAME) in different SLs is summarised. Two sets of criteria are established: the first aims to identify the types in the data and the second aims to distinguish discourse-marking tokens from non-discourse-marking tokens in LSFB. Afterwards, this second set of criteria is tested with each DM candidate with LSFB examples.

Chapter 6 contains the results of the analysis of the three DMs in LSFB. To begin with, the values that can be assigned to each DM and that were set out in chapter 3 are detailed. Afterwards, the three DMs are described including their distribution per genre and per signer, their functions (at three different levels including examples), their position and the functional paradigm (third goal, G3, of this research project).

Chapter 7 complements the previous chapter by giving an account of the same five aspects (genre and signer variation, DM functions, position and functional paradigm) from a cross-linguistic perspective (fourth goal, G4, of this dissertation). The chapter underlines the differences and similarities between LSFB and LSC when list buoys, PALM-UP and SAME are examined as DMs.

Chapter 8 contains the conclusions of this dissertation including what we learnt from studying three modality-independent DMs (fifth goal, G5). It also discusses some methodological issues to be implemented in the future and proposes new research lines on the basis of the work that has been done.

Chapter 2

Discourse markers: background

Discourse Relational Devices are traffic signals that get you to the right box.

Ted Sanders (TextLink Training School, Valencia, January 2016)

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General objective of this chapter

This chapter aims to give an account of previous research that has been conducted in the field of discourse markers, particularly in sign languages. To this end, existing studies in sign languages will be contextualised within a larger framework. The first issue that will be addressed is the core features that define the fuzzy category of discourse markers in the literature of spoken languages. Second, some of the approaches taken by scholars working on spoken languages and other important issues for the analysis of discourse markers such as the type of data will be presented. Third, the move from monolingual studies to contrastive studies will be described with a focus on an important concept in the second type of studies, i.e. the existence of a *tertium comparationis*. Finally, all known studies conducted on discourse markers in sign languages will be summarised.

2.1 Introduction

Discourse has been approached from a variety of fields including sociology, psychology, anthropology, cognitive science and linguistics. Although the definition of the term 'discourse' and the features under inspection are (slightly) different in each of these fields, the main objective of discourse analysis is "to understand the patterns and rules that result in communicative interaction" (Metzger and Bahan, 2001, p.113). In linguistics, discourse analysis refers to the study of language beyond the sentence (Schiffrin et al., 2001) including many different aspects such as coherence and cohesion, conversational repair, repetition and discourse markers, just to name a few.

This dissertation focuses on one of these aspects of discourse in French Belgian Sign Language (LSFB) and Catalan Sign Language (LSC), namely discourse markers (DMs). DMs have scarcely been studied in sign languages (SLs) and there is no existing theoretical framework specific to the signed modality. This chapter is divided into two large sections. In the first (2.2), I will contextualise the study of DMs in SLs drawing on the literature about spoken languages (SpLs). In the second section (2.3), I will summarise the works on DMs in SLs. These works do not include the studies on the three potential DM candidates selected for this dissertation, namely buoys, PALM-UP and SAME (see chapter 5), as they have not been approached exclusively from the point of view of DMs.[1]

2.2 What about discourse markers?

This section aims to provide a theoretical background about DMs that captures the fuzziness of the category they constitute. Three key points will be addressed in the following sub-sections. 2.2.1 lists the existing terms that are used to refer to this category and explains the core features that define DMs. 2.2.2 describes the different types of data and the most widespread approaches that can be taken to study DMs. Finally, 2.2.3 gives an account of the move from monolingual studies to contrastive studies and presents one of the most important concepts to be considered when two or more languages are compared, i.e. the *tertium comparationis*. The selection of references and approaches in these sub-sections is not exhaustive but necessary due to the amplitude and complexity of the topic.

2.2.1 Different names, but some common features

The term 'discourse marker' appeared in the literature of SpLs in the 1970s. From then, "the study of discourse markers has turned into a growth industry in linguistics, with dozens of articles, both theoretical and descriptive, appearing yearly" that refer to the category in many different ways such as cue phrases, discourse connectives,

[1] The only exception is Hoza (2011), who investigates HEY together with WELL (this is the gloss he uses to annotate palm-up tokens) from a discourse-marking perspective. This paper is summarised in the last section of this chapter 2.3 and is also mentioned in chapter 5, p.168.

discourse operators, discourse particles, discourse signalling devices, extrasentential links, indicating devices, phatic connectives, pragmatic connectives, pragmatic devices, pragmatic formatives, pragmatic markers, pragmatic particles, semantic conjuncts and sentence connectives (Fraser, 1998, p.301).[2] Despite the number of works and terms that reflect the difficulty of the object of study, there are some core features that scholars have used from the very first studies to date to somehow define and delimit the DM category.

The first monograph devoted to the issue of DMs was authored by Schiffrin (1987). She used socio-linguistic interview conversations in English for her study, in which she defined DMs as "sequentially dependent elements which bracket units of talk" (p. 31); that is, a set of non-obligatory items that appear at the boundaries of sentences, propositions, speech acts or tone units. This set of items includes conjunctions, interjections, adverbs and lexicalised phrases. Other features that Schiffrin adds to her definition of DMs are that they are syntactically detachable, they appear in the initial position, they have a range of prosodic contours, they are multifunctional and they operate at both local and global levels. Some clarification is in order.

Syntactically detachable (or syntactically optional) means that DMs can be removed and the meaning of the two clauses will remain intact. Example (2) contains two clauses that are connected with 'so'. In example (3), 'so' has been removed but the meaning of the clauses is the same. In other words, 'so' is non-obligatory because it does not encode propositional meaning. Compare this pair of examples with examples (4) and (5). In (4), 'so' is obligatory for the clause to be syntactically complete. If 'so' is removed as in (5), the clause is ungrammatical.

(2) *She has lived in England for years,* ***so*** *she speaks English fluently.*

(3) *She has lived in England for years, she speaks English fluently.*

(4) *He left after lunch and* ***so*** *did I.*

(5) **He left after lunch and did I.*

The meaning of 'so' in (2) is procedural or non-truth-conditional,[3] which means that 'so' constrains the relation that needs to be inferred. In contrast, 'so' in (4) does not explicit this type of relation between clauses. Most definitions of DMs agree on the 'procedural' and 'non-truth-conditional' meaning of DMs (e.g. Brinton, 1996 and Fraser, 1996, who also work on English; and Hansen, 2006, who works on French).

'So' in (2) appears in the initial position, i.e. just before the second clause it introduces. The first publications about DMs agreed that the initial position was the preferred position in which these items could be found (Schiffrin, 1987; Brinton, 1996;

[2]More terms could be added to this list proposed by Fraser. For instance, maybe the most recent is that of 'discourse relational devices' that is proposed and used in the COST Action IS1312 *TextLink: Structuring Discourse in Multilingual Europe* (2014 – 2018), chair: Prof. Liesbeth Degand.

[3]In this dissertation, the terms 'procedural' and 'non-truth-conditional' are taken as synonyms. However, preference will be given to the use of 'non-truth-conditional' (see chapter 5) because it is the term that appears in the definition of DMs (Crible, 2014) that I follow.

Fraser, 1996; Schourup, 1999), although medial and final positions were sometimes possible. More recent studies have shown that medial and final positions are indeed possible (at least in speech) and that some DMs seem to be restricted to these positions (e.g. Briz Gomez and Pons Bordería, 2010 on Spanish; Degand, 2014 on French; Crible, 2017 on English and French).

'So' in example (2) expresses a consequence. However, other functions could be expressed by this DM such as planning upcoming speech (possibly prosodic contours would change from one function to the other). The fact that DMs are referred to as multifunctional does not only include the wide range of functions that a particular DM may have in a context or in different contexts, but also the fact that the DM category as a whole can make explicit many different functions (e.g. cause, addition, etc.). Again, multifunctionality is one of the features (all) studies on DMs agree upon.

Finally, the consequence introduced by 'so' in (2) takes the form of a clause. In this particular case, the role of 'so' is local. If many clauses followed related to this consequence as in example (6), the role of 'so' would be global because it would relate the first clause to many others that constitute a wider span of discourse.

(6) *She has lived in England for years,* ***so*** *she speaks English fluently. She has a perfect accent, you couldn't say that she is Italian. Her grammar is also perfect, no mistakes at all! Incredible!*

In an overview of DMs, Schourup (1999) claims that the only features shared among different definitions of DMs are connectivity, optionality and non-truth-conditionality. However, this author mentions other features that have been said to delimit the DM category such as weak clause association, i.e. elements syntactically and prosodically detached (Brinton, 1996); initiality (see above); orality, i.e. some DMs such as 'well' will be more likely to appear in spoken productions rather than in written texts (Brinton, 1996); and multi-categoriality, i.e. the grammatical category of DMs is heterogeneous (see section 5.1 in chapter 5 for examples and specificities of SLs on this last point). All these features are summarised by Crible (2017) in a table that is reproduced in Figure 2.1.[4]

So far, Schiffrin's seminal work is still the source of inspiration of many papers on DMs, including papers on DMs in SLs whose surrounding SpL is English (Roy, 1989; Metzger and Bahan, 2001; Johnston and Schembri, 2007). In other papers in which the surrounding SpL is Spanish, references follow other works such as Martín Zorraquino (1992), Martín Zorraquino and Portolés Lázaro (1999), Domínguez Mujica (2005) and Portolés Lázaro (2007) that deal with DMs in Spanish (see section 2.3). The definitions proposed in these four works also mention somehow the three features that previous literature on DMs agrees upon: connectivity, no syntactic function, from which it can be inferred that DMs do not participate in the sentence (i.e. optionality) and guiding communication inferences (i.e. non-truth-conditionality).

[4] "No symbol means that the feature is not mentioned by the author, whereas the X indicates that the author explicitly denies the feature; 'procedural meaning' is taken as an approximate equivalent of non-truth-conditionality and absence of propositional content" (Crible, 2017, p.48).

	Schiffrin 1987	Brinton 1996	Fraser 1996	Hansen 2006
connectivity	✓		✓	✓
optionality	✓	✓	✓	×
procedural meaning	✓	✓	✓	✓
multifunctionality	✓	✓	✓	✓
syntactic mobility	✓			
tendency of initiality	✓	✓	✓	
prosodic	✓	✓		✓
orality		✓		
grammatical diversity		✓	✓	✓

Figure 2.1: Summary of the core features of DMs found in the literature (Crible, 2017)

Because of the number of existing publications about DMs, Schiffrin (2001) concludes that "[d]iscourse markers are parts of language that scholars want to study, even if they do not always agree on what particular parts they are studying or what to call the object of their interest" (p.65). The following sub-section will shed light on these 'particular parts' by summarising some important issues about how DMs are approached in the literature.

2.2.2 Data sources and approaches

The category of DMs is not only fuzzy because of the many definitions and terms that can be found in the literature, but also because of the different perspectives that can be adopted. In this sub-section, I will first talk about the data source (written, oral or multimodal) from which DMs can be investigated, which has an influence on the items that can be found and their functions. Then, I will move to the selection of DMs (onomasiological vs. semasiological approaches) and to some different degrees of granularity, which constrain the outcomes of the study and (sometimes) its reproducibility to another dataset. Finally, I will describe some well-known DM taxonomies in order to obtain a big picture of the existing categorical classifications.

2.2.2.1 From written to oral, and from oral to multimodal

Although Brinton (1996) claims that DMs are characteristic of the spoken-like register, most studies on DMs are based on written data. Corpora containing written data have been available for a longer time if compared to corpora containing oral or even multimodal data. Hence, the majority of existing taxonomies and annotation schemes of DMs (see sub-section 2.2.2.3) have been designed to deal with written data. Later, when new technologies allowed the collection of oral corpus data, some of these frameworks were adapted to languages that have both a written and an oral form.

Because of the growing interest in the study of DMs in spoken data, the first taxonomies specifically conceived for the annotation of DMs in spoken corpora are being created such as Crible's (2014) protocol (see below p.25). New technologies enabled corpora to move from written to spoken, and more recently from spoken to multimodal (i.e. speech + gesture). In fact, the fast evolution of software and tools has made it possible for the multimodal study of DMs to develop almost parallel to the study of DMs in spoken data. Multimodal research on DMs is still scarce and the first taxonomies (Bolly and Crible, 2015) are inspired by taxonomies designed to deal with spoken data, just like the first studies on DMs in spoken data are based on DM taxonomies created for written data.

Parallel to multimodal corpora, some SL referential corpora have also been collected (see section 3.1 in the following chapter for an exhaustive list). To the best of my knowledge, there is no research so far that deals with DMs in SLs using referential corpora. Existing studies have collected their own dataset and have followed the criteria presented in SpL research for the analysis of their DMs (see sub-section 2.3). Since SLs are 'oral' languages in the sense that they do not have a written form (writing systems such as SignWriting (Sutton, 1999) or HamNoSys (Hanke, 2004) remain limited to academic or scientific purposes), the use of spoken and multimodal DM taxonomies is recommended. They will not only provide an appropriate framework of analysis that will take into account the features of orality, but in addition the annotation will be reproducible to a larger dataset or to another dataset.

2.2.2.2 One vs. many, and other degrees of granularity

There are a lot of works in the literature about DMs, but the number of items they analyse varies greatly from one work to another. This is because scholars take either an onomasiological approach or a semasiological approach. On the one hand, an onomasiological approach consists of the identification of all discourse relations, which can be implicit or explicit. Onomasiological studies may include both types of discourse relations or focus on a particular type (either implicit or explicit). On the other hand, a semasiological approach is focused on the annotation of a closed list of specific markers. There are also works that could be considered as in between these two approaches; for instance, when a particular discourse relation such as cause is selected and all markers that are used to express it are inspected.

In SpLs, DMs are rarely tackled from an onomasiological perspective and the majority of works are case studies (Crible, 2017). Hence, results are not generalisable to the whole category. In SLs, the situation is more balanced: there are three papers that take an onomasiological approach (Pérez, 2006; Villameriel, 2008; Jarque, 2014), four that take a semasiological approach (Roy, 1989; Metzger and Bahan, 2001; Villameriel, 2010; Hoza, 2011) and one that is in between the two approaches, i.e. all DMs that express footing shifts (McKee, 1992) (see section 2.3 for further details). However, even the results of the three papers that take an onomasiological perspective are not generalisable to the whole category for different reasons: the amount of data tends to be small, the description of findings is less fine-grained than in their

SpL counterparts and/or the author acknowledges that findings are restricted to a particular genre (Pérez, 2006).

Regardless of the approach adopted, the research goals and the degree of granularity of each study are different. For instance, DMs in SpLs have been examined from the point of view of morphology (e.g. DMs that emerge from imperative verbs as in Dostie, 2004), syntax (e.g. the varying functions of 'like' depending on their position in the clause as in Miller, 2009) and prosody (e.g. how to analyse and identify DMs using prosodic features as in Raso, 2014). These linguistic levels may also be combined in the same research project. When the goal of the study is to investigate the discourse functions of DMs, researchers may want to take into account the whole production by representing its structure or they may focus on the items that work as DMs. Depending on the framework they choose, there may be different levels of categorisation. Some of the most well-known theoretical frameworks and/or taxonomies are presented in the following sub-section.

2.2.2.3 Existing taxonomies and annotation schemes

The annotation of discourse relations can be divided into two big groups: the complete discourse coverage approach and the lexically grounded approach (Benamara and Taboada, 2015). On the one hand, complete discourse coverage approaches require that the entire text or production is annotated so that discourse structure can be represented as a graph or tree. On the other hand, lexically grounded approaches focus on a lexical item, generally conjunctions, and include two arguments for each conjunction. Although full texts or productions are not always annotated when this approach is followed, annotations tend to be reliable.

Examples of complete discourse coverage approaches include the Rhetorical Structure Theory (RST, Mann and Thompson, 1988; Taboada and Mann, 2006) and the Segmented Discourse Representation Theory (SDRT, Asher and Lascarides, 2003). RST divides the text into discourse segments that are organised as a discourse tree. Since the underlying principle of RST is that coherent texts consist of discourse segments that are linked through rhetorical relations and they do not have gaps or non sequiturs, all discourse segments are related regardless of whether a relation is explicit or implicit. In addition, discourse components have a differential status: nucleus are signalled with a vertical line and satellites are related to the nucleus with a curve (horizontal lines mark text spans, see Figure 2.2). Although different lists of relations have been proposed, 24 relations and four multinuclear relations appear on the RST website.[5] Annotated resources following RST exist in Basque, Dutch, German, English, Portuguese and Spanish.

[5] http://www.sfu.ca/rst/01intro/intro.html

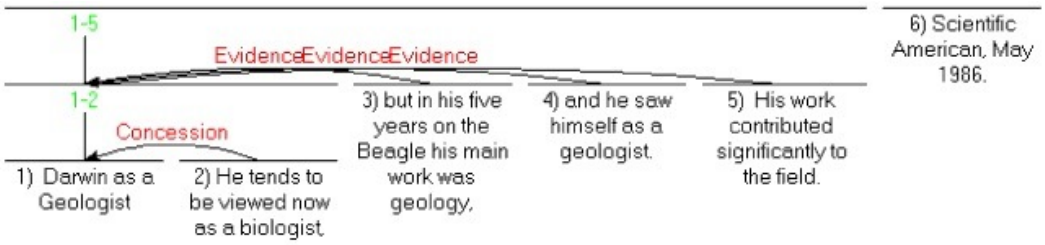

Figure 2.2: Example of an RST tree from the RST website

SDRT also segments texts into elementary discourse units (that can be embedded one into another) or complex discourse units (that may not partially overlap). When SDRT is represented as a graph, each discourse unit is a vertex. New discourse constituents can only be integrated into the graph if they are in the right frontier. Discourse relations are divided into coordinating or subordinating. The first are drawn horizontally, whereas the second are drawn vertically (see Figure 2.3). The list of relations has also been implemented depending on the language and corpus which was treated (so far SDRT representations can be found in Arabic, French and English).

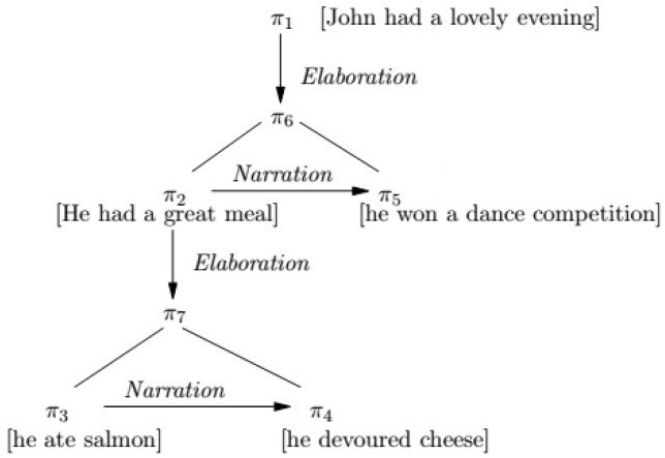

Figure 2.3: Example of an SDRT graph (Lascarides, 2008)

The Penn Discourse Treebank (PDTB, Prasad et al., 2008, 2014) is the most well-know example of a lexically grounded taxonomy. The PDTB "[adopts] a theory-neutral approach to the annotation, making no commitments to what kinds of high-level structures may be created from the low-level annotations of relations and their arguments" (Prasad et al., 2008, p.2961). A theory neutral approach such as this one can be easily merged with other annotations and facilitates cross-linguistic research on discourse relations. In the PDTB, all types of discourse relations (i.e. explicit, implicit or alternative lexicalisations of connectives) are annotated and understood as lexical items (except for implicit relations in which there is no signal) that hold between two segments of discourse. Regardless of how the relation is expressed, the PDTB taxonomy is divided into four classes, 15 types and 23 subtypes (see Figure

2.4). So far, Arabic, Chinese, Czech, Danish, Dutch, French, Hindi and Turkish data have been annotated using this taxonomy with some adaptations.

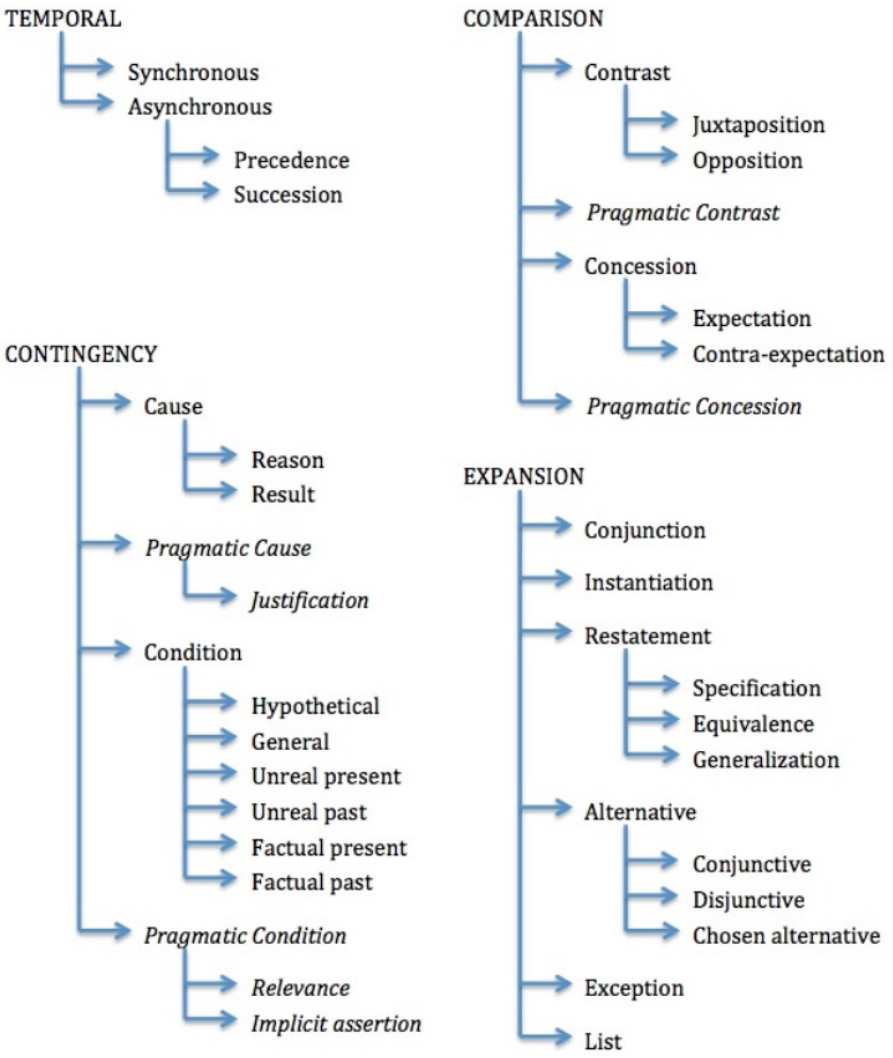

Figure 2.4: Discourse relations in the PDTB

Despite the existence of these different frameworks, there have recently been some unification and/or improvement attempts. On the one hand, unification attempts include the work of Chiarcos (2014), who focuses on the RST and PDTB taxonomies and "show[s] how ontologies can be employed to generalise over divergent annotations schemes" (p.4569). Benamara and Taboada (2015) also propose a unified taxonomy of RST and SDRT relations that contains four top-classes with 26 relations. On the other hand, improvement attempts include Zufferey and Degand's (2013) paper in which they revise the PDTB taxonomy in order to apply it to multilingual annotations. Crible's (2014) DM-level annotation protocol is also a revision of the PDTB with "major modifications [...] to improve its operational application and to extend its scope to all types of DMs, not only so-called connectives" (ibid., p.1). In other

words, the term 'discourse marker' puts together connectives with other items such as interpersonal markers in order to provide a categorisation for any discourse-marking item.

It is worth taking into account the existence of these unified or improved taxonomies when a new study on DMs is to be carried out for a matter of applicability to different data sources. In this dissertation, the selected taxonomy is Crible's (2014) protocol for its exhaustivity and efficiency: it adds and modifies certain functions, it enables the annotation of double functions, it provides a detailed description of each function with a paraphrase that helps to assign a function to DMs in context, and it contains a guide to interpret the functions of the most polysemous DMs. The different levels and values of the taxonomy are presented in section 3.3 (chapter 3) and they are explained more in detail in sub-section 6.2.1 (chapter 6), i.e. just before the results for the reader's convenience.

2.2.3 Moving towards contrastive studies

Most works on DMs are monolingual as the first research initiatives were focused on one language. At present, monolingual studies on DMs are still carried out, but contrastive studies are increasing because more and more data of different languages are becoming available as well as taxonomies that allow cross-linguistic comparisons. These contrastive studies have many practical applications such as helping translators to master the hard task of translating DMs because of their polysemy, improving linguistic resources such as classical dictionaries so that they duly represent the meaning of DMs, or casting light on the difficulties that first and second language learners may have in the acquisition of DMs (Zufferey and Degand, 2013).

For a contrastive study to be conducted at any linguistic level, a clear *tertium comparationis* must be established; that is, a feature shared between two objects against which differences can be stated (Krzeszowski, 1990). In the theory, *tertia comparationis* can be of two types: formal correspondence and semantic equivalence. The two have different shortcomings: while formal correspondence does not include all equivalents in two or more languages (e.g. the present perfect tense in English is not the only equivalent of the *passé composé* in French), semantic equivalence may be too large and must be constrained so that a comparison is possible (e.g. if all possible translations of present perfect into French are taken into account, the risk is that some of them may not be comparable). Hence, what the author proposes is that formal correspondence is supported by semantic equivalence in order to establish a *tertium comparationis*.

Designing a *tertium comparationis* depends on the languages that will be compared, the linguistic level of analysis targeted and the goal of the research. For instance, one cannot take as a *tertium comparationis* the system of articles to express (in)definiteness in English and Polish because neither definite nor indefinite articles exist in Polish. The *tertium comparationis* cannot be established at different linguistic levels either, e.g. 'you know' in syntax as a subject followed by a verb and 'you know' at the level of discourse as a DM. Even within the same linguistic level,

the *tertium comparationis* must be coherent with the research goals. Hence, one cannot have as a *tertium comparationis* how causal relations are expressed in English and French if the markers under study are 'but' and 'mais' (which are markers that typically express some sort of contrast).

In SpL studies on DMs, the *tertia comparationis* are designed with a combination of formal correspondence and semantico-pragmatic equivalence using different sources. On the one hand, the translation of a DM or DMs can be taken from a dictionary such as Visconti (2003) in the study of Italian 'qualora' vs. English 'whenever'. On the other hand, equivalents can be taken from parallel and/or comparable corpora[6] such as the study of the use of the words 'home/hombre' (i.e. man) and 'dona/mujer' (i.e. woman) as DMs in Catalan and Spanish (Cuenca, 2008) using comparable corpora, 'so' in English and 'dus' in Dutch (Buysse, 2017) using parallel corpora, cohesive markers of contrast in English and French using both parallel and comparable corpora (Dupont, 2016), and all DMs in English and French using comparable corpora (Crible, 2017), to name just some examples.[7]

Unfortunately, these resources that enable equivalences to be established are still under construction in SLs. SL dictionaries are frequently bilingual and they include data of a SL and the surrounding SpLs, but there are no bilingual or multilingual dictionaries in which different SLs are included. Parallel corpora consisting of SL data that are translated into the surrounding SpL are growing more and more, and both existing corpora and those that are being collected at present are making an effort to make (at least) some tasks comparable. Moreover, most of the time these data sources are not enriched with information about coherence relations conveyed by DMs. Hence, designing a *tertium comparationis* becomes somehow restricted to a formal correspondence due to the lack of tools that document semantico-pragmatic equivalences.

2.3 Discourse markers in sign languages

Research on DMs in SLs started in the late 80s and it is still scarce. Most studies focus on American SL (ASL) data (Roy, 1989; McKee, 1992; Metzger and Bahan, 2001; Hoza, 2011), although there are some initiatives in Venezuelan SL (LSV) by Pérez (2006) and in Spanish SL (LSE) by Villameriel (2008, 2010). In Australian SL (Auslan), Johnston and Schembri (2007) do not investigate DMs but they mention them as part of this SL. As for the two SLs under study in this dissertation, there are no investigations in French Belgian SL (LSFB) so far and there is one poster presentation about DMs in Catalan SL (LSC) by Jarque (2014). The nine studies about DMs that I have just mentioned will be summarised below in chronological order.

[6] A parallel corpus is a set of productions in a given language that are translated into another language or languages, and a comparable corpus is a set of productions that have the same communicative functions (Bowker and Pearson, 2002).

[7] These examples have been selected from the bulk of contrastive studies in order to illustrate both semasiological and onomasiological approaches using parallel and comparable corpus data.

Roy (1989) is the first research focused on DMs in a SL. She analyses the signs NOW and NOW-THAT in a five-minute lecture about the stickleback fish given by an ASL deaf male signer. Her analysis follows Schiffrin (1986), who investigates several DMs in English including 'now'. She distinguishes the adverbial use from the discourse-marking use following three criteria: (i) co-occurrence violations of 'now' as a DM, (ii) discourse context, and (iii) different prosodic features.

NOW is used to indicate that the action is happening in the present time, but its discourse-marking functions include "[shifting] into a new subtopic and calling attention to what is coming up next in the text" (Roy, 1989, p.236). The two forms (i.e. one with the syntactic function of adverb and the other with a discourse-marking function) appear in the utterance-initial position, but the difference is that discourse-marking tokens occur with topic marking and are accompanied by prior pauses and/or body shifts. Paraphrase is used to disambiguate tokens with an adverbial meaning from discourse-marking tokens.

NOW-THAT is a two-handed sign formed by NOW and THAT, the two articulated simultaneously, one in each hand. As a DM, it is used to separate the lecture into three parts (introduction, development and closing) that the author calls 'episodes'. The separation refers to previous discourse (THAT has a deictic meaning, i.e. 'that's the one I'm talking about') and establishes relevance to upcoming discussion at the same time. Similarly to NOW, NOW-THAT appears in the utterance-initial position with topic marking.

Roy admits that longer texts with different topics and different signers should be studied in order to see whether the conclusions drawn about NOW and NOW-THAT are valid. In addition, she finds other DMs in the lecture such as OK, ANYWAY and KNOW that she does not analyse but that make her claim that "further study will reveal some similarities to the functions of discourse markers found in spoken languages" (ibid., p.245).

McKee (1992) also devotes her doctoral dissertation to the study of ASL lectures, particularly to investigate footing shifts, i.e. the changes in speakers' 'voice' either for quotation or for digression. Her data are larger than those of Roy (1989): they include seven lectures that last for approximately six hours given by seven different adult signers (male and female).

Footing shifts for the purpose of quotation can be introduced by the STOP gesture (which can have a one-handed or a two-handed form) or by the sign QUOTE. The STOP gesture can be used to "[clarify] information, or continue with something slightly different in a minute" when it is combined with an eye squint, to "[punctuate] a section of talk and the footing associated with the prefacing remarks", to close the preface and open the frame for a quote (McKee, 1992, pp.52-54). The sign QUOTE is the most common metalinguistic framing device for quotation in ASL. It does not frame the quotation as written punctuation as it only appears after prefatory talk in order to open quoted text, but not to close it.

Footing shifts in which there is a digression are introduced by CL:LEGS-MOVE-L, i.e. a depicting sign[8] that graphically represents two legs moving to the left. The use of CL:LEGS-MOVE-L with lowered shoulders instead of a facial marking of new topic implies that the signer is asking for permission to his/her interlocutors to introduce a parenthesis. Therefore, this is a more polite form. The STOP gesture is also used to post-frame an aside, in which case it can terminate the preceding talk and mark a footing shift. Non-parenthetical functions of this gesture include closing a topic, marking a transition from topic to sub-topic and linking a proposition or topic with further explanation of it. Asides can also be used by the signer for self-correction or repair, in which case the signer breaks the gaze with the audience. INDEX-HOLD (a raised index finger) can be used to let the other signer know that the signer does not want to be interrupted as s/he is thinking about upcoming speech. In addition to manual production, non-manual markers (i.e. the head orientation, the shoulder height and the grimace) and stepping into a contrasting space can be used for this purpose.

Metzger and Bahan (2001) provide a well-grounded state of the art on discourse analysis in SLs. They study several features of SL discourse, among which there are DMs. The data on which they base their investigation is a 35-second ASL narrative taken from a multiparty conversation extracted from Lucas et al. (2001). Five deaf native adult signers participate in the conversation, but the production of only one signer appears in the selected sample.

Metzger and Bahan, following Schiffrin (1987), define DMs as devices that appear in conversations. Their functions are diverse, i.e. not only do they serve the speakers in the production and understanding of interaction, but they also help to connect sequences of utterances. Hence, DMs coordinate discourse and provide coherence to the whole. The only DM that the authors find in their data is FINE, which is used to separate different events in a sequence. After summarising the two previous studies on ASL (Roy, 1989; McKee, 1992), they conclude that "discourse markers in sign languages occur manually, non-manually and spatially" (Metzger and Bahan, 2001, p.133).

Pérez (2006) studies DMs in narrative productions in LSV. Her corpus is made up of four narrative monologues that were produced by four deaf adults (three men and one woman). In this paper, she identifies potential DM candidates, checks their discourse-marking status and classifies them in different categories. For the first two points, Pérez uses a definition of DMs that combines different studies (Martín Zorraquino, 1992; Martín Zorraquino and Portolés Lázaro, 1999; Domínguez Mujica, 2005; Portolés Lázaro, 2007):

> "A set of invariable elements that enable the relations in a text to be linked, organised, signalled or oriented. These features make discourse markers a linguistic category. Discourse markers also participate in the processes of formulation and exchange that take place in the production,

[8] The terms 'classifier' and 'depicting sign' are equivalents (see p.100). McKee uses classifier, which is why the gloss she uses starts with CL instead of DS.

> and they show the attitudes, shortages, etc. of a speaker in relation to what s/he says" (the adaptation to English is mine).[9]

The classification of DMs into different categories follows the taxonomy proposed by Domínguez Mujica (2004) and includes opening markers, markers of continuation, markers of reformulation and closing markers. The first category includes the sign BEGIN, which is used to start the narrative production by three signers, and the sign FIRST, which is not followed by SECOND and THIRD as the only signer who articulates it uses other markers of continuation to structure the production. Markers of continuation are OK, which is produced by one signer to mark the end of a topicalised information segment in the introduction and allows the elaboration of the following segment (similarly to FINE in ASL as reported by Metzger and Bahan, 2001); YA, which is produced by the same signer who used OK and marks the end of an event and the continuation of another; FINISH, which was produced by one signer and marks the end of an action and the beginning of another; and AFTERWARDS, which was produced by two signers and marks continuation between two discourse segments. There is only one marker of reformulation and one closing marker. SORRY, which was used by one signer, belongs to the first category and introduces a self-correction; and END, which was the only DM used by all signers, ends discourse.

Since most of these DMs are only used by one signer, the author claims that these may be idiosyncratic usages of the signs except for END. The use of markers of continuation may be optional because the content of narrative segments is related in a successive and causal way, which is why it is not necessary to make explicit the coherence relation and it can be left to pragmatic inference. Finally, the author hypothesises that the use of the opening and closing markers mentioned above may be restricted to narratives as they are not likely to be found in daily conversations, so they could be distinctive elements of this genre.

Johnston and Schembri (2007), in their book about the linguistics of Auslan, devote a section to discourse cohesion in which they mention DMs. Following Schiffrin's (1987) definition of DMs, they mention the existence of conjunctions (such as BUT, SO, THEN and COINCIDENCE) and fillers (such as WELL, HOLD or UM) in Auslan. Conjunctions "contribute to the cohesion of a text by linking clauses together into compound and complex sentences", whereas fillers are used to maintain a turn while the signer is planning upcoming speech or to signal that the signer does not want to be interrupted (Johnston and Schembri, 2007, pp.275-276).

Villameriel (2008) carries out a contrastive study of manual and non-manual DMs in Spanish and LSE. His corpus contains 87 recordings (mostly narrative, although there are some argumentative as well) produced by eight deaf adults (male and female) who use different LSE dialects. The definition of DM that he uses follows Martín Zorraquino and Portolés Lázaro (1999) and Portolés Lázaro (2007):

[9] "[E]l conjunto de elementos invariables que, en el texto en situación, permiten conectar, organizar, señalar u orientar las relaciones que lo sustentan como unidad lingüística, revelan los procesos de formulación e interlocución que tienen lugar en la producción textual y ponen de manifiesto la actitud, carencias, etc. del hablante en relación con el enunciado."

> "Discourse markers are invariable linguistic units, they do not have a syntactic function in the predicate of the sentence and their role at the discourse level is to guide, according to their morphosyntactic, semantic and pragmatic properties, communication inferences" (the translation from Spanish is mine).[10]

In addition to this definition, every time that Villameriel identified a DM candidate, he checked whether it complied with the following grammatical properties: (i) it must be invariable, (ii) it cannot to be substituted by pronominal or deictic elements, (iii) it cannot have specifiers or adjacent elements, (iv) it cannot answer a Wh-question, (v) DMs cannot be coordinated, (vi) they cannot be negated, (vii) they are not gradual, and (viii) they cannot be substituted by a relative (Martín Zorraquino and Portolés Lázaro, 1999; Martín Zorraquino, 1998).

There are 25 manual DMs in Villameriel's sample that he classifies according to Martín Zorraquino and Portolés Lázaro (1999) and Portolés Lázaro (2007) into four categories. These four categories are, in turn, divided into sub-categories (see Figure 2.5).

			Manual	Non-manual
Information structuring	Comment markers		SO-WELL	
	Ordering	Opening	FIRST, BEGIN	YES-BEGIN
		Continuation	APART (ON-THE-OTHER-HAND), OTHER, SECOND / THIRD / FOURTH, etc.	ROLE-SHIFT
		Closing	FINALLY, LAST, IN-THE-END, NOTHING-MORE, END, OK	
Connectors	Addition		IN-ADDITION	
	Consecutive		SO	
	Counterargumentative		CHANGE	
Reformulating	Explicative		WANT-SAY	
	Recapitulating		IN-SHORT, IN-CONCLUSION, TOTAL	
Argumentative operators	Supporting an argument		IN-REALITY	
	Specifying an argument		FOR-EXAMPLE	

Figure 2.5: Classification of discourse markers in LSE according to Villameriel (2008)

Villameriel does not explain these categories or all the DMs he finds in his corpus, but he does provide some details about the use of APART in LSE. APART (for which three different variants exist) is an information structuring marker that is used to order discourse, particularly to mark continuation. One of the variants of this DM has a more restricted meaning than the others, maybe because it is a different sign instead of a variant.

[10] "Los marcadores del discurso son unidades lingüísticas invariables, no ejercen una función sintáctica en el marco de la predicación oracional y poseen un cometido coincidente en el discurso: el de guiar, de acuerdo con sus distintas propiedades morfosintácticas, semánticas y pragmáticas, las inferencias que se realizan en la comunicación."

As regards the comparison of DMs, the author establishes equivalences for most DMs in LSE with their Spanish counterparts. However, there are some DMs in LSE that do not have an exact equivalent in Spanish such as list buoys,[11] which could not be translated into Spanish as 'first', 'second', etc. in some examples from the corpus; BEGIN, which does not exist as such in Spanish; OTHER, which can have many translations in Spanish but none reflect its informal register; OK, which is a closing marker in LSE and expresses deontic modality in Spanish; IN-ADDITION, which has the same problem of register as OTHER; IF-BEGIN and ROLE-SHIFT, which are non-manual DMs and do not have an equivalent in Spanish. This lack of a one-to-one correspondence supports the assertion that a particular DM in a language cannot always be translated by another DM in another language and that other resources may be necessary for this purpose.

Villameriel (2010) is the continuation of the previous research with a focus on two DMs in LSE, i.e. CHANGE and WANT-SAY, whose existence was attested but neither defined nor exemplified. In addition to their description, this work focuses on their origin because of the contact with Spanish. The corpus and the theoretical framework on DMs are the same that were used in Villameriel (2008).

CHANGE is a counterargumentative marker that could be translated as 'however' and that links two segments of discourse.[12] The sign CHANGE in LSE is used as a verb that has been pragmaticalised because of the contact between LSE and Spanish. In other words, the signer conveys the procedural meaning of contrast between two segments of discourse to the sign and removes its conceptual meaning of verb. Hence, this usage of CHANGE as a DM is not common and it depends on the signer's skills in Spanish. Interestingly, when CHANGE is used as a DM, the signer also uses space for the construction of meaning. One segment of discourse is articulated on the signer's left and the other segment on the right, and CHANGE is articulated in the middle, just in front of the signer.

WANT-SAY is a marker of reformulation that could be translated as 'in other words'. This DM introduces a segment of discourse that paraphrases the segment which was before the sign. WANT-SAY is the result of the sequential combination of the signs WANT and SAY. It seems that, once again, the origin of WANT-SAY is due to the contact between LSE and Spanish. However, the movement of WANT is reduced and makes a whole with SAY (there is even one case in which one signer uses SAY alone as a marker of reformulation, but it is not clear whether this is the result of reduction or if we are faced with a different DM). Non-manual marking also changes: when signers articulate WANT as a verb, they bite their lower lip; whereas this nonmanual disappears in WANT-SAY.

Hoza (2011) investigates the signs in ASL commonly glossed as HEY and WELL, which have originated from gesture. The first "involves waving one's hand up and

[11] I use this terminology for ease of reading, although Villameriel annotates them as IX-first, IX-second, IX-third, IX-fourth and IX-fifth.

[12] The gloss CHANGE is the translation of the gloss that the author uses in Spanish (CAMBIO). 'Cambio' is a noun that means 'change', but when it is combined with the preposition 'en' (i.e. 'in'), it becomes a DM that expresses contrast or opposition.

down (palm down) to get someone's attention" (ibid., p.69), whereas the second is produced with both hands open in the palm-up position to the sides of the body. He claims that these two gestures serve specific functions at the discourse level, so they can be labelled as DMs. He explores their organisational and textual functions as well as their politeness functions. However, he does not detail which data he uses for the analysis.

A wide range of functions are found for HEY in ASL. They include opening a conversation (Baker-Shenk and Cokely, 1980), getting the attention of the interlocutor (when it is one-handed and eye gaze is directed towards the interlocutor) or several people (when it is two-handed), expressing surprise or warning (Hoza, 2007), showing a connection between the speaker and the addressee (i.e. politeness function), introducing and shifting topics.

HEY can be seen as face-threatening if not managed correctly, but the use of nonmanuals mitigates its effects and enables it to be used in a wide range of registers. Of the five existing non-manual markers used to show politeness in ASL (polite pucker, tight lips, politeness grimace, polite grimace-frown and body teeter), Hoza (2011) finds that the first four co-occur with HEY with a varying degree of mitigation. The *polite pucker* (pursed lips) assumes involvement and communicates that the threat to face is minor, *tight lips* (closed mouth with lowered corners) mitigate threats to both involvement and independence, the *politeness grimace* (open mouth with teeth in contact) mitigates significant threats to face and the *polite grimace-frown* (open mouth, tensed lips and neck with teeth in contact) mitigates severe threats to face (pp.78-81).

On the other hand, five discourse functions have been attributed to WELL in the literature: pause filler (Winston and Monikowski, 2003), indicator of a shift in discourse McKee (1992), device to maintain coherence (Hoza, 2007) and turn-taking regulator (Roush, 2007). As a pause filler, WELL indicates a boundary between segments of discourse. As an indicator of shifts in discourse, it changes the speaker's orientation from reported speech to what s/he is saying. As a device to maintain coherence, WELL is used to maintain coherence and to save face when the signer is not complying with the request. And as a turn-taking regulator, WELL can either signal that the signer wants to end his/her turn and offers the floor to the other or that the signer encourages the other to continue signing.

WELL has a one-handed and a two-handed form, although the second is more common than the first. The politeness functions of WELL are related to "provide coherence, to indicate reluctance or to hedge, and to serve as an indefinite particle" (Hoza, 2011, p.86). Hoza (2007, 2008) and Roush (2007) find that, similarly to HEY, nonmanual marking co-occurring with WELL produces different degrees of mitigation. On a scale, the polite pucker (conveying assumed cooperation and used for little threats to face) is at one end, and the polite grimace-frown (used for severe threats) is at the other. In between, there are tight lips and the polite grimace for moderate and significant threats respectively. The fifth nonmanual used for mitigation, i.e. the *body teeter* (side-to-side head or body movement), intensifies extreme threats to

involvement and independence. If the body teeter appears with other nonmanuals, it intensifies the meaning of the other nonmanuals; whereas if it appears without other nonmanuals, it questions the compliance of a request or the viability of an option.

Jarque (2014) examines the role of gestures in the emergence and development of what she calls 'metatextual markers' and their pragmaticalisation in LSC. For this purpose, she takes a sample including dialogues, narratives, lectures and argumentations of 20 deaf (male and female) signers. Although 'metatextual marker' is another term used in the literature to refer to DMs, she does not define the category (which poses problems for the identification of tokens in another dataset) nor where her classification comes from.

After inspecting her corpus, she finds different manual metatextual markers that she divides into: (i) initiator (begins discourse), (ii) distributive (signals a transition between topics), (iii) order (marks sequential dependence between topics), (iv) transition (indicates a new topic or a partial shift in topic), (v) continuative (signals continuity in the text), (vi) additive (introduces new information), (vii) digressive (introduces a topic shift pragmatically marked), (viii) repair (introduces a self-correction), (ix) conclusive (signals the conclusion/implication of the discourse as a whole), and (x) closing (ends discourse).

The different metatextual markers that she identifies do not exclusively come from gesture, but they can be the result of gesture combined with a lexical item, they can be lexical items, fingerspelled words or constructions.[13] She concludes that there are three different paths for gesture to become language in the signed modality (see Figure 2.6) and that multimodal face-to-face conversation is key for building linguistic resources.

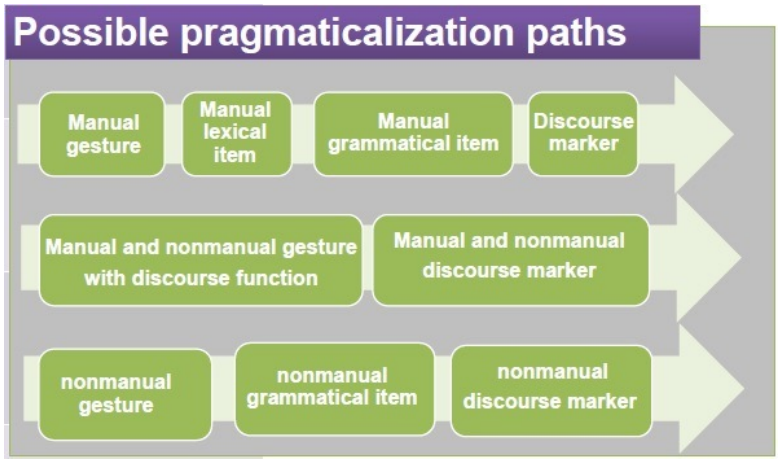

Figure 2.6: Pragmaticalisation paths of metatextual markers according to Jarque (2014)

[13] The type of construction is not specified.

As mentioned above in sub-section 2.2.2.2, some of these studies follow a semasiological approach in which only one or two DMs are inspected (Roy, 1989; Metzger and Bahan, 2001; Villameriel, 2010; Hoza, 2011), whereas others follow an onomasiological approach in which all discourse-marking tokens of a corpus are analysed (Pérez, 2006; Villameriel, 2008; Jarque, 2014). McKee (1992) is in between because she inspects DMs or other resources that convey coherence relations of quotation and digression. Regardless of the approach that is taken, most of these works are restricted to one genre (with the exception of Villameriel, 2008, 2010; and Jarque, 2014) and to one signer with a small amount of data (Roy, 1989; Metzger and Bahan, 2001), or they are hardly reproducible to a larger sample (Jarque, 2014). Table 2.1 contains a summary of this sub-section.[14]

SL	**Authors**	**Approach**	**Genres**	**Duration**	**Number of signers**
ASL	Roy (1989)	Semasiological (NOW and NOW-THAT)	Lecture	5 minutes	1
	McKee (1992)	In between (relations of quotation and digression)	Lecture	6 hours	7
	Metzger and Bahan (2001)	Semasiological (FINE)	Narrative	35 seconds	1
	Hoza (2011)	Semasiological (HEY and WELL)	Not specified	Not specified	Not specified
LSV	Pérez (2006)	Onomasiological	Narrative	Not specified	4
LSE	Villameriel (2008)	Onomasiological	Mostly narrative with some argumentations	Not specified	8
	Villameriel (2010)	Semasiological (CHANGE and WANT-SAY)	Mostly narrative with some argumentations	Not specified	8
LSC	Jarque (2014)	Onomasiological	Dialogic, narrative, expository and argumentative	Not specified	20

Table 2.1: Summary of known studies on DMs in SLs

[14]Note that Auslan is not included in the table because Johnston and Schembri (2007) make a comment on the existence of DMs in this SL, but they do not investigate the features of any DM in detail.

In this research, my approach is semasiological and my *tertium comparationis* is formal, i.e. three DM candidates (buoys, PALM-UP and SAME) that exist in LSFB and LSC and have the same form. The study of DMs from a cross-linguistic point of view will cast light on SL typology and will show whether the same issues raised in the comparison of DMs in SpLs such as the lack of one-to-one correspondence for some functions also exist in a language of a different modality. All in all, results will let us know whether DMs have shared properties in the two modalities (spoken and signed).

The endeavour of this research is to take a first step in order to fill some of the gaps in previous studies. On the one hand, my data contains different genres and different signers (from different genders and from different age groups), so the variation that may exist because of these two features (Metzger and Bahan, 2001) will be represented in the results. On the other, I will be using an annotation protocol (Crible, 2014) that will enable my research to be reproduced to a larger sample of SL data or to SpL data in order to carry out cross-linguistic and cross-modal studies. Previous studies on DMs in SLs often follow existing studies on the same issue produced by scholars that work on the surrounding SpLs, which may bias the results somehow. Although Crible's protocol was originally designed for English and French, it provides a more flexible and theory-neutral framework as "it has also been applied to other spoken languages (Kinshasa Lingalá by Nzoimbengene (2016); Slovene by Dobrovoljc (2016)) as well as writing (Crible and Zufferey, 2015) [and] gestures (Bolly, 2015), by both expert and naïve coders (Crible and Degand, 2017)" (Crible, 2017, p.93).

In addition to its theoretical contributions, this dissertation also has practical implications in a variety of fields that have been reported in previous SL studies on DMs (Roy, 1989; McKee, 1992; Metzger and Bahan, 2001; Villameriel, 2008): (i) it will provide teachers with a first description of three DMs that they will be able to incorporate in their lessons, (ii) the application of this knowledge in the classroom will improve the language skills of deaf children (and second language deaf or hearing learners), (iii) interpreters will have new strategies that will help to make their productions more coherent and cohesive, (iv) this new information about the discourse functions of the three DMs will be available to be incorporated in dictionaries, such as the online LSFB dictionary (Sonnemans, 2016), that mostly contain semantic descriptions but still lack pragmatic descriptions (Hoza, 2011).

Chapter 3

Methodology

It remains firmly the job of the human analyst, rather than that of any software, to interpret the evidence that corpus linguistic techniques lay before them, dovetail the findings with insights gained through other means, and reactivate whatever contextual information the work with large data volumes may have pushed into the background.

Gerlinde Mautner (2009)

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General objective of this chapter

This chapter aims to give an account of the methodology that will be followed throughout this dissertation. First, the emerging field of sign language corpus linguistics is presented as well as the two corpora that contain data on the two sign languages of study, namely French Belgian Sign Language and Catalan Sign Language. Second, the data that will be used for the study of discourse markers is described as is how these data will be exploited in the different chapters. Third, the annotation template is laid out and the different tiers it contains are explained. Finally, the annotation procedure that will be followed is detailed.

3.1 Sign language corpora

The main aim of this thesis is to contribute to the knowledge on how discourse is built in sign languages (SLs) through the study of three potential discourse marker (DM) candidates, namely buoys, the PALM-UP particle and the sign SAME in French Belgian SL (LSFB) and Catalan SL (LSC). These three types will be investigated following a corpus-driven approach for different reasons: (i) there is one corpus available for each SL, (ii) the data are already partly annotated, (iii) the data were selected for reasons independent of the goals of this study, and (iv) the productions are close to natural language. In this chapter, the peculiarities of sign language corpora, and particularly the LSFB and LSC corpora, as well as the annotation template and the annotation procedure are presented.

Corpus linguistics is defined as "the study of language based on examples of 'real life' language use" (McEnery and Wilson, 2001, p.1). The advent of corpus linguistics changed the old conception of what a corpus was, i.e. a body of text, into the present definition of "a large collection of authentic texts that have been gathered in electronic form according to a specific set of criteria" (Bowker and Pearson, 2002, p.9). A modern corpus may contain different types of data (written, oral or even multimodal), it is processed using a computer in order to allow the exploitation of data by corpus tools, it is large enough for the purposes of a specific study, and it is a representative sample of a language.

SL corpora are considered a sub-type of 'spoken' language corpora not only containing annotations, but also metadata on the participants as well as on the conditions in which data were collected (Johnston, 2009, 2010). The collection of the first SL corpora started in the early 2000s thanks to digital video technologies. Before this milestone in the study of SL linguistics, researchers recorded data on videotapes that were later transcribed on paper (early in the 1980s) and on word-processing and spreadsheet softwares (from the 1990s onwards). Nowadays, current tools allow the recording and storage of vast amounts of data, their annotation in a machine-readable format and the automatic search through the database (Meurant and Sinte, 2013).

The emergence of large-scale SL corpora has made it possible to develop discourse studies that offer a wider perspective on how the language is structured in different genres. The first studies of SLs were mostly devoted to micro-textual aspects of the language structure (such as morphology and syntax) and were limited to one or few signers. The data were narrations produced by one or few informants in front of a camera from a paper support or spontaneous dialogues between two signers. Large-scale corpora contain many genres and signers, so these datasets are the closest picture possible to real language and imply a new (practical) perspective on the study of SLs.

At present, corpora exist for several SLs although the degree of exploitation of such corpora is very different as some of them were collected more than 10 years ago, whereas others are very recent. Even the SL corpora that were recorded at the

beginning of the 2000s are still being annotated because it is an extremely time-consuming task (1:250 is the estimated ratio for basic annotation, i.e. 1 hour of video data requires 250 hours of work). Therefore, the amount of data that is available to linguistic studies is limited. For some SL, their corpus is under construction or even in a pilot phase, which means that a very small sample of signers has been taken in order to start working and testing elicitation protocols. The goal of SL corpus projects is to collect reference corpora, i.e. a representative sample of a particular SL that "can therefore be used to make general observations about a particular language" (Bowker and Pearson, 2002, p.11).

The first large-scale SL corpus was collected in 1995 to document sociolinguistic variations in American SL (Lucas et al., 2001). Many others have followed: the Auslan (Australian SL) Corpus,[1], the NGT (Sign Language of the Netherlands) Corpus,[2] the BSL (British SL) Corpus,[3] the DGS (German SL) Corpus,[4] the LSF (French SL) Corpus, the ISL (Irish SL) Corpus, the STS (Swedish SL) Corpus,[5] the LIS (Italian SL) Corpus, the SZJ (Slovene SL) Corpus,[6] the VGT (Flemish SL) Corpus,[7] the LSFB Corpus,[8] the PJM (Polish SL) Corpus,[9] the LSC Corpus,[10] the JSL (Japanese SL) Corpus,[11] the DTS (Danish SL) Corpus, the FinSL (Finish SL) Corpus,[12], the LSE (Spanish SL) Corpus[13] and the NTS (Norwegian SL) pilot corpus.

These projects have many common points, but also their own particularities. In general, signers are invited to the studio (or wherever the recordings take place) in pairs who know each other in advance, so that their exchanges are as natural as possible. They sit one facing one another and there is at least one camera per informant that takes a shot from the waist to the head. The conversations are guided by a deaf moderator who has a list of topics for the informants to discuss. Sometimes signers are given images or videos related to the questions that help elicit different kinds of productions. The list of topics varies from one corpus to the other, although there are some tasks such as narrating a childhood memory or telling the story *Frog, where are you?* (Mayer, 1969) that are present in most projects in order to allow cross-linguistic comparisons.

[1] http://www.auslan.org.au/about/corpus/
[2] http://www.ru.nl/corpusngtuk/
[3] http://www.bslcorpusproject.org/
[4] http://www.sign-lang.uni-hamburg.de/dgs-korpus/index.php/welcome.html
[5] http://www.ling.su.se/english/research/research-projects/sign-language/swedish-sign-language-corpus-project-1.59270
[6] hcp://www.lojze.si/signor/en
[7] http://www.corpusvgt.ugent.be/
[8] http://www.corpus-lsfb.be/
[9] http://www.plm.uw.edu.pl/en/node/241
[10] http://blogs.iec.cat/lsc/
[11] http://research.nii.ac.jp/jsl-corpus/en/
[12] https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject
[13] http://cnlse.es/es/corpus-de-la-lengua-de-signos-espanola

The video data resulting from the recording sessions need to be annotated so that they can be queried by a computer. At present, iLex[14] and ELAN[15] are the two pieces of software that are used for this purpose. Despite the advantages of iLex in comparison to ELAN (i.e. the lexical database and the metadata files can be linked to the annotations), ELAN is the only one that is free and open source, and it is the most frequently used software for the annotation of SL corpora.[16] ELAN was developed at the Max Planck Institute for Psycholinguistics (Nijmegen, The Netherlands), where it is continuously updated with improvements and new functionalities. It is used with both signed and spoken language (SpL) data as it allows the researcher to create, edit, visualise and search annotations for video and audio data. The tiers on which the annotations are made are customisable by the annotator depending on his/her needs, and they can always be displayed or hidden at any time of the annotation process.

Most SL corpora have created their own annotation conventions or have adapted them from other projects that have made their guidelines available such as the ECHO project (Crasborn et al., 2007), the BSL Corpus (Cormier and Fenlon, 2014), the Auslan Corpus (Johnston, 2015) or the STS Corpus (Mesch and Wallin, 2015). The first attempt to standardise annotation conventions for manual components resulted from the *Digging into Signs* project,[17] whose goal was to create "a universal standard for some aspects of glosses, while offering alternatives for others" (Cormier et al., 2016, p.35). Despite the advantages of having common annotation standards (particularly for cross-linguistic research), changing existing annotations in the different corpora to conform with changed annotations standards remains a challenge because of the amount of work it represents (ibid., p.38).

The ELAN files linked to a video from a SL corpus contain two types of annotations: ID-glosses and translations in the surrounding SpL. An ID-gloss is a word (usually in the surrounding SpL) that is consistently used to label a sign within the corpus, regardless of its meaning in the context (Johnston, 2010). The availability of these data (i.e. video files and annotations) vary from one project to another, although the general tendency is to make them available for the public[18] interested in them. This is the case for the LSFB and the LSC corpora, which are described below as they are the main data sources for this dissertation.

3.1.1 LSFB Corpus

The LSFB Corpus (Meurant, 2015) is the open-access referential corpus for French Belgian Sign Language made up of 150 hours of video data.[19] It is the first represen-

[14] `http://www.sign-lang.uni-hamburg.de/ilex/`

[15] `https://tla.mpi.nl/tools/tla-tools/elan/`

[16] Only the DGS, the PJM and the SZJ corpora use iLex. The others use ELAN.

[17] `http://www.ru.nl/sign-lang/projects/digging-signs/`

[18] Since this public is so varied (it includes the general public, professionals such as teachers and researchers), different profiles are created to access the data. For instance, metadata files (which contain sensitive data) are only available to researchers.

[19] The LSFB Corpus is the result of an Incentive Grant for Scientific Research (n° F.4505.12) entitled *Creation of a referential corpus for the study of French Belgian Sign Language (LSFB).*

tative sociolinguistic picture of LSFB that reflects the current use of this language. Following the tradition of other SL corpora, it contains dialogues of 100 signers who came in pairs to the studio based at the University of Namur. Their conversations were guided by a deaf moderator in order to elicit a wide range of genres, namely argumentations, narrations, descriptions, explanations and metalinguistic productions (there is a total of 19 different tasks except for older signers for whom the number of tasks is reduced).

The informants represent the variety that can be found in the Deaf Community in Wallonia and Brussels with regard to the age of exposure to LSFB, region, age and gender.[20] Three linguistic profiles can be found in the LSFB Corpus: native signers, i.e. children of deaf parents who were exposed to LSFB from birth (30%); near-native signers, i.e. they were exposed to LSFB in their first years of school (26%); and late signers, i.e. they were exposed to LSFB when they were 7 years old or older (49%). This sample reflects the reality of the majority of deaf communities in which 95% of children have hearing parents. In addition, the differences in gender and age were also taken into account. There is a balance of 43% men and 57% women, and four different age groups: 18-25 (17%), 26-45 (49%), 46-65 (18%) and 66 and above (16%).

The video files were annotated by deaf annotators with the ELAN software following the principles of annotation for the Auslan Corpus (Johnston, 2015) with some adaptations (see the LSFB Corpus website for further details). At present, only the manual activity is annotated for 12 hours of data (104,000 tokens) by way of ID-glosses (Meurant et al., 2016c). The basic annotation template is the same for all files (see Figure 3.1): two independent tiers are created, one for the right hand (S### - MD) and another for the left hand (S### - MG) of each signer.[21] In addition, there is one tier called NEGATION in which negation is annotated when it is non-manual[22] and another one called COMMENTAIRES in which annotators can insert comments if necessary. For some files, there is also a tier for each signer in which the translation into French is provided (S### - TRADUCTION). So far 2.5 hours of data have been translated, which makes a total of 2,500 sentences.

All ID-glosses of the LSFB Corpus are included in a lexical database (Lex-LSFB) that is also openly available. It contains the list of ID-glosses in alphabetical order together with their possible meanings in French and a video illustrating the sign.

It was awarded by the National Fund for Scientific Research (F.R.S. – FNRS) to Dr. Laurence Meurant for the period 2012 – 2015.

[20] The hierarchical order of these criteria was at the basis of the pairing of informants for each session.

[21] S### stands for the signer's code. MD and MG are the abbreviations of the French words 'main droite' (right hand) and 'main gauche' (left hand), respectively.

[22] In the LSFB Corpus, non-manual marking is not yet annotated. However, the gloss NEGATION is annotated below the sign or signs that are negated via non-manual marking in the tier called NEGATION in order to leave a trace.

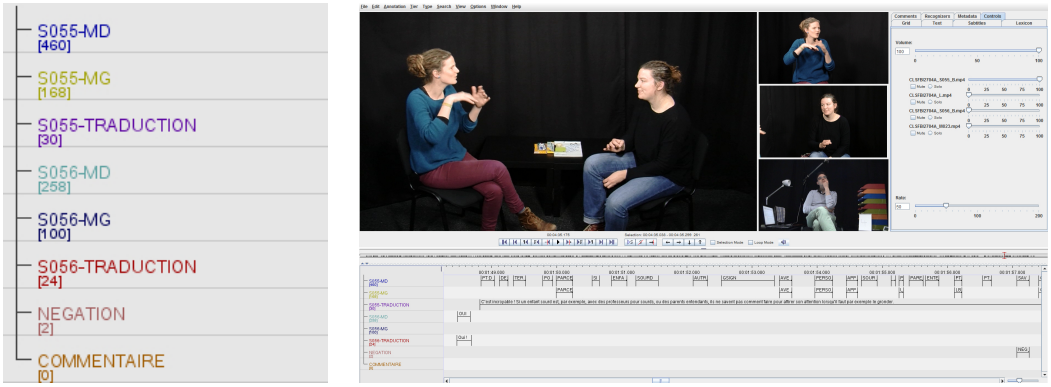

Figure 3.1: Screenshot of an ELAN file from the LSFB Corpus

3.1.2 LSC Corpus

The LSC Corpus (Institut d'Estudis Catalans, forth.) is the referential corpus for Catalan Sign Language that will be published as open-access.[23] It aims to collect 63 hours of video data that reflect the current use of this language in Catalonia. For this purpose, 42 informants from six different places in Catalonia will be recorded at the deaf club they usually attend. All of them are deaf native or near-native signers, which means that they were born into deaf families and/or that they attended a boarding school for the deaf. They sit in pairs and their conversations are guided by a deaf moderator in order to elicit a wide range of genres, namely argumentations, narrations, descriptions and explanations (there is a total of eight different tasks). The pairs always include a man and a woman from the same province and of the same age group, namely 18-29, 30-49 and 50-80. So far, there are 28 informants recorded that represent the west and the coastal varieties of LSC.

There is a total of 37 hours of annotated data. The software used for the annotation (performed by deaf annotators) is ELAN and an annotation guide was created. All ELAN files contain the annotations of the manual activity. The common template consists of two independent tiers, one for the active hand (*Glossa mà activa*) and one for the passive hand (*Glossa mà passiva*) of each signer; and one tier called *Comentaris* for the annotators' comments (see Figure 3.2). In addition, some files also contain annotations of nonmanuals, the use of space and role shift structures as well as the translation into written Catalan (so far 10 hours of data have been translated).

At the same time as the LSC Corpus is being collected, a lexical database is being created with the objective of having a query tool that enables the search of LSC lexical units (Barberà et al., 2016; Quer, 2017). This database is not only fed by ID-glosses from the LSC Corpus, but also by the glosses appearing in different publications in this language (Martín and Alvarado (1996); Perelló and Frigola (1998); Ferrerons (2011) and materials from DOMAD)[24] in order to set the basis for a nor-

[23] The LSC Corpus is an initiative of the Institut d'Estudis Catalans. The project is directed by Dr. Josep Quer and has been funded by the Obra Social "la Caixa".

[24] DOMAD is the Department of Documentation and Creation of Teaching Materials of the Catalan Association of Deaf People.

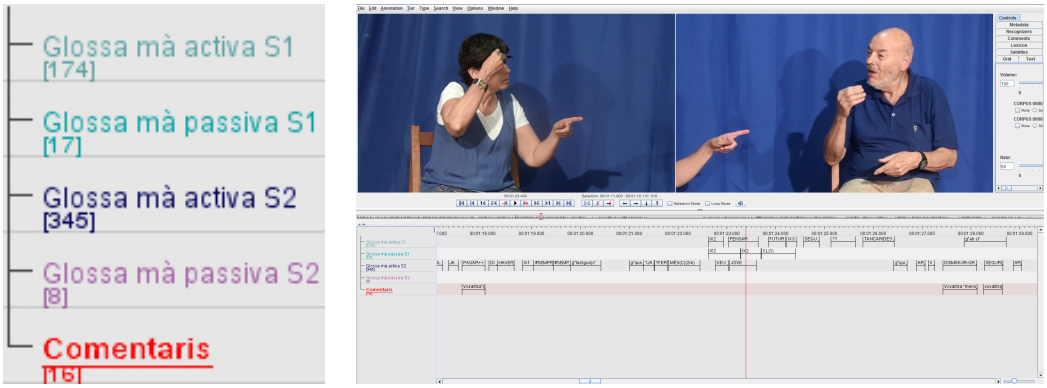

Figure 3.2: Screenshot of an ELAN file from the LSC Corpus

mative LSC lexicon and to get a source for the elaboration of lexical materials. This database will not only allow searches by gloss, but it will also allow searches by SL parameter (namely handshape, movement, place of articulation and orientation). For each sign, the database interface contains a phonological description, the gloss (in Catalan, Spanish and English), the definition with examples, syntactic information (category, transitivity, etc.), the variants (geographic, diaphasic, etc.), information about the morphology of the sign (number, aspect, etc.), synonyms and antonyms, and the origin of the sign.

3.2 A corpus for the study of discourse markers

The data that will be used for the study of the three potential DM candidates (buoys, the PALM-UP particle and the sign SAME) come from three different sources: (i) a set of LSFB videos that were produced by the same person with different purposes, (ii) the LSFB Corpus and (iii) the LSC Corpus. The videos from the first source were collected to start the present research as the LSFB Corpus was not available at that point. From these three sources, different samples were selected and they constituted three different sub-corpora: C1 (only the set of videos produced by the same person with different purposes), C2 (a sample from the LSFB Corpus) and C3 (a sample from both the LSFB and LSC corpora). All in all, their total duration is 3 hours and 35 minutes and the selected participants are deaf native or near-native signers (i.e. individuals who were born into deaf families and/or who attended a boarding school for the deaf).

C1 is a 53-minute corpus of one LSFB signer (a man in his 30s) made up of two argumentative (A1 and A2), two expository (E1 and E2), two metalinguistic (M1 and M2) and two narrative (N1 and N2) productions (see Table 3.1). All the productions are monologues (except for M2 which is an interview) balanced in terms of time with different degrees of preparedness (Crible et al., 2014); i.e. prepared (A1, E2 and M1), semi-prepared (A2, E1, N1 and N2) and spontaneous (M2). Two reasons motivated the choice of this signer alone: the first is that the focus is put on the differences

Genre	Abbrev.	Title	Number of speakers	Degree of preparedness	Public	Duration
Argumentation 13'14"	A1	Interpreters vs. communication support workers	Monologue	Prepared (with a parallel written French version)	Deaf Community	9'33"
	A2	Request to the management board of the French Belgian Federation of Deaf (FFSB)	Monologue	Semi-prepared	Deaf Community	3'41"
Explanation 14'16"	E1	The difference between French Belgian Sign Language (LSFB), Pidgin Signed French (PSF) and Sign Supported French (SFE)	Monologue	Semi-prepared	Deaf Community	8'45"
	E2	Informed consent	Monologue	Prepared (with a pre-existing written French version)	Deaf and CODA participating in the LSFB Corpus as informants	5'31"
Metalinguistic 13'02"	M1	LSFB parameters	Monologue	Prepared	Deaf and hearing LSFB learners	2'39"
	M2	Neologisms	Dialogue	Spontaneous	Deaf interviewer	10'23"
Narration 12'47"	N1	The Witch	Monologue	Semi-prepared	Deaf Community	6'42"
	N2	Illusion	Monologue	Semi-prepared	LSFB teachers and researchers	6'05"

Table 3.1: Description of C1

between genres and not on sociolinguistic variables or individual variation that could influence the analysis, and the second is that this signer is considered a good model of the language by the Deaf Community in Wallonia and Brussels (the two regions in Belgium where LSFB is used).

Two hearing non-native LSFB researchers annotated the manual activity in C1 with ID-glosses around the points in which there was a buoy. This annotation was inspired by the guidelines of the Auslan Corpus (Johnston, 2015) and no translation into French was provided. The analysis of C1 leads us to the first stage of more exploratory work focused on buoys (see chapter 5). It consists of creating an overview of buoys in LSFB, i.e. checking whether the different types described in the literature exist in LSFB, and disentangling those buoys with a discourse-marking function from those with other functions.

C2 is 1 hour and 28 minutes long and has been extracted from the large-scale LSFB Corpus (Meurant, 2015). The sample is made up of six signers from different age groups (18-29, 30-49 and 50-85)[25] in a dialogical situation where a deaf moderator asks a question and they have to talk about it. The conversations selected cover the same discourse genres that C1 contains, i.e. argumentative, expository, narrative and metalinguistic productions (see Table 3.2). These data are mostly spontaneous, except for the expository conversation in which the signers have some time to think about it or even take notes.

The data in C2 will be firstly used to work on a methodology for the segmentation of signed discourse (chapter 4). Secondly, they will complement the data of C1 in order to disentangle tokens of buoys, PALM-UP and SAME with a discourse-marking function from those with other functions (chapter 5). Thirdly, these data will be used to study the discourse-marking functions of the selected DM candidates by taking into account their distribution across genres and across signers, examining their functions, establishing their position in discourse and analysing the expected existence of a functional paradigm (chapter 6). The need to use conversational data (C2) instead of monologues (C1) is underlined in the scientific literature on DMs as they are considered characteristic of the spoken register in the sense of an interaction between people (Brinton, 1996; Schiffrin, 1987).

[25] Although the signers in the LSFB Corpus are divided into four different age groups (18-25, 26-45, 46-65 and 66 and over), I have adopted a division to the LSC Corpus in terms of age groups. Doing so facilitates comparison between languages. The amount of available data in both SLs is quite different (100 signers in LSFB vs. 42 signers in LSC). At the moment of selecting the samples for the present research, the LSC data that had been collected only included six signers. LSFB data at that time included more than 60 informants with different profiles, so six were chosen on the basis of the six LSC signers in order to allow cross-linguistic comparisons.

Genre	Title	Number of speakers	Degree of preparedness	Duration	Age group
Argumentation 20'52"	Deaf culture vs. hearing culture	Dialogue	Spontaneous	4'53"	18-29
				7'12"	30-49
				8'47"	50-85
Explanation 23'06"	Hobby, job, passion	Dialogue	Semi-prepared	9'29"	18-29
				6'15"	30-49
				7'22"	50-85
Metalinguistic 22'22"	Variations in LSFB	Dialogue	Spontaneous	8'10"	18-29
				6'02"	30-49
				8'10"	50-85
Narration 22'00"	Past memory	Dialogue	Spontaneous	4'46"	18-29
				9'05"	30-49
				8'09"	50-85

Table 3.2: Description of C2

C3 is the result of two samples selected from the referential corpora of the two SLs under study in this dissertation. It lasts for 1 hour and 56 minutes. The LSFB Corpus and the LSC Corpus are (for some of the tasks) comparable corpora because they contain texts produced with the same communicative functions, i.e. they have the same subject, the same type of text, etc. (Bowker and Pearson, 2002). The choice of signers as well as the setting are also the same in both corpora. There is a total of twelve signers (six for each SL), whose profiles are balanced in terms of age (two signers belonging to each of the following age groups: 18-29, 30-49 and 50-85) and gender (three men and three women per SL). The signers sit in pairs (from the same age group) facing each other with a deaf moderator who gives them different topics that they have to discuss.[26]

C3 comprises argumentations, explanations and narrations (see Table 3.3). The underlying idea when selecting this sub-corpus was to find comparable tasks in the LSC Corpus for those chosen from the LSFB Corpus in C2. The interest in doing so was so that as many genres as possible were represented in order to see whether the three potential DM candidates are similarly distributed across genres in two different SLs. Since the LSC and LSFB corpora are different in size, only two tasks could be taken from C2: the argumentation about deaf and hearing culture and the narration of a past memory. In the LSC Corpus, there is not a comparable task to the explanation of hobbies, jobs or passions; and there is no metalinguistic task at all. Therefore, these two tasks were not included in C3. However, there are two tasks that were not analysed in C2 but could be found in both SL corpora: the explanation of the name sign and the narration of a story. These two tasks were included in C3 in order to be able to compare the largest possible amount of data seeking a balance in terms of genre; that's why there is one task for each genre except for the narratives. For this genre, two tasks were selected as the productions will presumably be quite different and will give rise to different types of constructions (e.g. one would expect fewer interpersonal markers in the narration of *Frog, where are you?* (Mayer, 1969) than in the narration of a past memory, specially if knowledge is shared about the past memory that one signer tells).

From the three comparable genres in C3, the expository and one of the narrative tasks share the same title ("Explain your name sign" and "Past memory"), which means that the signers from both SLs received the same instruction from their respective moderators. Conversely, the argumentative and the other narrative task have different titles ("Deaf culture vs. hearing culture" vs. "What is the future of deaf clubs?" and "Tell a story from a video or paper material, and your addressee finishes it" vs. *Frog, where are you?*), which means that the signers were given slightly different instructions by their respective moderators, but the goal was to elicit the same kind of production.

[26]The narration of *Frog, where are you?* (Mayer, 1969) in LSC is an exception because signers face the moderator (and not their partner in the recording session) when they tell the story. This choice was made in order to avoid the signing style of one informant influencing the other when telling the story (Barberà et al., 2015).

Language	Genre	Title	Number of speakers	Degree of preparedness	Duration	Age group
LSFB	Argumentation 20'52"	Deaf culture vs. hearing culture	Dialogue	Spontaneous	4'53"	18-29
					7'12"	30-49
					8'47"	50-85
LSC	Argumentation 15'28"	What is the future of deaf clubs?	Dialogue	Spontaneous	4'50"	18-29
					5'32"	30-49
					5'06"	50-85
LSFB	Explanation 3'57"	Explain your name sign	Dialogue	Spontaneous	1'50"	18-29
					1'32"	30-49
					00'35"	50-85
LSC	Explanation 2'17"	Explain your name sign	Dialogue	Spontaneous	00'24"	18-29
					00'56"	30-49
					00'57"	50-85
LSFB	Narration 22'00"	Past memory	Dialogue	Spontaneous	4'46"	18-29
					9'05"	30-49
					8'09"	50-85
LSC	Narration 21'57"	Past memory	Dialogue	Spontaneous	3'52"	18-29
					4'23"	30-49
					13'42"	50-85
LSFB	Narration 15'15"	Tell a story from a video or paper material, and your addressee finishes it	Dialogue	Semi-prepared	5'37"	18-29
					7'59"	30-49
					1'39"	50-85
LSC	Narration 14'34"	*Frog, where are you?*	Monologue in front of the moderator	Semi-prepared	4'10"	18-29
					5'21"	30-49
					5'03"	50-85

Table 3.3: Description of C3

The data from C3 will allow the first cross-linguistic study on DMs between LSFB and LSC by comparing the distribution of the three selected items across genres and across signers, their functions, their position in discourse and their expected functional paradigm. By studying these three types that share the same form in the two SLs, chapter 7 proposes a different perspective that will provide evidence for or against the assumptions about the similarities between SLs.

3.3 Annotation template

In the previous section (3.2), the three samples that will be analysed in LSFB and LSC for this dissertation were presented. As explained in 3.1.1 and 3.1.2, the files from C2 and C3 were firstly annotated by deaf annotators that performed a basic annotation in which only the manual activity was transcribed. In addition to the tiers that all files contain in both corpora (i.e. one for each hand of the signer and one for the comments), 28 tiers were added to allow the study of the function and the position of the three selected DM candidates. The creation of tiers was based on an annotation protocol (Crible, 2014) for the identification and description of DMs in spoken data, and inspired by different works on PALM-UP (particularly McKee and Wallingford, 2011; van Loon, 2012), on nonmanuals (Meurant, 2008c; Notarrigo and Meurant, 2014) and on the segmentation of spoken discourse (Degand and Simon, 2005, 2009a,b).

Before this, initial exploratory work was carried out on buoys using C1 because there were no corpus data available at that time. This sample was only annotated with ID-glosses by two hearing non-native researchers at the points where there was a buoy. Only four tiers were added to the two tiers for the left and right hand: three to delineate the scope of buoys, understood as the chunk of discourse that is covered by a buoy (*Scope 1*, *Scope 2* and *Scope 3*) and one to delimit syntactic units (*SyU*). Hence, this is a simplified version of the annotation template created for C2 and C3 (displayed in Figure 3.3 and detailed below) that suffices to provide an overview of buoys in LSFB and to disentangle buoys with a discourse-marking function from those with other functions.

The first six tiers in Figure 3.3 (*DM candidate*, *Type DM*, *Domain 1*, *Function 1*, *Domain 2*, *Function 2*) were taken from the annotation protocol mentioned above (Crible, 2014). The *DM candidate* tier is the only one that has not been assigned a controlled vocabulary with the values proposed by Crible (2014). Note that both the domain and the function are doubled in order to avoid bias in case the same DM has two possible functions.

The **DM candidate** tier contains a gloss corresponding to the type of buoy, the PALM-UP particle or the sign SAME. This is an independent tier because the DM candidate can be articulated with one or two hands, so a dependency cannot be established with either the left or the right hand. The annotations here summarise in one gloss the activity of the two hands when articulating the DM candidate in order to facilitate the creation of dependent tiers and to identify the tokens under

Figure 3.3: ELAN annotation template

study. This tier purely describes the form, so no difference will be made between the glosses referring to discourse-marking and non-discourse-marking tokens.

Since different handshapes can be used to articulate buoys and palm-ups, different values are possible. For buoys, the values are inspired by Johnston (2015) for a matter of accuracy and coherence in describing forms. 24 values describe all the types of buoys,[27] from which only 18 concern list buoys.[28] For palm-ups, six values were created to depict one-handed and two-handed forms. The sign SAME, in turn, may present slight phonological variations in its articulation when hands come into contact because of surrounding signs or the speed of signing (see chapter 5), but the handshape (of at least one hand) and the movement are the same. Hence, there is

[27] In line with Johnston (2015), the gloss of all buoys except the list are followed by a colon and the gloss of the sign they refer to. For instance, if a pointer buoy points towards the place where a table has been placed in reality or in discourse, the gloss to be used will be PTBUOY:TABLE.

[28] Following Johnston (2015), the annotation of list buoys consists of the gloss of the list buoy, followed by a number in parenthesis that corresponds to the handshape, a colon and an ordinal or cardinal number in letters that refers to whether the list buoy is sequentially built or static (see chapter 5). Hence, if the list buoy is sequentially built (the digits are extended in some sort of chronological order or as they come to the signer's mind), the handshape is 3 (index, middle and annular fingers extended) and it is used for the third item in a list, the gloss to be used is LBUOY(3):THIRD. If the list buoy is static (the digits are extended from the beginning), the handshape is 8 (thumb, index and middle fingers extended) and it is also used for the third item in a list, the gloss to be used is LBUOY(8):THREE.

only one entry value for this sign. Table 3.4 illustrates the possible values of the controlled vocabulary that was created for this tier. For ease of reading, the values of each type of DM candidate are separated by double lines in the table.

Entry value	**Entry description**
LBUOY(1):FIRST	Sequentially built list buoy, 1 handshape, 1st item
LBUOY(1):ONE	Static list buoy, 1 handshape, 1st item
LBUOY(2):SECOND	Sequentially built list buoy, 2 handshape, 2nd item
LBUOY(2):TWO	Static list buoy, 2 handshape, 2nd item
LBUOY(3):THIRD	Sequentially built list buoy, 3 handshape, 3rd item
LBUOY(3):THREE	Static list buoy, 3 handshape, 3rd item
LBUOY(4):FOURTH	Sequentially built list buoy, 4 handshape, 4th item
LBUOY(4):FOUR	Static list buoy, 4 handshape, 4th item
LBUOY(5):FIFTH	Sequentially built list buoy, 5 handshape, 5th item
LBUOY(5):FIVE	Static list buoy, 5 handshape, 5th item
LBUOY(6):FIRST	Sequentially built list buoy, 6 handshape, 1st item
LBUOY(6):ONE	Static list buoy, 6 handshape, 1st item
LBUOY(7):SECOND	Sequentially built list buoy, 7 handshape, 2nd item
LBUOY(7):TWO	Static list buoy, 7 handshape, 2nd item
LBUOY(8):THIRD	Sequentially built list buoy, 8 handshape, 3rd item
LBUOY(8):THREE	Static list buoy, 8 handshape, 3rd item
LBUOY(9):FOURTH	Sequentially built list buoy, 9 handshape, 4th item
LBUOY(9):FOUR	Static list buoy, 9 handshape, 4th item
TBUOY	Theme buoy
FBUOY	Fragment buoy
PTBUOY	Pointer buoy
DPBUOY	Depicting buoy
PBUOY	Point buoy
DBUOY	Delimit buoy
PU	Two-handed PALM-UP
PU-R	One-handed PALM-UP in the right hand
PU-L	One-handed PALM-UP in the left hand
PU-RS	One-handed PALM-UP spreading in the right hand
PU-LS	One-handed PALM-UP spreading in the left hand
PU-A	Two-handed PALM-UP with the hands starting and ending the gesture at different moments
SS	Sign SAME

Table 3.4: Controlled vocabulary for the *DM candidate* tier

The **Type of DM** tier is devoted to the "situation of the marker on the scale of relationality" (Crible, 2014, p.8), i.e. whether the DM is relational (puts together two segments of discourse), non-relational (it used as a punctuation marker) or both if it expresses a relational and a non-relational function at the same time. A controlled

vocabulary for these three values was created and assigned to this tier (see Table 3.5). This tier is dependent on the *DM candidate* tier.

Entry value	**Entry description**
REL	Relational discourse marker
NREL	Non-relational discourse marker
B	Both relational and non-relational discourse marker

Table 3.5: Controlled vocabulary for the *Type of DM* tier

The **Domain** tier makes explicit the "component of language structure affected by the marker, source of coherence" (Crible, 2014, p.8). That is, a taxonomy of four more general functions distinct enough that group more specific functions. The domains proposed by this author are as follows: ideational, which signals a relation between real world events; rhetorical, which expresses the speaker's meta-comment on his/her phrasing; sequential, which structures discourse segments; and interpersonal, which manages the exchange between speakers. They are included in a controlled vocabulary created for this tier which is illustrated in Table 3.6. This tier is dependent on the *DM candidate* tier.

Entry value	**Entry description**
IDE	Ideational domain
RHE	Rhetorical domain
SEQ	Sequential domain
INT	Interpersonal domain

Table 3.6: Controlled vocabulary for the *Domain* tier

The **Function** tier "specifies the discourse relation or otherwise pragmatic function of the marker" (Crible, 2014, p.8), i.e. a taxonomy of 30 more specific functions that belong to the previously mentioned more general domains such as cause, consequence, etc. Therefore, the *Funtion* tier is dependent on the *Domain* tier. The controlled vocabulary for the possible functions of this tier is complemented with the functions of the multimodal typology for the annotation of DMs by Bolly and Crible (2015), which is inspired by Crible (2014) but focuses on the speech-gesture interface (see Table 3.7 containing the list of entry values and their description). For ease of reading, double lines separate the functions of each domain (in the same order as in the previous table).

In order to account for the specificities of SLs and of this research, some additional tiers were created. Despite the common points between spoken and signed data (immediacy, face-to-face communication, etc.), there are some differences that distinguish audio-phonatory languages from visual-gestural ones such as the use of two articulators (i.e. the hands) together with non-manual markers. For the purposes of this dissertation, describing the non-manual activity is a must as previous studies

(particularly, McKee and Wallingford, 2011; van Loon, 2012) claim that the function of PALM-UP is partly conveyed by non-manual marking. One could hypothesise that the same thing may happen at least with a polysemeous sign such as SAME. The template includes six tiers that describe the non-manual activity going on at the same time that the DM is produced. A controlled vocabulary was created for each tier (except for the *Mouthings* tier) on the basis of different authors' proposals.

Entry value	**Entry description**
CAU	Cause
CONS	Consequence
TEMP	Temporal
CONT	Contrast
CONC	Concession
COND	Condition
EXC	Exception
ALT	Alternative
MOTIV	Motivation
CCL	Conclusion
OPP	Opposition
REL	Relevance
REFOR	Reformulation
HEDGE	Approximation
COMM	Comment
SPE	Specification
EMP	Emphasis
OPEN	Opening boundary
CLOSE	Closing boundary
RES	Resuming
TS	Topic-shifting
QUO	Quoting
ENU	Enumeration
ADD	Addition
PUNCT	Punctuation
PLAN	Planning
MONI	Monitoring
FACE	Face-saving
DISAGR	Disagreeing
AGR	Agreeing
ELL	Elliptical

Table 3.7: Controlled vocabulary for the *Function* tier

The **Body movement** tier contains the movements of the upper part of the body (from the waist to the shoulders). Possible values are inspired by the body movements reported during the articulation of palm-ups in McKee and Wallingford (2011)

and van Loon (2012) together with other possibilities found in my data. Table 3.8 contains the entry values and their description.[29]

Entry value	**Entry description**
ssh	Shoulder shrug
blb	Body lean backward
blf	Body lean forward
bls	Body lean to the (left or right) side

Table 3.8: Controlled vocabulary for the *Body movement* tier

The **Head movement** tier includes the movements of the head according to their direction. The possible values of the controlled vocabulary assigned to this tier (see Table 3.9) derive from the head movements reported during the articulation of palm-ups in van Loon (2012) and from the values proposed in Notarrigo and Meurant (2014) for the study of (dis)fluency in LSFB.

Entry value	**Entry description**
cd	Chin down
cu	Chin up
hb	Head lean backward
hf	Head lean forward
hn	Head nod
hs	Head shake
h-tilt	Head tilt
h-turn	Head turn

Table 3.9: Controlled vocabulary for the *Head movement* tier

The **Gaze** tier is used to annotate the direction of the gaze. The possible values of the controlled vocabulary (see Table 3.10) are adapted from Meurant's (2008c) study of the gaze in LSFB.

Entry value	**Entry description**
as-g	Gaze directed to the addressee
sp-g	Gazed directed to a position in space or within a role shift
fl-g	Floating gaze

Table 3.10: Controlled vocabulary for the *Gaze* tier

[29]By convention, nonmanuals are annotated in lower case letters in order to differentiate them from ID-glosses that use capital letters. The only exception to this rule is mouthings, which are also annotated in capital letters.

The **Eyebrows** tier reflects the position of the brows. The possible values in the controlled vocabulary (see Table 3.11) are taken from Notarrigo and Meurant (2014). Although other authors such as De Vos et al. (2009) found that there are more brow positions, the dichotomy established by Notarrigo and Meurant (2014) was retained because it is the result of an extensive annotation grid which was later refined during the annotation process of LSFB data (ibid., p.136).

Entry value	**Entry description**
ra	Raised eyebrows
fr	Frown eyebrows

Table 3.11: Controlled vocabulary for the *Eyebrows* tier

The **Mouth actions** tier contains the movements of the mouth (excluding mouthings). The possible values in the controlled vocabulary (see Table 3.12) are derived from two sources. The first is Notarrigo and Meurant (2014), who proposed a simplified version of the SL transcription conventions for the ECHO Project (Nonhebel et al., 2004); and the second is McKee and Wallingford (2011), who found a set of mouth actions typically co-occurring with palm-ups.

Entry value	**Entry description**
cl	Closed mouth
clm	Closed mouth with lip movement
cwa	Closed mouth with air breathed out
lcm	Lowered corners of the mouth
op	Open mouth
olm	Open mouth with lip movement
owa	Open mouth with air sucked in

Table 3.12: Controlled vocabulary for the *Mouth* tier

In the **Mouthings** tier, the mouthing of a word or words from the surrounding SpL is annotated. Any value (in capital letters and not in lower case as the other non-manuals) can be added depending on what the signer utters while producing the DM.

Despite the differences in terms of scope/alignment and timing of nonmanuals layering with manual activity (Herrmann, 2010; Herrmann and Steinbach, 2013), the previous six tiers are dependent on the *DM candidate* tier. Sometimes, nonmanuals may change their direction or their movement while the DM candidate is produced. Other authors such as van Loon (2012) use two tiers to report these changes, but I opted to write them in the same annotation in the order they are produced and separate them with a '+' for ease of analysis.

Position is also a feature of DMs, and one that is included in Crible's (2014) annotation protocol. She has three tiers to investigate the place in which a DM is

found: macro, micro and turn position. The macro and micro positions follow from the segmentation into utterances based on the Dependency Grammar framework by Tesnière (1959). Since a different methodology is used here for the segmentation of signed data (based on Degand and Simon (2005, 2009a,b), see chapter 4 for details), two different tiers are created: *Position clause* and *Position BDU* (Basic Discourse Unit, see definition below). Conversely, the tier for the turn (*Position turn*), which is based on Bolly et al. (2015), was retained with no changes. The three tiers are dependent on the *DM candidate* tier.

The **Position clause** tier contains the position of the DM in the clause, defined as a nucleus (usually a verb) with its dependants, in terms of Dependency Syntax for spoken French developed by Blanche-Benveniste et al. (1990). It is assigned a controlled vocabulary (see Table 3.13) based on Degand et al. (2014) with some adaptations.

Entry value	**Entry description**
LP	Left peripheral position
IP	Initial position
MP	Medial position
FP	Final position
RP	Right peripheral position
INT	Interrupted
IND	Independent

Table 3.13: Controlled vocabulary for the *Position clause* tier

The **Position BDU** tier reflects the position of the DM within the 'basic discourse unit', which is the result of the convergence points between syntactic units (clauses) and prosodic units. It is assigned a controlled vocabulary based on Degand et al. (2014) with some adaptations (see Table 3.14).

Entry value	**Entry description**
SyPr-LP	Syntactico-prosodic left periphery
Sy-LP	Syntactic left periphery
Pr-LP	Prosodic left periphery
IP	Initial position
MP	Medial position
FP	Final position
Pr-RP	Prosodic right periphery
Sy-RP	Syntactic right periphery
SyPr-RP	Syntactico-prosodic right periphery
INT	Interrupted
IND	Independent

Table 3.14: Controlled vocabulary for the *Position BDU* tier

The **Position turn** tier is devoted to the position of the DM within the turn. It is assigned a controlled vocabulary inspired by Crible (2014) that is illustrated in Table 3.15.

Entry value	Entry description
TI	Turn-initial position
TM	Turn-medial position
TF	Turn-final position
TT	Whole turn

Table 3.15: Controlled vocabulary for the *Position turn* tier

The three items under study – i.e. buoys, palm-ups and the sign SAME – are very different formally, so one can guess that the functions they convey are quite distinct as well. Although there are some studies that tackle the functions of buoys and palm-ups in other SLs (see chapter 5 for a summary), there is no taxonomy of the functions (including non-discourse-marking functions) of the three items either in LSFB or in LSC. For this reason, when working on the identification and description of the possible discourse-marking functions of the three candidates, one must take all tokens into account and decide whether they are DMs or not. If a token is not a DM, it needs to be assigned another function in order to justify this choice; that's why my annotation template contains one tier for each item in order to annotate non-discourse-marking functions.

Note that the term 'discourse-marking' strictly refers to the coherence relations (cause, contrast, addition, etc.) that an item can may explicit. Hence, the use of the term 'non-discourse-marking' does not imply that other discourse functions may be performed by the three items under study. Moreover, a DM candidate may have a discourse-marking function and a non-discourse-marking one at the same time (e.g. when a PALM-UP is at the end of a turn, it may have the discourse-marking function of closing a turn and the non-discourse-marking function of expressing modality). These tiers reflecting non-discourse-marking functions are dependent on the *DM candidate* tier.

In the **Role PALM-UP** tier, the non-discourse-marking functions of the PALM-UP particle are annotated. The possible values contained in the controlled vocabulary are mainly inspired by Engberg-Pedersen (2002); Zeshan (2006b); McKee and Wallingford (2011); van Loon (2012) and some were added if none of the functions for other SLs applied (see Table 3.16).

Entry value	Entry description
mark-ep	Mark epistemic stance
express-ep	Express epistemic stance
mark-ev	Mark evaluative stance
nlf	Non-lexical filler
ssf	Sign stretch (filler)
tfc	Present topic for consideration
dfi	Present discourse for inspection
rhe-q	Rhetorical question marker
wh-q	Wh-question marker
neg-m	Negative marker
interj	Interjection
frame for m	Frame for mouthings
parallel	Accompanying another sign
indeciph	Indecipherable

Table 3.16: Controlled vocabulary for the *Role PALM-UP* tier

The **Role SAME** tier contains the non-discourse-marking functions of the sign SAME. To the best of my knowledge, there are no existing studies on this sign, but there is a dictionary entry in the Auslan SignBank[30] that describes some morpho-syntactic functions. These functions are included in the controlled vocabulary created for this tier together with other values that were added as this research advanced (see Table 3.17).

Entry value	Entry description
noun	Noun
adj	Adjective
adv	Adverb
conj	Conjunction (not discourse-marking)
cop	Copulative verb
idiom	Idiom
indeciph	Indecipherable

Table 3.17: Controlled vocabulary for the *Role SAME* tier

The **Role buoys** tier is used to annotate the non-discourse-marking functions of any type of buoy (except list buoys). Possible values are copied from Kimmelman (2014) and are illustrated in Table 3.18. For ease of reading, they are separated by double lines in the table according to whether the function is at the phonetic, syntactic or discourse level.

By definition, buoys are "signs [produced] with the weak hand that are held in a stationary configuration as the strong hand continues producing signs" (Liddell, 2003,

[30] `http://www.auslan.org.au/dictionary`

Entry value	Entry description
ph-rep	Phonetic repetition
syn-subj	Syntactic function of subject
syn-obj	Syntactic function of object
syn-sv	Syntactic function of serial-verb construction
syn-NP head	Syntactic function of noun phrase head
syn-adv	Syntactic function of adverb
syn-wh word	Syntactic function of wh-word
syn-prep	Syntactic function of preposition
dis-anch ref	Discourse function of anchoring a referent
dis-noun topic	Discourse function of noun as topic
dis-verb topic	Discourse function of verb as sentence topic
dis-interj repair	Discourse function of interjection or repair
ico-simul	Iconic function of simultaneity
ico-back loc	Iconic function of background in locative
indeciph	Indecipherable

Table 3.18: Controlled vocabulary for the *Role buoys* tier

p.223). The difference in extension across discourse of the different types of buoys can be seen because the gloss reflects the extension of the sign. However, sometimes a buoy may drop and appear again later in discourse because the signer needed to use the two hands. In these cases, it is harder to visualise the chunk of discourse that this buoy organises and what linguistic material can be found within (i.e. one clause, several clauses, etc.). In order to map the scope of a buoy and analyse its role in discourse coherence and/or cohesion, three different tiers were created. The first two are devoted to list buoys because they are formally quite different from the other types of buoys. While the other types consist of a handshape that is held, a list buoy is made up of a combination of numeral signs held called digits. Digits follow each other and they build a list that is used to make associations with from one to five entities.[31]

The **Scope 1** tier reflects the extension of the whole list buoy (i.e. combination of all digits) across discourse. It does not contain a set of values, but only one value is possible (see Table 3.19) that may be followed by a number (if there are several list buoys in the same file). Although the annotations in this tier purely aim to mark the scope of the buoy, assigning a gloss to each annotation facilitates the visualisation of data in the Excel file when it comes to the analysis.

Entry value	Entry description
LB	Scope of the whole list buoy

Table 3.19: Controlled vocabulary for the *Scope 1* tier

[31] I refer the reader to chapter 5 for more details on the different types and properties of buoys.

The **Scope 2** tier contains the extension of each digit of the list buoy across discourse. The set of possible values are the numbers represented by each digit (see Table 3.20).

Entry value	Entry description
LB:FIRST	Scope of the first digit of the list
LB:SECOND	Scope of the second digit of the list
LB:THIRD	Scope of the third digit of the list
LB:FOURTH	Scope of the fourth digit of the list
LB:FIFTH	Scope of the fifth digit of the list

Table 3.20: Controlled vocabulary for the *Scope 2* tier

The **Scope 3** tier displays the extension of any buoy (except list buoys) across discourse when a sign is not directly held as a buoy, but it appears as such later (there are some signs in between the sign and the buoy), or when a buoy drops and it appears afterwards. The set of possible values are the different types of buoys (see Table 3.21).

Entry value	Entry description
TB	Scope of a theme buoy
FB	Scope of a fragment buoy
PTB	Scope of a pointer buoy
DPB	Scope of a depicting buoy
PB	Scope of a point buoy
DB	Scope of a delimit buoy

Table 3.21: Controlled vocabulary for the *Scope 3* tier

These three tiers are not dependent on the *DM candidate* tier as they contain the buoy with a (non-)discourse-marking function and the signs that it parallels. For the *Scope 1* tier, two dependent tiers were created:[32] the *Type list buoy* and the *Role list buoy*.

The **Type list buoy** tier is used to assign a type of list buoy according to the extension and the content of its scope. The two possible values are illustrated in Table 3.22. This tier is directly dependent on the *Scope 1* tier because it reflects the extension of the whole list buoy.

[32] I have not created a dependent tier on *Scope 3* because a sign may appear that has a predicate function and afterwards it may become a buoy with a different function such as topic-comment. This is typically the case for fragment buoys, but the difference in function can also be for signs that drop and afterwards become depicting or delimit buoys. This is not the case for the other types of buoys (including list buoys) in the data.

Entry value	Entry description
Local	Local enumeration within the clause
Global	Global organisation of discourse

Table 3.22: Controlled vocabulary for the *Type list buoy* tier

The **Role list buoy** tier contains the non-discourse-marking functions of list buoys (i.e. those cases in which list buoys do not establish coherence relations between two segments of discourse, but other types of (discourse) functions). The possible values in the controlled vocabulary (see Table 3.23) are taken from Kimmelman (2014) and Davidson (2012). Again, the functions belonging to different linguistic levels are separated by double lines in the table for ease of reading. This tier is dependent on the previous, i.e. the *Type list buoy* tier.

Entry value	Entry description
syn-subj	Syntactic function of subject
syn-obj	Syntactic function of object
syn-NP head	Syntactic function of noun phrase head
dis-noun topic	Discourse function of noun as topic
coor-conj	Conjunction within the clause
coor-disj	Disjunction within the clause

Table 3.23: Controlled vocabulary for the *Role list buoy* tier

Finally, there are four tiers devoted to the segmentation of signed discourse. All of them are independent tiers that do not have a controlled vocabulary (i.e. annotations are empty, so they only indicate the start and end of units). As mentioned above, the segmentation methodology followed in this dissertation is based on Degand and Simon (2005, 2009a,b). In a nutshell, it consists of two independent segmentations: one into syntactic units and another one into prosodic units. Once syntactic annotation is finished, the tier is hidden in order to proceed to prosodic segmentation. When this is finished, the two tiers are displayed and the convergence points between both types of units give rise to basic discourse units, defined as the minimal units the addressee uses when reconstructing what the speaker is saying (see chapter 4 for details).

Three tiers are therefore necessary to apply this methodology: **SyU**, which is used to segment discourse into syntactic units (clauses) based on the Dependency Syntax framework for spoken French (Blanche-Benveniste et al., 1990); **PrU**, which is used to segment discourse into prosodic units based on a set of prosodic cues (Mertens and Simon, 2009) that are adapted to the signed modality; and **BDU**, which is used to segment discourse into basic discourse units resulting from the coincidence points between syntactic and prosodic units. The fourth tier, **Turn**, segments discourse into turns when another signer takes the floor, i.e. the addressee or the moderator in the LSFB and LSC corpora. Note that all productions are fully segmented into

turns, but syntactic units, prosodic units and basic discourse units are only delimited in the points around DMs candidates.

I opted not to have a tier for the comments, but rather to include them in the annotation they referred to in parenthesis. It may seem messier for the person looking at the data from the outside, but this decision was made in order to facilitate the management and analysis of the tiers (which are numerous and sometimes it is difficult to visualise all the information at the same time).

3.4 Annotation procedure

The annotation procedure for data in this dissertation does not always follow the order of the hierarchy of tiers that was presented in the previous section. The hierarchy is only the reflection of the dependencies between tiers. The steps that were taken to annotate the data in C2 and C3 and the tiers that were involved are detailed below:

1. Annotating all tokens of buoys, PALM-UP and SAME in the data. Tiers: *DM candidate*, *Scope 1*, *Scope 2* and *Scope 3*.
2. Segmenting discourse into turns (the whole production) and into syntactic, prosodic and basic discourse units in the points around DM candidates (see chapter 4). Tiers: *SyU*, *PrU*, *BDU* and *Turn*.
3. Annotating the type of scope of list buoys (within one clause or containing many clauses). Tier: *Type list buoy*.
4. Deciding whether the tokens of buoys, PALM-UP and SAME are DMs or whether they fulfil other functions. To be considered a DM, any token needs to meet three criteria, namely to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes (see chapter 5).
5. Annotating non-discourse-marking functions. Tiers: *Role PALM-UP*, *Role SAME*, *Role buoys* and *Role list buoys*.
6. Annotating discourse-marking functions. Tiers: *Type DM*, *Domain 1*, *Function 1*, *Domain 2* and *Function 2*.
7. Annotating non-manual marking co-occurring with discourse-marking functions. Tiers: *Body movement*, *Head movement*, *Gaze*, *Eyes*, *Eyebrows*, *Mouth actions* and *Mouthings*.
8. Annotating the position in the clause, the basic discourse unit and the turn. Tiers: *Position clause*, *Position BDU* and *Position turn*.

Since C1 had a simplified annotation template that was sufficient for the first stage of exploratory work, only the first four steps apply. Note that, for the first point, there is no *DM candidate* tier in C1 because only buoys and some surrounding signs

were annotated. The second point is also simplified as only syntactic units were delimited. Once the four steps were completed in C1, annotations were extracted in an Excel file in order to see which buoys were found in the data. The same procedure of data extraction took place when the eight steps were completed in the other two sub-corpora (C2 and C3) in order to allow the quantitative and qualitative analysis of discourse-marking tokens of the three items under study.

Chapter 4

Discourse segmentation: a methodology for sign languages

Prosody and syntax are intimately related but, as in romance, intimacy only happens between two separate entities. Sign languages present a particularly interesting domain for considering the relationship between prosody and syntax, in part because a consensus has not yet been reached on where to draw the line between the two.

Wendy Sandler (2010)

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General objective of this chapter

This chapter aims to present the segmentation methodology that has been created and followed in this dissertation for the study of the position of discourse markers. First, the issue will be introduced and the existing segmentation approaches (namely pragmatic, prosodic and syntactico-prosodic) for both spoken and signed languages will be discussed. Afterwards, a methodology to segment sign language discourse is proposed. It consists of the adaptation of a syntactico-prosodic model for spoken languages. The chapter concludes with a summary of its main contributions to the domain and underlines the advantages of using this methodology as compared to others.

4.1 Introduction

Discourse segmentation is at the basis of the study of how discourse in the oral[1] setting is structured regardless of the modality, i.e. spoken or signed. However, the reality of each modality is very different from the other: scholars working on spoken languages (SpLs) have developed some consolidated models to segment spoken discourse (Roulet et al., 1985; Morel and Danon-Boileau, 1998; Briz Gómez and Val.Es.Co., 2003; Degand and Simon, 2005, 2009a,b; Lombardi Vallauri, 2009; Groupe de Fribourg, 2012), whereas scholars working on sign languages (SLs) have done some case studies (Fenlon et al., 2007; Hansen and Heßmann, 2007; Jantunen, 2007; Hochgesang, 2009; Nicodemus, 2009; Börstell et al., 2014) and initial detailed accounts (Gabarró-López and Meurant, 2014b; Hodge, 2014; Hodge and Johnston, 2014; Börstell et al., 2016). For an overview of the case studies, see Ormel and Crasborn (2012).

This dissertation contributes to the study of discourse structure from the perspective of discourse markers (DMs). A segmentation model will enable their position in a system of units to be investigated and will pave the way for other studies on discourse structure in SLs from different perspectives. Bearing in mind these two goals, this chapter is structured as follows. In section 4.2, the discourse segmentation models at stake for SpLs together with the existing case studies and the newly established accounts for SLs will be presented. The advantages and drawbacks of each proposal for the purposes of this research will be discussed as well. In section 4.3, the methodology to delimit discourse units in this dissertation will be detailed (i.e. an adaptation of Degand and Simon's (2005, 2009ab) model) as well as its pros and cons. In section 4.4, the main issues discussed in this chapter will be summarised.

4.2 Existing models and case studies

When facing a written text, it seems that its structure is quite clear: the text is made up of sentences (separated by full stops) that are organised in paragraphs (separated by spaces). Therefore, if somebody was asked to segment this text, s/he could use these 'regular measures' (i.e. the full stops, the spaces or other visual ways) to split the production consistently. However, when instead of a written text we get natural speech or signing, regardless of whether it is a monologue or a dialogue, the segmentation procedure is far from straightforward. The first reason is that there is no physical medium on which one can see the structure of the production with clues on how the text is segmented (with punctuation marks or blanks), so the 'listener' (or researcher) needs to make more effort to discover the intentions of the person who produced the text when it comes to structure and segmentation. The second reason is that there are other features belonging to the oral setting that influence the flow of speech and signing such as the immediacy of production. The speaker or the signer can be interrupted by somebody, pause in the middle of the sentence, etc.

[1] In the present work, the term 'oral' is used as the opposite to written and it is not restricted to audio-phonatory languages: it also includes visual-gestural languages that do not have a written form (see sub-section 2.2.2.1 in chapter 2).

Spitzer (1922, V-VI), cited in Pons Bordería (2014), claims that interest in the study of spoken language started in Germany during the Romanticism. The first analyses of the structure of oral productions were carried out following a syntax-based approach, which would be commonplace until the 1980s. Oral productions would be transcribed onto paper and linguists would work on the transcription in order to study how oral productions were organised. The main problem though was that conversations are not only made up of sentences, but also of other elements that make the interaction possible, such as interjections, linguistic elements that yield the floor to the listener, etc. Therefore, researchers realised that oral productions could not be analysed from an exclusively syntax-based approach (Narbona, 1989) and that other factors had to be taken into account.

In 1985, the seminal work of Roulet and colleagues saw the light of day and paved the way for other scholars to develop their own models. It was the first time that conversations were conceived of as a phenomenon of varying complexity, instead of as a mere succession of turns (see subsection 4.2.1). At present, there are six different models for segmenting spoken productions:[2] the Geneva Model (Roulet et al., 1985), the Co-Enunciation Model (Morel and Danon-Boileau, 1998), the Val.Es.Co. Model (Briz Gómez and Val.Es.Co., 2003), the Prominence Demarcation Model (Lombardi Vallauri, 2009), the Basic Discourse Unit Model (Degand and Simon, 2005, 2009a,b) and the Fribourg Model (Groupe de Fribourg, 2012). These models have been developed for Romance languages as "[the issue of segmentation] does not seem to be of concern in the Anglo-Saxon academic world" (Pons Bordería, 2014, p.2).[3]

The main difference between these models is that they approach the issue of segmentation from different points of view, namely pragmatic, prosodic or syntactico-prosodic (ibid., p.8). Despite these three possibilities, prosody is almost always present to a greater or lesser extent because it is one of the main forces that organise spoken discourse (Blanche-Benveniste et al., 1990; Hidalgo Navarro, 1997; Morel and Danon-Boileau, 1998; Cresti and Moneglia, 2005) as pauses, tone units, differences in F0,[4] to name just a few, are objective and measurable criteria. If one thinks of a scale illustrating the importance given to prosody by the different segmentation

[2]There are other well-known methodologies for the segmentation of written productions such as the Basel Model (Ferrari, 2005; Ferrari et al., 2008), the Rhetorical Structure Theory (Mann and Thompson, 1988) or the Segmented Discourse Representation Theory (Asher and Lascarides, 2003). Since SL data are oral, these methodologies were not taken into account for the purposes of this research. However, an account of the Rhetorical Structure Theory and of the Segmented Discourse Representation Theory can be found in chapter 2, sub-section 2.2.2.3, as they are theories that contain a taxonomy of discourse relations.

[3]Nevertheless, there is a whole research tradition that started in the United States in the 70s concerning the systematics of the organisation of turn-taking for conversation, known as Conversational Analysis (Sacks et al., 1974). Conversational Analysis focuses on social interaction and aims to describe the underlying norms and practices that make it possible. It differs from segmentation approaches in that Conversation Analysis focuses on turns and not on their internal constituents (this is a challenge left for linguists according to the authors), whereas each segmentation model provides a methodology to chop turns into different types of units in order to investigate different linguistic aspects (e.g. the position of DMs).

[4]F0, also know as the 'fundamental frequency', is the lowest frequency of repetition of a waveform. It is related to the pitch: the higher the fundamental frequency is, the higher the pitch is perceived.

methodologies, the Co-Enunciation Model and the Prominence Demarcation Model would be at one extreme, as their segmentation methodology is almost totally based on prosody: they take into account long pauses, tone units or a change in F0. The Geneva Model would be at the opposite extreme of the scale because prosody is completely discarded and the approach is pragmatic, i.e. units are delimited according to illocutive forces, whether they elicit a response from the listener or are an answer to the speaker's preceding talk. There are in-between positions such as the Fribourg Model that only use prosody for their macro-syntactic segmentation (and not for the micro-syntactic), and the Val.Es.Co. Model sees prosody as an accessory that should only be used if needed. Eventually, the Basic Discourse Unit Model combines both syntax and prosody for the delimitation of units.

SLs scholars have not experienced this evolution of switching their interest from written to oral productions as SLs do not have a written form.[5] Signed productions consist of manual and non-manual activity that contains syntactic and prosodic information at the same time. Although syntactic structure and prosodic structure are non-isomorphic, some scholars have tried to break down productions into units by considering that prosodic cues reflect syntactic organisation to some extent (Fenlon et al., 2007; Hansen and Heßmann, 2007; Jantunen, 2007; Hochgesang, 2009; Nicodemus, 2009; Börstell et al., 2014). These segmentation initiatives pursued different objectives and concluded that no prosodic cue functions as dominant by itself to mark boundaries, but this occurs rather as a layering of cues. More recently, other researchers have tried to create methods replicable in other SLs; namely the Segmentation into Discourse Units (Gabarró-López and Meurant, 2014b), the Clause-Like Units Segmentation (Hodge, 2014; Hodge and Johnston, 2014) and the Swedish SL (STS) Clausal Segmentation (Börstell et al., 2016). Similarly to the models in SpLs, the main difference between these methods lies in the importance given to prosody. While the Clause-Like Units Segmentation and the STS Clausal Segmentation take a syntactic approach that is later combined with prosody to delimit utterances, the Segmentation into Discourse Units only takes into account prosodic cues to delineate utterances.

Table 4.1 presents an overview of the previously listed segmentation models or accounts together with the approach they take, the authors that conceived them and the language modality they were created for. Case studies, all of them following a prosodic approach, are not included in the table as they are not models or detailed accounts but initiatives that do not propose a particular methodology.

This section is divided into four sub-sections. Following the outline in Table 4.1, the first three sub-sections correspond to the three existing approaches to segmentation. 4.2.1 will present the pragmatic approaches (i.e. the Geneva Model, the Fribourg Model and Val.Es.Co. Model) at stake for SpLs. No SL initiatives in this respect have been found in the literature so far. 4.2.2 will be devoted to prosodic approaches

[5]Some writing systems have been developed from the 80s onwards, such as SignWriting (Sutton, 1999) or HamNoSys (Hanke, 2004). However, their use for communicative purposes is not widespread across the Deaf Community (Boutet and Garcia, 2006) and remains limited to academic or scientific purposes.

Approach	Name of the model or account	Authors	Language modality
Pragmatic	Geneva Model	Roulet et al. (1985)	Spoken
	Fribourg Model	Groupe de Fribourg (2012)	Spoken
	Val.Es.Co. Model	Briz Gómez and Val.Es.Co. (2003)	Spoken
Prosodic	Co-Enunciation Model	Morel and Danon-Boileau (1998)	Spoken
	Prominence Demarcation Model	Lombardi Vallauri (2009)	Spoken
	Segmentation into Discourse Units	Gabarró-López and Meurant (2014b)	Signed
Syntactico -prosodic	Basic Discourse Units	Degand and Simon (2005, 2009a,b)	Spoken
	Clause-Like Units Segmentation	Hodge (2014); Hodge and Johnston (2014)	Signed
	STS Clausal Segmentation	Börstell et al. (2016)	Signed

Table 4.1: Segmentation approaches, models or accounts, authors and language modality

(i.e. the Co-Enunciation Model, the Prominence Demarcation Model and the Segmentation into Discourse Units) and will introduce some SL case studies that look at prosody in order to segment signed discourse. 4.2.3 will explain the principles of syntactico-prosodic approaches (i.e. the Basic Discourse Units Model, the Clause-Like Units Segmentation and the STS Clausal Segmentation). 4.2.4 will conclude this section by presenting a summary of the advantages and drawbacks of each model.

4.2.1 Pragmatic approaches

Pragmatic approaches for the delimitation of discourse units include the Geneva Model, the Fribourg Model and the Val.Es.Co. Model. All of them were conceived for conversational analysis of SpLs. A review of the scientific literature reveals that no models have been developed for SLs along these lines. An explanation for this situation may be that SLs have traditionally used narratives for linguistic analysis and dialogues are still less frequently analysed. In what follows, the three SpL models (the Geneva Model, the Fribourg Model and the Val.Es.Co. Model) will be first presented together with the discourse studies that have been carried out using them as a basis. Special attention will be paid to the possible uses of these models to study the position of discourse markers (DMs) through discourse (i.e. large sets of utterances) as it is one of the goals of this dissertation.

4.2.1.1 In spoken languages

Created by Roulet et al. (1985), the **Geneva Model** was the pioneering segmentation model that inspired the others. At first, it was conceived as a hierarchical structure that would later be implemented to become a modular device (Roulet, 1991; Roulet et al., 2001). Conversations are analysed in terms of different and interrelated phenomena of varying complexity (Filliettaz and Roulet, 2002) and not just as a mere succession of turns. The basic levels of the hierarchical structure are *exchanges*, *moves* and *acts*. They are represented in a schema as in Figure 4.1 (E = exchange, M = move, A = text act, m = main, s = subordinate), which reflects the structure of the conversation in example (7) (original transcription in French in the left column and English translation in the right column). Both are taken from Roulet (2004, pp.8-9).

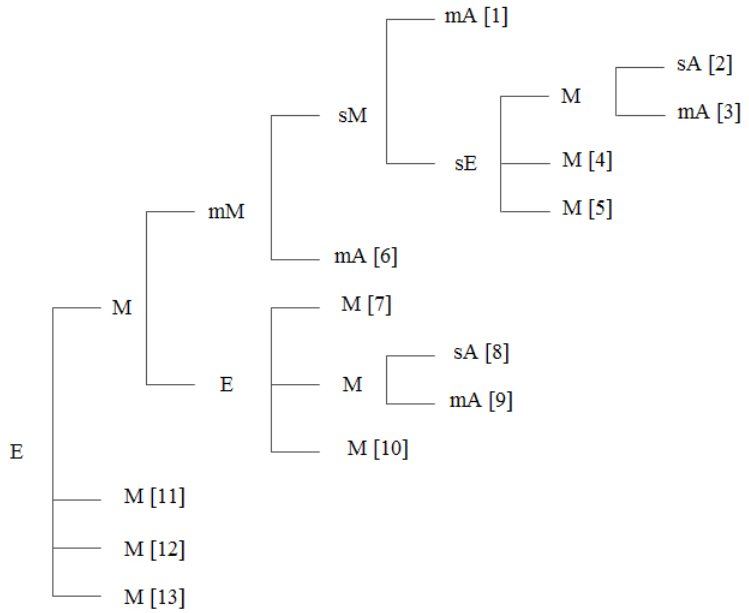


Figure 4.1: Representation of the structure of a conversation in the Geneva Model hierarchical structure

Conversations are conceived of as a process of negotiation with a *monological* and a *dialogical* part: the first consisting of a move from the speaker that provides sufficient information to contribute to the negotiation process, and the second consisting of moves from the listener/s that end the negotiation process. An act is the minimal discourse unit of this model, which is conceptually independent, and the combination of acts creates moves as in [2] and [3], and [8] and [9]. Moves are situated in the monological structure and their constituents are subordinated to each other. In the dialogical structure, there are exchanges and incursions. For an exchange to take place, there must be an initiative move that elicits further talk as in [1] and a reactive move that is the response to the previous as in [2] and [3] (two acts that create a reactive move).

(7)

1	C.	*Est-ce que vous avez Contes et nouvelles d'Oscar Wilde?*	'Would you have...?'
2	B.	*Oscar Wilde...*	'Oscar Wilde...'
3		*En français?*	'In French?'
4	C.	*Euh... oui.*	'Yes.'
5	B.	*Bon.*	'OK.'
6	C.	*S'il vous plait.*	'Please.'
7	B.	*Dans quelle collection?*	'In which series?'
8	C.	*J'sais pas... euh...*	'I don't know...'
9		*c'que vous avez.*	'whichever you have.'
10	B.	*Bon.*	'OK.'
11		*Cher Monsieur, j'ai rien.*	'Dear Sir, I don't have anything.'
12	C.	*Vous avez rien?*	'Don't you?'
13	B.	*Non j'ai rien.*	'No.'

The second phase of the Geneva Model consists of a modular approach to discourse, which has three basic components (linguistic, textual and situational). They refer to elementary information and are combined to account for complex discourse processes (Filliettaz and Roulet, 2002). The *modules* deal with the elementary dimensions of discourse organisation, so the structure of a discourse unit is characterised differently from its lexical, syntactic, hierarchical, referential or interactional dimension. The *organisation forms* are couplings between elementary information, so "it is by combining lexical, hierarchical, and referential information that one can describe the relational organisation of a text or dialogue and, in particular compute the specific relation which is indicated by a discourse marker" (Roulet, 2006, p.116). Figure 4.2, extracted from Roulet (2004, p.16) displays a schema of how the modular approach is organised.

Roulet (2006) uses the modular approach as the basis for the study of text relational markers (TRMs). For him, a TRM "can be defined as a linguistic form (lexical or syntactic) which indicates an illocutionary or interactive relation between a text constituent and a piece of information stored in discourse memory and which gives instructions in order to facilitate the access to the relevant information. [...] TRMs have a *procedural meaning*,[6] which has to be described in the lexicon or syntax of any language" (ibid., p.120). From the three basic components of discourse (linguistic, textual and situational), TRMs belong to the textual component.

Although the Geneva Model has been used as a framework for the study of TRMs, it presents at least three shortcomings for the purposes of this dissertation. First, the definition of DMs in this research is taken from Crible (2014), and she includes in it different devices that participate in the construction of discourse by not only signalling a textual relation, but also by expliciting structural sequencing, expressing

[6] 'Procedural meaning' is a term introduced by Blakemore (1987) that applies to DMs. It means that they do not "contribute to the propositional content of an utterance but [they] constrain and guide the inferential phase of accessing the intended contextual assumptions and implications" (Carston, 2016, p.158). For instance, the procedural meaning of the DM 'because' is a relation of cause between two discourse segments that does not affect their propositional content. See subsection 2.2.1 in chapter 2 and the different sections on the criteria for identifying DMs in chapter 5 for further details.

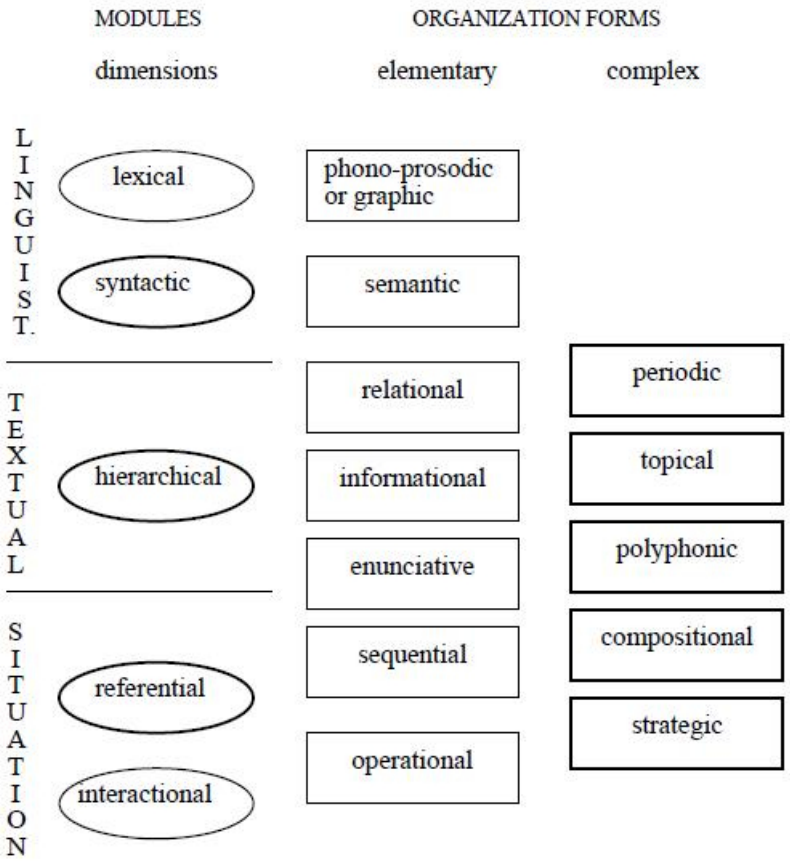


Figure 4.2: Representation of the structure of a conversation in the Geneva Model modular device

the speaker's meta-comment and contributing to interpersonal collaboration. In the Geneva Model, TRMs belong to the textual component of discourse, so only textual relations are taken into account and the other markers such as interpersonal ones are excluded. Second, TRM categories result from a top-down approach in which one looks for different types of textual relations (such as cause, consequence, etc.), whereas this dissertation takes a bottom-up approach in which the starting point is the DM candidate itself. Third, when applying this model to a conversation, the outcome is not the position of the TRM in itself but a tree that interprets the structure of discourse.

The **Fribourg Model** (Groupe de Fribourg, 2012) has two levels of analysis, namely *micro-syntax* and *macro-syntax*, both integrated by minimal and maximal units. On the one hand, micro-syntax is made up of rectional links (in the sense of *rection* in French, i.e. government) existing at the morphosyntactic level. For instance, an article must be followed by a noun or an adjective, and a verb rules a set of complements. The minimal unit is the *morpheme*, whereas the maximal is the *clause*, which is not understood as a sentence in the orthographic and grammatical tradition

but as an "entirely organised [...] network of rectional relationships, without sharing any of such relationships with the surrounding sequences" (Rossari and Gachet, 2014, p.98). In other words, it is an islet of rectional connectedness that may take very different forms. The same authors provide two examples in French with their English translations (here reproduced as examples (8) and (9)) in which the concept of clause is illustrated.

(8) *Quand il fait beau, je vais me promener.*
'When the weather is nice, I go walking.'

(9) *Il fait beau, je vais me promener.*
'The weather is nice, I go walking.'

Example (8) contains one clause because the different elements that constitute it are connected by rectional relationships, i.e. the first part before the comma needs to be attached to another unit as it only specifies when an action takes place. Although example (9) is separated by a comma as well, it is made up of two clauses as they do not share a rectional relationship.

On the other hand, macro-syntax, or *pragma-syntax* (Berrendonner, 2002), consists of larger units in which clauses are connected by lexico-grammatical or discourse relations. For instance, when an anaphora appears in a unit, it establishes a connection with the previous one. The minimal unit is the *enunciation*, which includes a clause together with prosodic, gestural and postural features. An enunciation may have the role of *preparation*, *confirmation* or *refection* towards another enunciation, and they will successively transform the *discourse memory* (i.e. the shared knowledge between interlocutors). The maximal unit is the *period*, which gathers a set of enunciations that form a complete communication unit, and is marked by a conclusive intonative contour. In example (10), copied from Rossari and Gachet (2014), there are four enunciations that are characterised by a continuative intonation (i.e. 'S') and separated by a parenthesis. Together they make up a period (conclusive intonative contour, i.e. 'F').

(10) *(On allait à la messe)^S (on portait le pique-nique)^S (on mangeait sur l'herbe)^S (on rentrait le soir)^F*
'(we went to mass)^S (we carried the picnic)^S (we ate outdoors)^S (we came back in the evening)^F'

The Fribourg Model has been taken as the theoretical framework by scholars working with oral data and dealing with the syntactic analysis of spoken productions, for which traditional syntactic theories for the study of the sentence cannot give satisfactory solutions. The concept of macro-syntax has allowed them to analyse subjunctive constructions producing a hypothetical interpretation (Corminboeuf, 2007); discourse anaphora, 'anadeixis' and discourse deixis (Cornish, 2009); correlations and enumerations (Montchaud, 2016); and parenthetical verbs (Rossari and Gachet, 2014), just to name some of the works. To the best of my knowledge, DMs have not been studied following this approach and neither does this model provide a solution for the position of DMs in discourse; that's why it is discarded for the purposes of this work.

The **Val.Es.Co. Model** is a segmentation methodology for conversations developed by Briz Gómez and Val.Es.Co. (2003). The model is made up of different units (discourse, dialogue, exchange, turn, intervention, act and subact) organised in a hierarchical structure, i.e. the units in a lower position in the hierarchy are direct constituents of those in a higher position (see Table 4.2 cited from Grupo-Val.Es.Co. (2014)). These different units are defined as either monological or dialogical as in Roulet et al. (1985). Moreover, they are further categorised into three dimensions: structural (how units build a message), social (the influence of participants) or informative (how the message is divided).

Level	**Dimensions**		
	Structural	**Social**	**Informative**
Dialogic	discourse dialogue exchange	turn taking	
Monologic	intervention act	turn	subact

Table 4.2: Hierarchical structure of the Val.Es.Co. Model

The maximal monological unit is the *intervention*, which is delimited by the change of speaker, and contributes to the thematic or semantic development of a conversation in the structural dimension. If there is not such a development, it becomes a *turn*, which is a unit defined by social acceptance (the only one in the social dimension). Below interventions, there are *acts* which are a combination of propositional content and nonpropositional units attached to it. Acts encode a proposition, have neat boundaries and can be independent in a given context. The lowest unit in the hierarchy is the *subact*, which is not independent despite having neat boundaries. Subacts are divided into substantive (most adverbial subordinate clauses) and adjacent (usually DMs). Prosody and other linguistic marks may help to identify units; for instance, an intonation contour or an illocutive force delimit an act, whereas a pause longer than 0.4 seconds delimits a subact.

On the dialogical level, *exchanges* belong to the structural dimension and are made up of an initiative and a reactive intervention. An intervention responds and provokes some talk at the same time, so the combination of several interventions is at the basis of a conversation. A structural unit can be delimited by an initiative intervention at the beginning and a reactive intervention at the end, and then it is a *dialogue*. Beyond dialogues, there are *discourses*, which are the highest category in the hierarchy and belong to the structural domain as well.

When it comes to the position of a DM, the Val.Es.Co. Model establishes a position within the dialogue, another within the reactive or initiative intervention, another within the act and finally another within the subact (Briz Gómez and Pons Bordería, 2010). Example (11), taken from Pons Bordería (2008), shows a piece of transcribed

conversation containing the particle 'bueno' (well).[7] 'Bueno' is in the reactive part of the intervention because there is a change of speaker, in the initial position of the first act of the intervention and in the initial position of the first subact of the act.

(11)

S: ¿cómo que iban a una velocidad?	'what do you mean by they were so fast?'
A: que corrían MÁ(S)	'that they ran MORE'
S: # { bueno sí } // { porque ellos tenían más fondo que tú ↓ } # # porque tú-tú noo-no has corrido desde hace mucho tiempo #	'# { well yes } // { because they were in a better physical condition than you ↓ } # # because you-you haven't-haven't run for a long time # '
A: § yo me quiero meter a natación	'§ I want to start swimming'

The Val.Es.Co. Model is undoubtedly a well-grounded methodology for the study of different aspects of DMs. For instance, it has been used in different works about the grammaticalisation of DMs (Estellés, 2009, 2011) as well as about their diachronic evolution in meaning and position (Estellés, 2006; Briz Gómez and Estellés, 2010), among many other studies. Its main underlying hypothesis is that the position delimits the function of DMs. Therefore, this model could be a good candidate for the segmentation of signed discourse if the necessary adaptations that the modality imposes were put in place. However, its main shortcoming is that, to the best of my knowledge, the Val.Es.Co. Model is only applicable to conversation and monologues fall beyond its scope. The corpora of this dissertation mainly include conversations for both French Belgian SL (LSFB) and Catalan SL (LSC) (see chapter 3), but the story *Frog, where are you?* (Mayer, 1969) in the LSC Corpus is elicited as a monologue, i.e. the six informants tell the story to the moderator in order to avoid the signing style of one signer influencing the other.

Conversations are processes of negotiation between at least two parties (Roulet et al., 1985), so discourse is constructed immediately depending on the contributions of each speaker and is not managed by one person alone as in monologues. As a result of the interaction between at least two people, interruptions can occur at any moment and DMs (specifically interpersonal markers such as 'you know', but also sequential markers that manage turns) are abundant. These features are absent in monological productions. Therefore, the top-down structure that is established for conversations in the Val.Es.Co. Model does not match the structure of monologues. Adapting this model to the signed modality would imply that another methodology should be conceived to treat monological data, which would be more time consuming and could result in incomparable discourse units. The underlying principle that guides the selection of a model to be adapted to the signed modality is a bottom-up approach, i.e. the starting point cannot be a previously established global conception of discourse but it has to emerge from SL data.

[7] The symbols used for the transcription mean the following: # marks the beginning and the end of an act, {} marks a subact, // marks a pause ranging from half a second to one second long, § marks a succession within a pause between two speakers, and capital letters mark emphasis (Briz Gómez and Grupo-Val.Es.Co., 2002).

4.2.1.2 Interim summary of pragmatic approaches

To sum up, three segmentation models (namely the Geneva Model, the Fribourg Model and the Val.Es.Co. Model) that analyse conversations from a pragmatic approach were presented above. Neither of them sees conversations as a mere succession of turns. Instead, they establish different levels of segmentation and/or of organisation. On the one hand, the Geneva Model and the Val.Es.Co. Model conceive conversations as having a monological and a dialogical part, and within these two levels they establish different kinds of units that are organised as a hierarchy.[8] On the other hand, the Fribourg Model tackles conversations as a combination of micro and macro-syntax. Because of the nature of these models (i.e. pragmatic), prosody plays an auxiliary role (in the Fribourg Model to delimit macro-syntactic units and in the Val.Es.Co. Model to identify acts and subacts) or even a non-existent role (in the Geneva Model). With regard to the applications of the three models, the Geneva Model and the Val.Es.Co. Model have been used to study the role and position of DMs, whereas the Fribourg Model has been used for the syntactic analysis of spoken productions for which traditional syntactic theories to study the sentence could not give a satisfactory result.

4.2.2 Prosodic approaches

The delimitation of discourse units has been tackled from a prosodic perspective in both SpLs and SLs. There are three segmentation models at present: the Co-Enunciation Model, the Prominence Demarcation Model and the Segmentation into Discourse Units.[9] As stated in 4.2, prosodic approaches have commonly been used to delimit utterances in signed discourse as prosody partially reflects syntactic organisation (Crasborn, 2007; Fenlon et al., 2007; Hansen and Heßmann, 2007; Jantunen, 2007; Herrmann, 2009; Hochgesang, 2009; Nicodemus, 2009; Börstell et al., 2014). From these studies, it is known that neither manual nor non-manual cues function as dominant for the segmentation, but that the boundaries of units are frequently marked by a layering of several prosodic cues.

In this section, the prosodic models for both SpLs and SLs are described as well as some segmentation case studies in SLs. As with pragmatic approaches in 4.2.1, the different types of discourse studies that have been carried out using prosodic models as a basis are explained. Once again, special attention will be paid to the possible uses of the presented methods to study the position of DMs in discourse (i.e. large sets of utterances) as this is my ultimate goal in the creation of a segmentation protocol for the signed modality. To the best of my knowledge, segmentation case studies have not been further used for the development of any kind of discourse studies, but they have influenced one SL segmentation account (Gabarró-López and Meurant, 2014b) and the final segmentation methodology used in this dissertation. Therefore,

[8] As previously said, the Geneva Model, being the oldest approach to the segmentation of oral discourse, also has a modular approach in addition to the hierarchical one.

[9] It could be disputed whether the Prominence Demarcation Model and the Segmentation into Discourse Units are models as they are rather heuristics for finding acoustic and visual cues respectively for the delimitation of utterances.

they will merely be summarised (i.e. no connection will be made between them and the study of the position of DMs).

4.2.2.1 In spoken languages

The **Co-Enunciation Model** (Morel and Danon-Boileau, 1998) segments conversations taking into account pitch changes, variations in intensity and pauses. These three cues are considered to display the relation between the speaker with regard to the listener's stance. As previously said, prosody is at the basis of this model as it is considered to show the structure of turns in conversation. The *oral paragraph* is the major unit. It is defined as a grouping of discourse constituents (preamble and rheme) and is characterised by a marked drop in the pitch and intensity of the last syllable of the unit. Oral paragraphs are further divided into the *preamble* and the *rheme*, both referring to the speaker's point of view on what is being said. In the preamble, the speaker expresses his/her stance with respect to the listener and to the upcoming dialogical exchange. The preamble is divided into five constituents that usually occur in a pre-established order: ligature (links the utterance with the context), point-of-view (of the speaker or of somebody else – expresses modality through modal particles and alterity markers), dissociated modus (expresses epistemic or appreciative value), framework (avoids misunderstanding by delimiting zones of meaning) and disjoint lexical support (constructs a discourse object within the zone of meaning by means of a pronoun close to the rheme's verb). In the rheme, the speaker expresses his/her personal position in connection with the topic of the discourse. Rhemes, usually containing a pronoun and a verb, are generally brief and are usually found to the right of preambles. Table 4.3 summarises the Co-Enunciation Model.

Oral paragraph (the grouping of discourse constituents)	
Preamble (the speaker express his/her stance with respect to the listener and to the upcoming exchange)	**Rheme** (the speaker expresses his/her personal position concerning the topic)
Composed by: 1. Ligature 2. Point-of-view 3. Dissociated modus 4. Framework 5. Disjoint lexical support	Features: 1. Including a pronoun and a verb 2. Generally brief 3. Found to the right of preambles

Table 4.3: Summary of the Co-Enunciation Model

In addition to this structure, the Co-Enunciation Model also includes patterns in gaze movements and co-speech hand gestures that accompany the different units. For instance, the preamble is usually produced with a deviated gaze from the listener and a deictic gesture towards somebody in the conversation. The rheme, in turn, occurs with a directed gaze before its end and co-speech gestures are gift-offering (i.e. the handshape of a PALM-UP) or of iconic nature depicting a referent's property (e.g. opening a book).

The Co-Enunciation Model has been widely used for the study of DMs, namely to investigate the parallelism between their functions and their prosodic component as in Danon-Boileau et al. (1991), Morel (1992, 1993) and Morel and Rialland (1992), to mention some works. DMs are found either in the preamble or in the rheme, and recently the speaker's gaze and gestures have been included as shown in example (12) from Morel and Vladimirska (2014)[10] (original text and translation given by the authors).

(12)

M:	oh ça m'attire pas du tout °les Etats-Unis° par contre le Québec *c'est vraiment ma^{gni}§fique hein*	'oh I am not at all attracted by °the United States° on the other hand Quebec *is really ma^{gni}§ficient eh*'
C:	§ouais moi j'pense§ que ça m'plairait bien aussi {60cs}	'§yeah I think§ that I would like it too {60cs}'

The DM 'vraiment' appears in the rheme 'c'est vraiment magnifique' of the oral paragraph. '[P]ar contre' and 'le Québec' are the ligature and the disjoint lexical support of the preamble. The DM expresses modality, which is characterised by: a low pitch, no variation in the intensity and duration, no pause after the marker, the gaze not addressed to the listener, a lateral oscillation of the head (negative gesture) and no hand gesture. Such features that go with modality differ from those in which *vraiment* expresses focalisation or a value of adequacy. Therefore, the addition of the gaze and gestures to the intonation properties of the DM result in a more refined analysis.

One of the main advantages of the Co-Enunciation Model in comparison with other segmentation models is that not only does it take into account spoken material but also other elements such as co-speech gestures participating in human communication. Vermeerbergen and Demey (2007), following Taub et al. (2002) and Enfield (2004), claim that the appropriate level for cross-linguistic analysis between speakers and signers is speech together with co-speech gestures for the first, and manual together with non-manual production for the latter; that's why adapting the Co-Enunciation Model to SL data could be the most fruitful option for comparing DMs in spoken and signed discourse. Nevertheless, this model also presents the shortcoming of being designed for conversations, whereas the data in this dissertation contain one monological task in LSC. The top-down structure that the Co-Enunciation Model establishes for conversations (whose principle is the interaction between at

[10] The symbols used for the transcription mean the following: °xx° stands for a parenthetical segment with low and flat melody, §xx§ for an overlapping with another participant, 60 for pause duration in centiseconds and the exponent syllable for a rising contour.

least two people) does not match the structure of monologues (in which there is only one speaker). I endeavour to do the opposite, i.e. to adopt a bottom-up approach which does not start from a global conception of discourse and that, therefore, can be adapted to both monologues and dialogues.

The so-called **Prominence Demarcation Model** (Lombardi Vallauri, 2009) is a heuristic, rather than a model, that looks at acoustic cues such as the measurement of pitch accent, the intensity and the syllable length. They are combined by means of a mathematical algorithm (Tamburini, 2005) in order to measure acoustic prominence. The main underlying hypothesis is that Information Structure[11] is marked by means of prosodic prominence, i.e. "main prominence is the boundary between information units within the utterance" (Lombardi Vallauri, 2014, p.230). This analysis makes it possible to study the three main patterns of Information Structure, namely topic focus, narrow focus plus appendix, and broad focus. Examples (13), (14) and (15) (copied from Lombardi Vallauri (2014) together with their translations) illustrate these three patterns in which the letter in subscript delimits each element of Information Structure (T = topic, F = focus and A = appendix).

(13) *Secondo me$_T$ stava sulla sinistra$_F$*
'According to me$_T$ it was on the left$_F$'

(14) *E' una cosa tremenda$_F$ quella donna$_A$*
'She is something terrible$_F$ that woman$_A$'

(15) *Ho pagato all'omino$_F$*
'I paid to the man$_F$'

In topic focus utterances (13), the topic enables the focus to be understood but does not carry illocutionary force. Instead, the focus makes explicit the informational purpose of the utterance and does carry the illocutionary force (Cresti, 2000; Lombardi Vallauri, 2009). In narrow focus plus appendix constructions (14), the focus is situated to the left of the utterance and is followed by the appendix. And in broad focus utterances (15), there is no topic as the focus extends to the whole utterance.

Despite the advantages of using this heuristic instead of using one of the other models (i.e. it may not be restricted to conversations), the Prominence Demarcation Model is not suitable for the study of DMs because they are considered "minor units" (Lombardi Vallauri, 2014, p.223) and therefore discarded from the analysis. Conversely, the Prominence Demarcation Model is oriented towards how prominence in the different varieties of Italian is interpreted by speakers and how the (non-)demarcation of the components of Information Structure affects the communicative dynamism of discourse.

[11] Information Structure is defined as "a small set of instructions with which the hearer is instructed by the speaker to retrieve the information carried by the sentence and enter it into her/his knowledge-store" (Vallduví, 1992, p.18).

4.2.2.2 In sign languages

Before giving an account of the Segmentation into Discourse Units, five case studies (Jantunen, 2007; Hansen and Heßmann, 2007; Fenlon et al., 2007; Hochgesang, 2009) that somehow inspired it or were carried out at the same time (Börstell et al., 2014) are presented. In addition, these studies later inspired the prosodic segmentation part within the syntactico-prosodic model proposed in this dissertation. As previously mentioned, the underlying principle of these initiatives is that syntactic structure is somehow reflected in visual cues. At present, there is a significant number of works along these lines carried out from different perspectives. I will restrict myself to giving an account of those case studies in which the data used are similar to the data exploited here, namely productions of deaf adults directed to another (deaf) adult or to a camera. Research concerning the segmentation of interpreters' discourse (Nicodemus, 2006, 2009) or the segmentation of child-directed speech (Brentari, 2007) will be left aside. Empirical studies on prosody such as that of Herrmann (2009, 2012) will not be included here either.

Jantunen (2007) focuses on equative sentences in Finnish SL (FinSL) by offering a description and analysis of their syntactic form. Equative sentences are defined as "nominal structures which are used mostly for identificational purposes (e.g. for introduction, naming, and defining), and which have the propositional meaning 'x is y'" (ibid., p.113). This study is situated in the framework of functionalism, and the notion of sentence is taken from Role and Reference Grammar (Van Valin and LaPolla, 1997). The information comes from the analysis of corpus data taken from the *Basic Dictionary of FinSL* (Malm, 1998) and from the intuitions of native FinSL informants.

19 declarative/affirmative sentences were investigated and gave rise to three different types of structure: (i) $\text{NP}_{Non-pred.}$+$\text{NP}_{Pred.}$, (ii) $\text{NP}_{Non-pred.}$+PI+$\text{NP}_{Pred.}$, and (iii) NP_{L-d-p} $\text{NP}_{Non-pred.}$+PI+$\text{NP}_{Pred.}$[12] Interestingly, non-manual behaviour (including the actions of the mouth, eyes, brows, head and body) associated with the sentences is substantially uniform, also when it comes to prosodic marking. In general, eye blinks occur at sentence boundaries, and at the beginning and end of sentence internal phrases. Eye blinks are also found in these positions in American SL (ASL) (Wilbur, 2000) and Hong Kong SL (HKSL) (Sze, 2008a). A head-tilt was also found at the end of most sentences as well as changes in body movements or postures (that could also appear at phrase boundaries) as in HKSL.

Hansen and Heßmann (2007) tackle the issue of segmentation in German SL (DGS) following Jantunen's steps: they first segment a sample of DGS (a piece of narratives, 32.7 seconds long, by one signer) into elementary units, perform a functional analysis and investigate whether boundary markers align with sentences. Their notion of sentence is that of a meaningful unit that contains a small number of manual signs, and their identification relies on "pragmatic decisions about 'what goes together'" (ibid., p.147). The authors take a step further by analysing

[12] NP = noun phrase, PI = a sign in FinSL semantically opaque, L-d-p = left-detached position, Non-pred. = nonpredicating, Pred. = predicating, R-d-p = right-detached position.

their DGS sample with a TPAC approach allowing functional relationships to be made more explicit and thus helping to establish the boundaries of nuclear sentences (ibid., p.156). TPAC stands for Topic (an expression or element that refers to someone or something that the signer says something about), Predication (one or more elements that express what is being said of whatever the unit is about), Adjuncts (elements that serve to contextualise statements by providing spatial, temporal or modal information) and Conjuncts (elements that serve connecting, textual, or interactive functions) (ibid., p.153). The main drawback of this approach according to the authors is that it leaves higher level units such as constructed action untouched, i.e. it does not take into account other mechanisms that may integrate clauses and make them more complex units.

When it comes to the formal marking of sentence boundaries, Hansen and Heßmann (2007) inspected both manual and nonmanual elements. To begin with, the signs PUT-ASIDE and DONE are used to end discourse. In addition to their contribution to textual structure, temporal adjuncts such as PAST and NOW occur at the beginning of a large textual unit, so they may be preceded by a boundary. PALM-UP was also found at sentence boundaries with more than accidental frequency, although it does not mark them consistently. Second, non-manual elements investigated include head nods, eye blinks and changes in gaze. Head nods were found in larger units than the clause indicating an incision or comment in the narratives. Eye blinks follow no clear-cut pattern as they do not only appear in sentence boundaries, but also within units; and changes in gaze direction do not seem to be a valid marker of boundaries. Finally, the authors take into consideration dynamic features that contribute to 'visual rhythm', i.e. pauses (video frames without communicative or transitional activities), transitions and holds (a sign frozen during three frames). However, none of the three cues show a consistency in marking boundaries. In short, the signals analysed in this study only show a certain correlation with the clauses delimited, "though individually or in clusters they may support interpretations of sentence boundaries" (ibid., p.168).

Fenlon et al. (2007) carried out a perception study in which deaf native British SL (BSL) signers and hearing non-signers had to interpret manual and non-manual cues as markers of sentence boundaries. For this purpose, they recruited six people belonging to each profile and asked them to segment two narratives (Aesop's fables), one presented in BSL and another one in Swedish SL (STS). Participants had two practice runs for each SL. In the first, a fable in one of the two SLs was shown to them in ELAN. They were asked to use the online segmentation controls to mark boundaries whilst watching the video. In the second run, they had to proceed likewise with another fable in the same SL in which they had segmented the first one. These two steps were repeated with the other SL. Before assessing participants' responses, the authors identified visual cues such as blinks, head nods and pauses that behaved as intonational phrase boundaries in both SLs (26 in BSL and 21 in STS). In order to see which participants' responses were associated with a boundary established by researchers, a 1.5 second window was applied to the last frame of the final sign of all intonational phrases. The window was extended 0.5 seconds before the last frame of the sign and 1 second afterwards.

The results show no significant differences between native signers and non-signers when using visual cues for segmentation, which means that their decisions are not influenced by their knowledge of the language. Furthermore, visual cues that make participants mark boundaries were analysed. Interestingly, some boundaries are marked by one cue whereas others are marked by multiple cues (from two to eight, i.e. evidence of prosodic layering). The cues found at real boundaries in both SLs are head movements, blinks, changes in eye gaze, changes in eyebrow position, sign holds, pauses and hand drop. However, only the last three are associated with 'strong' intonational phrase boundaries (i.e. boundaries detected by the majority of participants). This may be due to different factors such as the stop in the signing flow that these three different cues imply, or that some articulators that produce the other cues (eyes and brows) are smaller and less visible in online segmentation. As for head movements, they are highly common in narratives because of their semantic and domain marking functions that allow a change of role or perspective or mark when a character speaks. Finally, this study – like the two studies presented before – presents evidence for non-isomorphism as there is no one-to-one match between prosodic and syntactic domains.

Along the lines of perception studies, **Hochgesang (2009)** investigates how deaf native and early users of ASL segment discourse, and compares it to three studies (Lucas et al., 2001; Metzger and Bahan, 2001; Mulrooney, 2006) in which three groups of linguists segmented the same production. To test the signers' intuitions, Hochgesang uses a narration which was previously segmented by the three different groups of linguists. Her ultimate goal is to test whether the responses coming from members of the Deaf Community can be helpful for linguists' efforts to document a SL. 21 deaf native/early users participated in the study and they were given different instructions: seven were asked where the sentences ended, seven were asked to place periods whenever they thought there would be one, and seven were asked how the narratives could be divided. Participants watched the videos twice: the first time they had to focus on watching the video and the second time they had to segment the video by reporting the time codes of the sentences, periods and parts. At the end of the segmentation exercise, participants were given the opportunity to change their answers if they wanted to.

The results revealed that the number of boundaries identified by each participant was similar (average of seven) irrespective of the instruction given. These boundaries were later inspected in order to see what kind of linguistic events occurred there. Boundaries coincided with prosodic cues (head movements, eye blinks, changes in gaze and pauses), lexical items (four specific signs) and syntactic units (i.e. clauses, defined as a verb and its core arguments). The homogeneity found in participants differed from the three groups of linguists who got 32 (Lucas et al., 2001), 15 (Metzger and Bahan, 2001) and 24 (Mulrooney, 2006) text segments. When comparing clusters (at least the same response from 10 participants) with the boundaries established by linguists, some coincidences were found between all linguists and deaf participants, or between two groups of linguists and deaf participants. However, there were cases in which only linguists had segmented. These results lead the author to suggest that intuitions of native and early signers could be used as a 'diagnostic test' by linguists

because deaf signers are sensitive to the same boundaries and they therefore segment in a similar manner. Not having examined the content of the chunks, Hochgesang concludes that there are sentence-like units in ASL and underlines the importance of linguists using native users' judgements to inform their segmentation process.

The most recent case study concerning segmentation is that of **Börstell et al. (2014)**, whose goal is to investigate whether syntactic segmentation can be conducted on the basis of manual and non-manual visual cues. The data selected were a narration (1:35 minutes) and a dialogue (2:08 minutes) from the STS Corpus. The experiment designed to test their hypothesis consisted of two steps: a segmentation using visual cues by seven deaf STS signers and a segmentation into clausal units by a deaf STS expert. Segmentations were coded in ELAN (only the tier for the participant that was performing the test at that moment was visible) and the overlaps between the two parts of the experiment were analysed. A point of overlap was identified as such when two segment boundaries were less than 300 ms apart and when the total span of the overlap point was less than 1000 ms.

The experiment showed some degree of agreement in the visual segmentation, although the procedure remains quite idiosyncratic. Moreover, when comparing visual with syntactic segmentation, boundaries did not always align so segmentation based on visual cues is not reliable as a means of segmenting syntactic units in line with previous studies. Finally, the authors compared syntactic segments with the translation that a hearing STS native signer did of the sample. Although some endpoints of the translation segments coincided with the syntactic segments, the number of segments was not the same (i.e. translation segments were longer than syntactic segments, the first type usually including several of the second type). Thus, translation segments are not accurate for the segmentation of STS data on a clausal level either.

To the best of my knowledge, the **Segmentation into Discourse Units** is the first attempt in the SL literature to systematise segmentation on the basis of visual cues. The segmentation protocol proposed by Gabarró-López and Meurant (2014b) is the result of a hierarchised and operationalised synthesis of the criteria that inform the segmentation judgements of three deaf (two native and one non-native) and two hearing (non-native) LSFB signers. Although the methodology is similar to previous studies (Fenlon et al., 2007; Hochgesang, 2009; Börstell et al., 2014), the goal of the protocol is not to get units close to sentences or clauses, but to get discourse units. The participants (hereinafter 'the segmenters') were asked to segment a small-scale (1h) corpus containing four different genres (argumentative, explanatory, narrative and metalinguistic), either as monologues or dialogues, with different degrees of preparedness.

The segmentation experiment was composed of two stages: the 'copy test' and the 'cut test'. Both involved a different type of segmentation. On the one hand, the 'copy test' was made up of a three-minute sample of each genre from the corpus. All three deaf participants were involved in this test. They were asked to watch the video, stop it whenever they wanted and repeat the content of the chunk of discourse to the hearing segmenter who would code it in ELAN as a discourse unit. On the other hand,

the 'cut test' was performed by all segmenters (deaf and hearing) and they were asked to segment the productions at the points they thought to be convenient using ELAN.

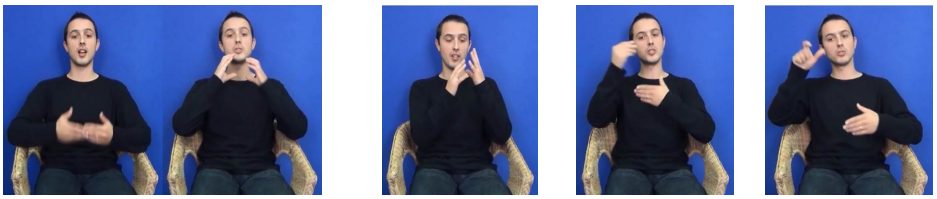
Once both tests were finished, the authors first analysed inter-segmenter agreement in the delimitation of discourse units for both stages. Agreement was high, so boundaries were "coherent from a discourse perspective and linguistically founded" (Gabarró-López and Meurant, 2014b, p.56). Secondly, a list was created with the manual and non-manual cues that occurred at the boundaries established by at least two segmenters as Fenlon et al. (2007) did. Pauses (periods of no signing at all) were the most frequently spotted cues at discourse unit boundaries. In line with pauses, sign holds (the final handshape of a sign is held in the final position for a longer duration) might have the same effect. Eye blinks layered with head nods were the second most common cue found at the end of discourse units. However, in some cases they could either be a linker between two parts of a temporal syntactic structure or mark the end of a parenthetical comment. The example displayed in Figure 4.3 illustrates an eye blink layered with a head nod (bl + hn) co-occurring with the sign SIGN-WRONG that links two parts of a discourse unit.

The change in eye gaze layered with a change in head position is another common combination of cues that segmenters took as a criterion. A change in eye gaze can signal role, which was considered a linguistic cue for the segmentation of discourse units. Finally, the last most common linguistic cue taken into account by the segmenters was the PALM-UP particle (i.e. fingers loosely extended performing an outward movement with the palm in upward position), whose functions are varied according to the SL literature and include the end of turn (see chapter 5). All in all, these results are similar to what was found in the case studies presented above (Jantunen, 2007; Hansen and Heßmann, 2007; Fenlon et al., 2007; Hochgesang, 2009).

Bearing in mind this list of the most common cues appearing at the boundaries of discourse units, Gabarró-López and Meurant (2014b) propose a protocol that consists of four steps: (i) segmenting at a pause and at a sign hold, (ii) segmenting at the end of every constructed dialogue and at the end of every role shift, (iii) segmenting at every eye blink layered with a head nod (or at every combination of a blink in the close context of a change in eye gaze and head position), and (iv) removing all the eye blinks layered with head nods acting as discourse unit linkers. The main drawback of this proposal is that the form and size of discourse units are very variable. There is no information provided about the content of each discourse unit and their boundaries purely depend on the occurrence of a prosodic cue. Therefore, it may well be that the boundary of a discourse unit splits a clause/sentence because, as mentioned in the previous case studies, prosodic cues may appear in the middle of clauses.

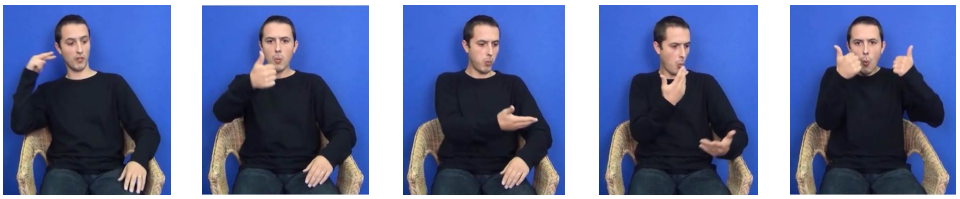
This segmentation protocol was used in a pilot study concerning the position of list buoys in LSFB (Gabarró-López, 2016). Three positions were possible: (i) initial, the list buoy is the first sign of the discourse unit; (ii) middle, the list buoy is surrounded by at least one sign to the left and one to the right; and (iii) final, the list buoy is the last sign of the discourse unit. Results showed that enumerative list buoys (i.e. the articulation of each digit is followed by a sign or signs that do not constitute a

DVD, clip A1, 16:12 - 16:18



RH	COMMUNICATION-SUPPORT -WORKERS	SIGN-WRONG	OUTSIDE	PEOPLE
LH	COMMUNICATION-SUPPORT -WORKERS	SIGN-WRONG	OUTSIDE	

bl + hn



RH	SEE	GOOD	PT:DET	PALM-UP	GOOD
LH				PALM-UP	GOOD

'Even if communication-support workers sign badly, people think they do a good job.'

Figure 4.3: Example of an eye blink layered with a head nod acting as a linker

clause) usually appear in the middle position, whereas globally organising list buoys (i.e. each digit is followed by large portions of discourse containing variable numbers of clauses) could appear in the initial or middle position. However, this outcome is not very informative as the position only concerns the discourse unit and discourse units are not comparable between themselves because their content has not been annotated. Therefore, the same position in two discourse units cannot be compared either as they may contain different amounts of linguistic material before and after the list buoy. For this reason, the Segmentation into Discourse Units as it is presented here is not considered an appropriate methodology for the purposes of this dissertation.

4.2.2.3 Interim summary of prosodic approaches

To sum up, three segmentation models were laid out above: the Co-Enunciation Model, the Prominence Demarcation Model and the Segmentation into Discourse Units. In addition, five case studies that inspired or that are somehow connected to the Segmentation into Discourse Units (the only prosodic account for signed discourse) were presented. The Co-Enunciation Model was conceived to analyse conversations and considers that prosody shows the structure of turns. Similarly to the Geneva Model or the Val.Es.Co. Model, it establishes different kinds of units that are organised in a hierarchy. The Co-Enunciation Model is the only model for SpL that

goes beyond speech and analyses multimodal data. On the other hand, the Prominence Demarcation Model and the Segmentation into Discourse Units are heuristics for finding acoustic and visual cues respectively in order to segment monological or dialogical discourse. The cues taken into account and the resulting segments are different though. The Prominence Demarcation Model combines the intensity and the syllable length by means of a mathematical algorithm in order to measure acoustic prominence as it is thought to reflect Information Structure, whereas the Segmentation into Discourse Units uses prosodic manual and non-manual events to segment into discourse units. As for the applications of the three models, the Co-Enunciation Model has been used to investigate the parallelism between the functions of DMs and their prosodic component. The Segmentation into Discourse Units was also used to refine the description of list buoys (possible DM candidates) by studying their position. On the contrary, the Prominence Demarcation Model disregards DMs (they are considered 'minor units') and focuses on exploring the communicative dynamism of discourse.

4.2.3 Syntactico-prosodic approaches

Segmenting oral discourse based on a combination of syntax and prosody is the approach taken by the Basic Discourse Units Model, the Clause-Like Units Segmentation and the STS Clausal Segmentation.[13] The first was originally developed for SpLs, whereas the other two are being developed for SLs. In addition to the differences from one model to another, the Basic Discourse Units Model has been created using a wide range of different genres, whereas the Clause-Like Units Segmentation and the STS Clausal Segmentation have only been used in narratives so far.

4.2.3.1 In spoken languages

The principles of the **Basic Discourse Units Model** (Degand and Simon, 2005, 2009a,b) are that the only observable linguistic criteria that must be considered for the delimitation of units are syntax and prosody. The resulting basic discourse units are the minimal units the listener uses when reconstructing what the speaker is saying, and they may be different in nature, i.e. they may regulate discourse, package information, express didactic focus or emphasis. The procedure consists of two independent analyses: a syntactic and a prosodic one that are carried out in Praat (Boersma and Weenick, 2016).[14] On the one hand, syntactic mapping is based on Dependency Syntax as conceived for spoken French by Blanche-Benveniste et al. (1990). In a nutshell, syntactic units (clauses) are comprised of a verb (or any other governor) and its governed complements. The clause "demonstrates maximal syntactic completeness [...] as its internal structure is built on dependency relations

[13] Neither the Clause-Like Units Segmentation nor the STS Clausal Segmentation have formally been called 'models' so far, that's why I have kept the terminology used by the authors and I have used 'segmentation' to name them. However, sometimes they will be treated as models in what follows because they have worked out a methodology for segmentation as the other models for SpLs have.

[14] Praat (`http://www.praat.org/`) is a free open source software package to analyse speech.

between its parts, and no external relations of the same type" (Degand et al., 2014, p.247). The remaining ungoverned elements are adjuncts and DMs, which are syntactically independent but they are not autonomous in discourse. Let's illustrate this by way of example (16) together with its translation taken from Degand and Simon (2005, p.69). There is a clause (delimited by square brackets) that contains a governor 'j'ai pas', its governed elements 'pour le moment' and 'le permis', and a DM 'de toute manière' (they are separated by parentheses).

(16) *[(de toute manière) (j'ai pas) (le permis) (pour le moment) quoi]*
'[(in any case) (I do not have) (the licence) (for the moment)]'

The result of this syntactic mapping gives rise to three different types of dependency clauses (Tanguy et al., 2012): verbal dependency clauses (governed by a verb), averbal dependency clauses (governed by an element other than a verb), and elliptical dependency clauses (incomplete clauses that can be interpreted as verbal dependency units when referring to the context as in answers). Moreover, these units can either be interrupted (the clause lacks an obligatory complement and/or it has been started but not completed) or contain adjuncts such as DMs. Table 4.4 contains this typology with the name of the clauses, their acronyms,[15] their definitions and one example[16] for each.

The final step for the annotation of syntactic units consists of identifying the 'functional sequences' that integrate each dependency clause. These functional sequences are the "clausal constituents that occupy a main syntactic function like Verb, Subject, Object, etc." (Degand et al., 2014, p.248) and the authors base their categorisation on Bilger and Campione's (2002) proposal for spoken French.[17]

On the other hand, prosodic mapping is trickier because there is not a consensus on a prosodic model to be used for French (Degand et al., 2014). Prosodic segmentation is therefore performed on the basis of a semi-automatic annotation procedure developed by Mertens and Simon (2009) that enables the establishment of major, intermediate and minor prosodic boundaries. Minor boundaries are not taken into consideration in the Basic Discourse Units Model, only the other two are mapped. Major boundaries (///) are marked by a silent pause longer than 250 ms, a lengthening of the syllable (three times longer than the syllables in context) or a sharp rise of

[15] The acronyms for each category are given according to their French acronym, so 'urv' stands for *unité de rection verbale*, 'ura' for *unité de rection averbale*, and 'ure' for *unité de rection elliptique*. Interrupted dependency clauses are tagged with '-I' for *inachevée*, and dependency clauses with a nondependent element are identified with a '+' sign. Both the '-I' and the '+' are placed after the acronym for the three possible dependency clauses (i.e. urv, ura or ure).

[16] The examples in French and their translations are taken from Degand et al. (2014) as are all the others in this section. The only exceptions are the last example in Table 4.4 and example 21, which are extracted from Tanguy et al. (2012) and translated by me. The meaning of the symbols is the following: square brackets mark clauses, parentheses mark functional sequences and angle brackets mark adjuncts.

[17] For the sake of clarity, I am only listing here the abbreviations that the reader will find in the examples of this dissertation. SS = Subject Sequence, SV = Verbal Sequence, SO = Object Sequence, SRg = Left Governed Sequence, SRd = Right Governed Sequence, SN = Nominal Sequence, SPrep = Prepositional Sequence, SPron = Pronominal Sequence, SAdj = Adjectival Sequence, SAdv = Adverbial Sequence, ag = Left Adjunct, md = Discourse Marker, insert = Insertion (all acronyms are based on French terms). For an overview of all functions, I refer the reader back to the source.

Type of clause	**Acronym**	**Definition**	**Example**
Verbal dependency clauses	urv	A clause that contains a governing verb.	*[(je me souviens)$_{SV}$ (des titres euh du Figaro et du Monde)$_{SO}$]^{urv}* ‘[(I remember)$_{SV}$ (the headlines uh of the Figaro and Le Monde)$_{SO}$]^{urv},
Averbal dependency clauses	ura	A clause that does not have a governing verb.	*<euh> [(les gens dans la rue)$_{SN}$]^{ura}* ‘<euh> [(the people in the streets)$_{SN}$]^{ura},
Elliptical dependency clauses	ure	An incomplete clause that can be interpreted as a verbal dependency unit when referring to the context (answers, etc.).	*[(de casser le lien qu'il y avait entre l'évolution des prix et des salaires)$_{SO}$]^{ure}* ‘[(to cut the link that existed between the prices evolution and the salaries)$_{SO}$]^{ure},
Interrupted dependency clauses	...-I	A clause lacking an obligatory complement and/or a clause that has been started but not completed.	*[(supposez supposez)$_{SV}$]$^{urv-I}$* ‘[(suppose suppose)$_{SV}$]$^{urv-I}$,
Dependency clauses with a non-dependent element	...+	A clause that includes an adjunct, insertion or DM.	*[(on peut dire)$_{SV}$ <je pense>$_{insert}$ (une star)$_{SO}$]$^{urv+}$* ‘[(we could say)$_{SV}$ <I think>$_{insert}$ (a star)$_{SO}$]$^{urv+}$,

Table 4.4: Type of clauses resulting from syntactic mapping

F0 (intra-syllabic F0 superior to ten semi-tones); whereas intermediate boundaries (//) are marked by a lengthening of the syllable (two times longer than the syllables in context), a sharp rise of F0 (superior to four semi-tones) or F0 is higher than adjacent syllables (higher than five semi-tones). Four types of intonation contours can be attributed to prosodic boundaries: "Continuation (rising F0 movement), Finality (falling or low F0), Focus (sharp falling from high to low contour) and Suspense (flat and lengthened contour)" that are abbreviated as C, T, F and S respectively (Degand et al., 2014, p.249).

Once syntactic and prosodic units are delimited, the frontiers of basic discourse units (BDUs) are established in the places where syntactic and major prosodic boundaries coincide. As a result, BDUs may be congruent (BDU-c), syntax bound (BDU-s), intonation bound (BDU-i), regulatory (BDU-r) or mixed (BDU-m) as in Table 4.5.

Type of BDU	Acronym	Definition	Example
Congruent	BDU-c	A syntactic unit corresponds with a prosodic one.	*[(il y a)*$_{SV}$ *(celui du capital* $//^{C}$ *et celui du travail)*$_{SO}$*]*^{urv} $///^{T}$ ‘[(there is)$_{SV}$ (that of capital $//^{C}$ and that of labor)$_{SO}$]^{urv} $///^{T}$,
Syntax-bound	BDU-s	Several prosodic units are grouped within a syntactic unit.	*[(l'invention* $//^{C}$ *du semestre européen* $///^{T}$ *qui soumet à l'approbation préalable de la commission* $///^{T}$ *les budgets des états nations)*$_{SS}$ $///^{C}$ *(nous ramène)*$_{SV}$ *(à une situation du droit de véto* $///^{C}$ *antérieure à la grande révolution de* $//^{S}$ *dix-sept-cent-quatre-vingt-neuf)*$_{SO}$*]*^{urv} $///^{T}$ ‘[(the invention $//^{C}$ of the European semester $///^{T}$ which submits to the prior approval of the commission $///^{T}$ the national budgets)$_{SS}$ $///^{C}$ (brings us back)$_{SV}$ (to the situation of the veto right $///^{C}$ previous to the great revolution of $///^{S}$ seventeen eighty-nine)$_{SO}$]^{urv} $///^{T}$,
Intonation-bound	BDU-i	Several syntactic units are grouped within a major prosodic unit.	*<la première>*$_{ag}$ $//^{C}$ *[(c'est)*$_{SV}$ *(qu'on n'est pas obligés de faire comme tout le monde* $//^{C}$*)*$_{SO}$*]*^{urv} *[(on a déjà fait)*$_{SV}$ *(la république)*$_{SO}$ $//^{C}$ *(quand tous les |- autres se contentaient* $//^{C}$ *d'une monarchie)*$_{SRd}$*]*^{urv} $///^{C}$ ‘<the first one>$_{ag}$ $//^{C}$ [(is)$_{SV}$ (that we do not have to do like everyone else $//^{C}$)$_{SO}$]^{urv} [(we have already done)$_{SV}$ (the republic)$_{SO}$ $//^{C}$ (when all |- others were satisfied with $//^{C}$ a monarchy)$_{SRd}$]^{urv} $///^{C}$’,
Regulatory	BDU-r	An adjunct or a DM are mapped with a major intonation unit.	*<mais>*$_{md}$ *<alors>*$_{md}$ $///^{T}$ ‘<but>$_{md}$ <then>$_{md}$ $///^{T}$,
Mixed	BDU-m	There are several syntactic and prosodic units before the boundaries of the units coincide.	*[(c'est la bulle* $//^{F}$ *financière qui)*$_{SS}$ *(dévore)*$_{SV}$ *(tout* $///^{C}$ *y compris* $//^{C}$ *les retraites* $//^{C}$ *des travailleurs)*$_{SO}$*]*^{urv} $//^{T}$ *<et>*$_{md}$ *[(je mets en garde)*$_{SV}$ *(tout le monde)*$_{SO}$*]*^{urv} $///^{T}$ ‘[(it's the financial $//^{F}$ bubble that)$_{SS}$ (consumes)$_{SV}$ (everything $///^{C}$ including $//^{C}$ the pensions $//^{C}$ of the workers)$_{SO}$]^{urv} $//^{T}$ <and>$_{md}$ [(I am warning)$_{SV}$ (everybody)$_{SO}$]^{urv} $///^{T}$,

Table 4.5: Type of BDUs resulting from the coincidence between syntactic and prosodic boundaries

Within this classification of BDUs, different positions are possible in order from the first to the last: left peripheral elements, initial elements, medial elements, final elements and right peripheral elements. Initial and final elements are the positions in which left and right governed sequences can typically be found. These sequences are always integrated into the syntactic and prosodic structure of the BDU. In example (17), the verbal sequence is preceded by a left governed sequence (in bold) that is both syntactically and prosodically integrated within the BDU. This left governed sequence is considered to be in the initial position.

(17) *<euh> [(**la première manifestation la première journée de grève**)$_{SRg}$ //^{C} (c'était)$_{SV}$ (le mouvement s'essouffle)$_{SO}$]^{urv} ///^{T}*
'<er> [(**at the first demonstration on the first day of the strike**)$_{SRg}$ //^{C} (it was)$_{SV}$ (the movement ran out of steam)$_{SO}$]^{urv} ///^{T}'

Peripheral positions allow elements to have different syntactic and prosodic relations. Therefore, an element that is found either in the left or the right periphery of an utterance may be syntactically dependent but prosodically isolated, syntactically independent but prosodically integrated or syntactically and prosodically detached at the same time. Examples (18), (19) and (20) together with the English translations will illustrate these possibilities with the elements referred to in bold.

(18) *[(**l'invention** //^{C} **du semestre européen** ///^{T} qui soumet à l'approbation préalable de la commission ///^{T} les budgets des états nations)$_{SS}$ ///^{C} (nous ramène)$_{SV}$ (à une situation du droit de véto ///^{C} antérieure à la grande révolution de //^{S} dix-sept-cent-quatre-vingt-neuf)$_{SO}$]^{urv} ///^{T}*
'[(**the invention** //^{C} **of the European semester** ///^{T} which submits to the prior approval of the commission ///^{T} the national budgets)$_{SS}$ ///^{C} (brings us back)$_{SV}$ (to the situation of the veto right ///^{C} previous to the great revolution of //^{S} seventeen eighty-nine)$_{SO}$]^{urv} ///^{T},

(19) *<**madame**>$_{ag}$ [(il est inexact de dire)$_{SV}$ ///^{C} (que tous les autres //^{F} font comme nous)$_{SO}$]^{urv} ///^{T}*
'<**madam**>$_{ag}$ [(is it correct to say)$_{SV}$ ///^{C} (that all the others //^{F} act as we do)$_{SO}$]^{urv} ///^{T},

(20) *<**bon**>$_{md}$ ///^{C} <mais>$_{md}$ [(pas nous)$_{SPron}$]^{ure} ///^{T}*
'<**well**>$_{md}$ ///^{C} <but>$_{md}$ [(not us)$_{SPron}$]^{ure} ///^{T},

In example (18), 'l'intervention du semester européen' is a prosodic left peripheral element because it is prosodically detached and syntactically dependent (i.e. it belongs to the subject sequence). Conversely, 'madame' in (19) is a syntactic left peripheral element because although it is prosodically integrated, it is out of the syntactic unit as it does not belong to the valency of the governing verb. In example (20), 'bon' is a syntactico-prosodic left peripheral element because it neither takes part in the syntactic unit nor in the prosodic unit, it is detached from both.

Finally, medial elements are inserted into the dependency structure of the verb. This means that although they do not belong to the valency of the nucleus, they are embedded in the syntactic unit. Example (21) presents a case in which there are

three medial elements: one DM and two adjuncts. If they were left out, the clause would still be grammatically correct because they do not belong to the valency of the verbal nucleus (i.e. to thank).

(21) *[(j'en remercie)$_{SV}$ <**d'ailleurs**>$_{md}$ <**cher Hervé**>$_{ad}$ <**cher Alain**>$_{ad}$ (tout spécialement)$_{SRd}$ (les ministres de la défense qui sont parmi nous ce soir)$_{SO}$]$^{urv+}$*
'[(I thank)$_{SV}$ <**by the way**>$_{md}$ <**dear Hervé**>$_{ad}$ <**dear Alain**>$_{ad}$ (in particular)$_{SRd}$ (the ministers of defence who are among us tonight)$_{SO}$]$^{urv+}$'

It derives from this explanation of the different positions of a BDU that in the case of DMs, they will be found in the syntactic left or right periphery of the BDU (as 'mais' in example (20)), in the syntactico-prosodic left and right periphery (as 'bon' in example (20)) or in the medial position (as 'by the way' in example (21)). However, there are some cases such as conditional clauses in which the DM appears in the initial position or in the prosodic left periphery. To the best of my knowledge, there are no examples so far in which the DM appears in the final position or in the prosodic right periphery. Table 4.6 contains a summary of the different positions in which an element can be found in a BDU, whether this position could be occupied by a DM, and whether the element is situated within a syntactic and/or a prosodic unit.

Name of elements in a BDU	**Possible DM position?**	**Belonging to what type of unit?**	
		Syntactic	**Prosodic**
Initial elements	✓	✓	✓
Medial elements	✓	✓	✓
Final elements	?	✓	✓
Prosodic left peripheral elements	✓	✓	—
Prosodic right peripheral elements	?	✓	—
Syntactic left peripheral elements	✓	—	✓
Syntactic right peripheral elements	✓	—	✓
Syntactico-prosodic left peripheral elements	✓	—	—
Syntactico-prosodic right peripheral elements	✓	—	—

Table 4.6: Summary table on the possible positions of DMs in a BDU

Some recent studies describing the position of DMs following the Basic Discourse Units Model in French have been completed, namely Degand et al. (2014); Martin et al. (2014); Degand and Simon (2015); while others are in progress. The underlying principle of these works is that "the semantic distribution of [DMs] varies with their position in the utterance, and that this semantic variation has to be interpreted in paradigmatic terms" (Degand, 2014, p.154). For this reason, the hypothesis of the left periphery attracting subjective meanings and the right periphery attracting intersubjective ones is in place.

The main advantage of the Basic Discourse Units Model is that it is not only applicable to conversations, but it can also be used for monological data. It does not propose a structure that reflects the global conception of discourse (top-down approach), but rather selects some observable linguistic criteria to segment discourse. This segmentation is based on heuristics and enables the structure of discourse to be studied without a pre-conceived idea (bottom-up approach). The versatility of this model will allow the use of the 'same measures' to segment any discourse regardless of the number of speakers and therefore obtain comparable units. The resulting units are linguistically described in syntactic and prosodic terms, which renders possible the comparison of a position with respect to the unit. Another interesting point is that prosodic segmentation does not rely on a theory that could restrict its usage to French. Instead, a set of explicit cues are selected in order to make the segmentation procedure more objective and replicable by different researchers to different sources of data. Because of these advantages, the Basic Discourse Units Model is taken into consideration for adaptation to SL data.

4.2.3.2 In sign languages

The **Clause-Like Units Segmentation** (Hodge, 2014; Hodge and Johnston, 2014) was developed with and for the Auslan Corpus data in order to delimit utterances that allow different types of linguistic analysis. Unlike the other models explained above for SpLs, this is not a hierarchical or a modular model but rather a methodology to delineate clause-like units (CLUs) of different kinds. Following Johnston (2013, p.50), CLUs are defined as "meaningful symbolic composite utterances that assert something about the world by using one element in that utterance to predicate something about another element" (Hodge, 2014, p.99). CLUs are annotated on the basis of Role and Reference Grammar, in which a clause consists of a semantic relation between a predicate and its arguments (Van Valin and LaPolla, 1997). The clause is made up of the nucleus (containing the predicate, i.e. some type of symbolic unit that profiles a process, activity, state or event), the core (consisting of the predicate together with its arguments), and the periphery (non-arguments expressing time, manner or location).

CLUs are identified on the basis of content (semantic relations) and perceived form (intonation contours expressed by both the manual and non-manual channel). Intonation contours have not yet been annotated in the Auslan Corpus, so perceiving them to delineate a CLU remains a subjective task (that's why CLUs are assigned a CERTAIN or UNCERTAIN tag depending on the annotator's certainty). The delimitation of CLUs enables syntactic mapping of their constituents and identification of the different types of CLUs and the relationships between them. CLUs may be single, embedded or dependent, and the last two may combine and give rise to cases of 'embed + embed' or 'dependent + embed' CLUs (Hodge and Johnston, 2014). A single CLU is a more or less complete CLU that makes sense in itself as in example (22) cited from Johnston (2013).[18]

[18]The following examples of CLUs also come from this source. CLUs are delimited by square brackets for the reader's convenience. PT:PRO3SG = third person singular, PRO1 = first person singular, FS = fingerspelling.

(22) [PT:PRO3SG BUY CAR YESTERDAY]
'He bought a car yesterday.'

The other three types are cases in which single CLUs are linked via relations of hypotaxis. An embedded CLU is contained within another CLU as another argument of the predicate. In example (23), the CLU 'PRO1 THINK FROM PERTH' is embedded within another CLU that is the container.

(23) [TODAY NEW TEACHER [PRO1 THINK FROM PERTH] ARRIVE SCHOOL]
'The new teacher, who I think is from Perth, came to school today.'

A dependent CLU presents a morpho-syntactic or prosodic indication of dependency with regard to another CLU with which it expresses one coherent idea. In example (24), there are two CLUs. In this case, one is not embedded within the other but they are dependent as together they express a coherent idea.

(24) [FS:IF UNUSUAL PT:PRO3SG SAY REAL] [PT:PRO3 STILL DOUBT BOTHER]
'If he uncharacteristically was to tell the truth, the villagers would still not believe and not bother to help.'

So far, segmentation into CLUs has been devoted to the study of narratives in Auslan (Ferrara, 2012; Ferrara and Johnston, 2014; Hodge and Ferrara, 2014; Hodge and Johnston, 2014). These studies mainly focus on enactment (i.e. the use of different manual and non-manual resources so that the narrator embodies another referent by reproducing its actions, thoughts, feelings and/or what it says) as well as on the function that signs, gestures and nonmanuals fulfil within a CLU. Conversational data has not been taken into account yet, which leaves specific features of conversations such as interruptions, DMs, etc. unexplored. Although adopting this methodology would avoid major modality adaptations, preference will be given to segmentation models more oriented to the study of DMs that solve the issue of conversational data.

Along the lines of CLUs, the **STS Clausal Segmentation** (Börstell et al., 2016) proposes a methodology to delimit clauses with and for the STS Corpus. Their definition of a clause is also taken from Role and Reference Grammar, but their syntactic annotation is restricted to the core of the clause (predicate and obligatory arguments) and does not include peripheral elements. Only the smallest clausal units are being delineated at present, so they "do not keep track of the relations between matrix and subordinated clauses, or between coordinated clauses" (ibid., p.20). When an argument or a predicate are repeated, they are included in the same clause if one of the following conditions is met: the argument or predicate are repetitions of the same sign (see example (25)), or if they are semantically related or near-synonyms such as 'grab' and 'take'.

(25) [DOG WAG-TAIL HAPPY WAG-TAIL]
'The dog was happy, wagging its tail.'

Clauses are not only delimited on the basis of meaning (semantics) but also of form (syntax and prosody), which is why "the elements included into a clausal unit should be linearly adjacent within a prosodically uniform sequence" (ibid.). Since prosodic

breaks appear at different places, the layering of boundary markers is taken as a criterion for a syntactic break (Börstell et al., 2014). Being a methodology still under discussion, it has been used to segment narrative productions from the STS Corpus. Again, the same argument presented against adopting the Clause-Like Units Segmentation applies here: the segmentation of conversational data using this methodology is not a reality yet (although it is expected to be the next step taken). Another major drawback is that this segmentation is restricted to small clausal units, whereas the study of DMs entails larger chunks of discourse.

4.2.3.3 Interim summary of syntactico-prosodic approaches

To sum up, the three segmentation models (namely the Basic Discourse Units Model, the Clause-Like Units Segmentation and the STS Clausal Segmentation) whose approach is syntactico-prosodic were presented above. Their syntactic segmentation consists of the delimitation of clauses for which there is a nucleus/governor and its arguments/dependants. The Basic Discourse Units Model establishes a set of cues to delineate prosodic units, whereas the other two do not do so as the role of prosody is to help locate predicates, arguments and non-arguments. Another difference is that the Basic Discourse Units Model gives rise to different types of units depending on how syntax and prosody are combined, whereas the other two always give rise to clauses that prosody does not alter. As for their uses in natural discourse, the Clause-Like Units Segmentation and the STS Clausal Segmentation are still under construction or under revision, and they have been created for and with narrative data. Conversely, the Basic Discourse Units Model has been going around for a while and has been constantly revised. It is more versatile than the other two as it can be used for any kind of discourse (monologue vs. dialogue, any genre). Therefore, any type of DM (including interpersonal) is covered by this model and, moreover, it allows the study of their position in order to refine their description.

4.2.4 Summary of the advantages and drawbacks of each model

So far nine segmentation models or accounts for spoken and signed languages have been presented. They have been divided into three different approaches, namely pragmatic (4.2.1), prosodic (4.2.2) and syntactico-prosodic (4.2.3). Prosodic approaches also include five SL case studies that base segmentation on visual cues and have paved the way for other SL segmentation accounts. In what follows, the advantages and drawbacks of the different segmentation models for both SpLs and SLs are put together. I also justify why adapting the Basic Discourse Units Model is the most convenient solution for segmenting my data.

Let's begin with the three pragmatic approaches, namely the Geneva Model, the Fribourg Model and the Val.Es.Co. Model. Although the **Geneva Model** has been used as a framework for the study of text relational markers (TRM), i.e. linguistic forms with procedural meaning (Roulet, 2006), there are at least three shortcomings regarding its use within the framework of this dissertation. First, the definition of DMs taken from Crible (2014) for this research includes different devices that

participate in the construction of discourse by signalling a textual relation, making structural sequencing, expressing the speaker's meta-comment and contributing to interpersonal collaboration. In the Geneva Model, TRMs belong to the textual component of discourse, so only textual relations are taken into account and other markers such as interpersonal ones are excluded. Second, TRM categories result from a top-down approach in which one looks for different types of textual relations (such as cause, consequence, etc.), whereas this dissertation takes a bottom-up approach in which the starting point is the DM candidate in itself. Third, when applying this model to a conversation, the outcome is a tree that interprets the structure of discourse and not the position of the DM in itself.

As for the **Fribourg Model**, it was conceived to solve syntactic questions that traditional grammar for the analysis of the sentence has not been able to answer such as subjunctive constructions producing a hypothetical interpretation (Corminboeuf, 2007); discourse anaphora, 'anadeixis' and discourse deixis (Cornish, 2009); correlations and enumerations (Montchaud, 2016); and parenthetical verbs (Rossari and Gachet, 2014). DMs have not been studied under this approach, which is why this model has not been adopted to study of the position of DMs.

The **Val.Es.Co. Model** has a lot of potential uses for the study of the position of DMs in conversational data as its main underlying hypothesis is that the position delimits the function of DMs. This model has also been applied to the study of the grammaticalisation of DMs (Estellés, 2009, 2011) as well as to their diachronic evolution in meaning and position (Estellés, 2006; Briz Gómez and Estellés, 2010), among many other studies. Despite its advantages, the Val.Es.Co. Model is not the appropriate candidate to be adapted to the signed modality because it is only applicable to conversation, for which a hierarchical structure is established including prototypical features of interactions (e.g. interruptions, hesitations and turn-management DMs), and therefore monologues fall beyond its scope. Even if most of the data in this dissertation are conversations, there is one case in which there are monologues, namely the story *Frog, where are you?* (Mayer, 1969) in the LSC Corpus. In this case, the informants tell the story to the moderator in order to avoid the signing style of one signer influencing the other. Consequently, if this model were adopted, this would imply that two different methodologies would be needed: one to treat monological productions and the Val.Es.Co. Model to treat dialogical productions. The resulting discourse units would then be different in nature and, therefore, not comparable.

As regards prosodic approaches, none of the three models – the Co-Enunciation Model, the Prominence Demarcation Model and the Segmentation into Discourse Units – have been found suitable for the purposes of this dissertation. One of the main advantages of the **Co-Enunciation Model** is that not only does it take into account spoken material but also other elements such as co-speech gestures participating in human communication. Bearing in mind that the appropriate level for cross-linguistic analysis between speakers and signers is speech together with co-speech gesture for the first, and manual together with non-manual production for the latter (Taub et al., 2002; Enfield, 2004; Vermeerbergen and Demey, 2007), the application of the Co-Enunciation Model to SL data could be potentially interesting

for the comparison of DMs in spoken and signed discourse. Nevertheless, this model presents the same shortcoming for this research as the Val.Es.Co. Model, i.e. it is designed for conversations, whereas the data in this research are monological (one task in the LSC Corpus) and dialogical (the rest of the tasks in both the LSFB and LSC corpora).

The main advantage of both the **Prominence Demarcation Model** and the **Segmentation into Discourse Units** is that they are not models in themselves but rather heuristics. As a result, they are applicable to any kind of oral data (monological or dialogical). However, the problem with the Prominence Demarcation Model is that it considers DMs as 'minor units' (Lombardi Vallauri, 2014, p.223) and so far discards them from the analysis. Conversely, adapting Tamburini's (2005) algorithm to a set of prosodic visual cues could prove extremely useful for the studies on Information Structure in SLs, in which researchers identify both the topic and focus of utterances by hand (Kimmelman, 2014; Navarrete, 2016). From the Prominence Demarcation Model, it is also acknowledgeable that its underlining idea is that a set of prosodic cues delimits the boundaries of units, which is in line with what some researchers claim about SL, i.e. prosodic cues somehow reflect the syntactic organisation of utterances (Crasborn, 2007; Fenlon et al., 2007; Hansen and Heßmann, 2007; Jantunen, 2007; Herrmann, 2009; Hochgesang, 2009; Nicodemus, 2009). On the other hand, the weak point of the Segmentation into Discourse Units is that the units resulting from segmentation are not very informative because they are of a very different nature and no linguistic description is provided.

Last but not least, syntactico-prosodic approaches include the Basic Discourse Unit Model, the Clause-Like Units Segmentation and the STS Clausal Segmentation. The first is the only existing model along these lines conceived for SpLs, whereas the other two were developed for SLs. Both the **Clause-Like Units Segmentation** and **STS Clausal Segmentation** present two drawbacks. The first is that they were created with narrative data and have not yet been adapted to conversation (see sub-section 4.2.3), which excludes specific features of conversations such as interruptions and abundance of interpersonal DMs. The second is that their focus is the study of syntax, which is too narrow to investigate DMs because they function at different levels of discourse and therefore units larger than the clause are necessary.

As for the **Basic Discourse Units Model**, its main advantage is that it is not only applicable to conversation (which was the main drawback for other potentially interesting models that have already been used for the study of DMs such as the Val.Es.Co. Model or the Co-Enunciation Model), but it can also be used for monological data because it does not establish a hierarchical structure of interactions between at least two people. Instead, it provides some guidelines for syntactic and prosodic segmentation that are based on heuristics applicable to any kind of discourse. This versatility will allow the use of the 'same measures' to segment any discourse and therefore obtain comparable units. Two other strong points that this model presents with respect to its SL prosodic and syntactico-prosodic counterparts are that (i) it is not focused on syntax as the Clause-Like Units Segmentation and the STS Clausal Segmentation are, but it takes into account larger segments of dis-

course (i.e. basic discourse units or BDUs) which are more appropriate for the study of DMs; and (ii) it is more descriptive than the Segmentation into Discourse Units as regards the content of the resulting BDUs because of the combination of syntactic and prosodic segmentation. In short, adapting the Basic Discourse Units Model seems to be the most suitable methodology for this dissertation and could also be at the basis of more in-depth future syntactic and prosodic analyses.

4.3 A segmentation model for sign languages

As mentioned at the beginning of this chapter, segmentation is at the basis of how discourse is structured, which is why it is essential to have a model or heuristics that allow a consistent delimitation of units. Once units are delineated, one can study what they are made of, i.e. what material is contained within these units and how it is distributed (the position of elements). Indeed, this last point is at the basis of this dissertation that aims to describe the position of list buoys, palm-ups and the sign SAME (as well as their distribution across genres and functions) in LSFB and LSC when they have a discourse-marking role. As argued in 4.2.4, the best way to proceed seems to be to adapt the Basic Discourse Units Model (Degand and Simon, 2005, 2009a,b) to the signed modality as the models that are being created for SLs (the Clause-Like Units Segmentation and the STS Clausal Segmentation) do not fully account for the specificities of conversational data. The Basic Discourse Units Model tackles segmentation of spoken discourse in a combination of syntax and prosody, and its underlying hypothesis is that basic discourse units (BDUs) are the minimal units the listener uses when reconstructing what the speaker is saying, and they may be different in nature, i.e. they may regulate discourse, package information, express didactic focus or emphasis.

The pillars of this model, i.e. syntactic and prosodic segmentation, are carried out independently using Praat (Degand and Simon, 2005, 2009a,b). However, this software was designed exclusively for analysing speech and not SL data. The software used in this dissertation for the annotation and analysis of SL discourse is ELAN (see chapter 3), which is commonplace in SL research because it supports video data. Consequently, one of the first issues to take into account for the adaptation of the Basic Discourse Units Model to the signed modality is the difference in software. Despite this disparity, ELAN is very convenient because it allows different tiers to be displayed and hidden whenever necessary. Three different tiers were created in order to segment SL data: one for syntactic units (i.e. clauses), one for prosodic units and one for BDUs.

The segmentation procedure consists of three different steps that are explained in the following sub-sections. The first step concerns the segmentation of discourse into clauses as explained in 4.3.1. When this is done, the syntactic tier is hidden so that it does not influence prosodic segmentation, which is the second step. Prosodic segmentation is based on a set of visual cues that are detailed in 4.3.2. When prosodic segmentation is over, the syntactic tier is displayed again and the places where syntactic and prosodic boundaries coincide are identified in order to establish BDUs (4.3.3). This is the third step that, as in the original model, results in different

kinds of BDUs. To wrap up this adaptation of the Basic Discourse Units Model to the signed modality, the weak and strong points of this methodology are discussed as well (4.3.4).

4.3.1 Syntactic segmentation

Adapting a spoken segmentation model to the signed modality is not exempt of the challenges that the modality (spoken vs. signed) poses. In the Basic Discourse Units Model, clauses are delimited using Dependency Syntax for spoken French as conceived by Blanche-Benveniste et al. (1990). Then, the type of clause is annotated (i.e. verbal, averbal, elliptical, interrupted or containing a non-dependent element) and finally the 'functional sequences' (i.e. verb, subject, object, etc.). For the moment, syntactic segmentation will be restricted to the delimitation of clauses, and the annotation of the type of clause and of the functional sequences will be left aside. This decision is justified because the type of clause and the type of material that is contained within a clause do not influence the position of a DM, the description of which is the final objective of having a segmentation model for SLs in this dissertation. Annotating the type of clauses as well as the functional sequences is indeed an issue that could be taken up for further research with a focus on SL syntax.

Although SL studies about different aspects of syntax are numerous to date, there is not a syntactic model such as Dependency Syntax to delimit clauses. SL scholars frequently base their segmentation on Role and Reference Grammar (Jantunen, 2007; Hodge, 2014; Hodge and Johnston, 2014; Börstell et al., 2016), the principles of which are similar to Dependency Syntax. As previously mentioned in sub-section 4.2.3, Dependency Syntax establishes that a clause is made up of a nucleus or governor (usually a verb) together with its arguments or dependants. Example (26) illustrates an instance of a clause.[19]

(26) $[(\text{PT:PRO1})_{SS}\ (\text{BUY})_{SV}\ (\text{LAND})_{SO}\ (\text{WITH HEARING})_{SRd}]^{urv}$
'I bought land with a hearing person.'

(LSFB Corpus, session 2, task 4, signer S004, 03:18 – 03:20)

The signer is explaining that a long time ago, he bought land with a hearing person. The nucleus of this clause is the verb BUY. PT:PRO1, LAND and WITH HEARING are its dependants. This is a simple example with a structure that is easy to identify. Nevertheless, it is not just verbs that can be the nucleus of a clause; different possibilities exist. For the sake of clarity, the structure of the upcoming pages is the following: first, the different types of clauses will be explained with examples (4.3.1.1); second,

[19] In the section devoted to the Basic Discourse Units Model (4.2.3), the type of clause as well as the set of functional sequences are annotated in the examples in French and their English translations. There is a match between the example and its translation because the structure of the clause and the participating elements in both languages are similar. Conversely, LSFB clauses and their English translations frequently display different structures as well as linguistic items of a different nature. As a result, mismatches between examples and translations are more frequent. In what follows, the type of clauses and the functional sequences are only annotated in the LSFB examples but not in their English translations. Although this information is not annotated in the corpora of this dissertation, the examples in the syntactic segmentation part (4.3.1) do contain this information for illustrative purposes.

non-dependent elements will be commented on (4.3.1.2); and third, some special cases will be tackled (4.3.1.3).

4.3.1.1 Types of dependency clauses

As mentioned in 4.2.3, there are three types of clauses in the Basic Discourse Units Model: verbal, averbal or elliptical. Following the structure of Tanguy et al. (2012), this section is divided into these types with a final point on the variations they may display (i.e. being interrupted or being further elaborated by way of a non-dependent element). Note that the acronyms of the Basic Discourse Units Model reused here for the annotation of both the type of clause and the type of sequence derive from French (see 4.2.3.1).

Verbal dependency clauses (urv) As its name reveals, a verbal dependency clause contains a verb that is the nucleus of the clause. According to Tesnière (1959), verbs are the only elements in the clause that cannot be governed. In SLs, the verb can be either a fully-lexical or a partly-lexical sign. Fully-lexical signs are those tokens that can be dictionary entries of a SL because they are "highly conventionalised signs in both form and meaning in the sense that both are relatively stable or consistent across contexts" (Johnston, 2015, p.13). Partly-lexical signs cannot be listed in a dictionary as they are "combinations of conventional and non-conventional (highly contextual) elements" (ibid.). The lack of a meaning value that is added to the sign parameters of handshape, location, orientation and movement on the one hand, and the need to refer to the context in order to understand the meaning of the sign on the other, are the two main features that characterise this group of signs. At least one of these two features must be met for any sign to be partly-lexical. Partly-lexical signs are a broad category that mainly includes pointings (towards a person or entity in discourse), depicting signs (they encode meanings related to the location, movement, size, shape and handling of entities)[20] and buoys (signs held on one hand while the other keeps on signing, see chapter 5).

The difference between fully-lexical and partly-lexical signs acting as verbs is illustrated in Figure 4.4 with an LSFB token extracted from the *Dictionnaire de LSFB en ligne* (Sonnemans, 2016). As a fully-lexical sign, both its form and its meaning (the noun 'aperitif' or the verb 'taking the aperitif') are stable across contexts. As a partly-lexical sign, the meaning conveyed is that a person takes a small cup or glass with a handle and drinks from it, so not only is the action encoded but also the aspect of what the person is taking.

[20] Depicting signs have received different names in the literature. Schembri (2003), who uses the term 'polycomponential verbs' following Slobin et al. (2003) (see below), and Bauer (2014) make a list of the most common denominations including: 'verbs of location and motion' (Supalla, 1982, 1986, 1990), 'classifier predicates' (Schick, 1987, 1990; Corazza, 1990; Smith, 1990; Valli and Lucas, 1995), 'spatial-locative predicates' (Liddell and Johnson, 1987), 'polymorphemic predicates' (Collins-Ahlgren, 1990; Wallin, 1990), 'polymorphemic verbs' (Engberg-Pedersen, 1993), 'polysynthetic signs' (Takkinen, 1996; Wallin, 1996, 1998), 'proforms' (Sutton-Spence and Woll, 1999; Chang et al., 2005) and 'polycomponential signs' (Slobin et al., 2003).

Figure 4.4: Fully-lexical sign for APERITIF and partly-lexical for 'taking a small cup or glass with a handle'

In example (26), the verb was a fully-lexical sign with three governed elements. In example (27), the signer is explaining how his days were organised when he was at the boarding school for the deaf. In this clause, there is a fully-lexical sign (START) and a partly-lexical sign (DS:GO-UP). The nucleus in this case is DS:GO-UP and START SCHOOL constitutes a clause that depends on the verb DS:GO-UP and expresses the moment in which the action happens. Therefore, START SCHOOL behaves as a left governed sequence of the governor DS:GO-UP. DS:GO-UP is followed by an object sequence which is SCHOOL and a right governed sequence which is UNTIL TIME-TEN.

(27) [(START SCHOOL)$_{SRg}$ (DS:GO-UP)$_{SV}$ (SCHOOL)$_{SO}$ (UNTIL TIME-TEN)$_{SRd}$]^{urv}
'When it was the time to start school, we went upstairs to the classroom until ten o'clock.'

(LSFB Corpus, session 21, task 3, signer S044, 02:46 – 02:50)

Averbal dependency clauses (ura) The verb is usually considered the nucleus of the clause. In oral data, it may be absent or another element such as a pronoun, a noun or an adjective may fulfil this role. In LSFB, copulative verbs are not overtly expressed in discourse. Therefore, the element that would follow the copulative verb (if overtly expressed) will be considered the nucleus as in example (28). Here the signer is explaining his experience with the bank when he bought his house. The nucleus is DIFFICULT, i.e. an adjectival sequence.

(28) [(BANK)$_{SRg}$ (DIFFICULT)$_{SAdj}$ (MONEY RECEIVE)$_{SO}$]^{ura}
'It was difficult to get money from the bank.'

(LSFB Corpus, session 2, task 4, signer S004, 06:43 – 06:46)

Elliptical dependency clauses (ure) When a clause is incomplete but it is interpretable as a verbal dependency clause thanks to the context, it is called an elliptical dependency clause (Tanguy et al., 2012). Answers and interventions (among other possibilities) fall within this category. In example (29), the signers are talking about the football matches that used to take place between two boarding schools for the deaf in Brussels called IRSA and Woluwe. Signer S045 says that both schools are continuing this tradition, but signer S044 answers that it is not as often as it used to be. The clause that S044 utters (overlapping with his partner and marked with underlined text preceded by §) is interpretable as a verbal dependency clause when referring to what S045 says.

(29)
S045: [(NS:IRSA NS:WOLUWE TEAM)$_{SS}$ (AGAIN PLAY AGAIN)$_{SV}$]^{urv}
§[(FOOTBALL)$_{SO}$ (PLAY AGAIN)$_{SV}$]^{urv} [(LESS)$_{SAdv}$]^{ure}
S044: §[(PT:DET)] [(EVERYDAY)$_{SAdv}$]^{ure} [(LESS)$_{SAdv}$]^{ure}
S045: 'The teams at IRSA and Woluwe still §play football... Less often, yes.'
S044: '§Not everyday, less often.'

(LSFB Corpus, session 21, task 3, 04:10 – 04:16)

Other possibilities regarding dependency clauses As explained above, there are three types of dependency clauses: verbal, averbal and elliptical. When individuals communicate, the person who holds the floor can be interrupted by his/her interlocutors or by other contextual factors. As a result, clauses may be incomplete (marked with -I), which means that some dependants after the nucleus of the clause are lacking as in example (30). There are three different interruptions in this example. The first time S055 interrupts S056, who is looking for what to say next. The second time S055 interrupts herself: she begins a sentence but does not finish it because of the backchannel that S056 provides her. The third time it is also an interruption in which S056 does not finish the clause.

(30)
S056: [(FEEL)$_{SV}$]$^{urv-I}$
S055: [(FEEL)$_{SV}$ (MORE DEAF)$_{SO}$]^{urv} §<PALM-UP>$_{ad}$ [(BECAUSE PERSON-BLOW)$_{SV}$]$^{urv-I}$ [(YES)$_{SAdv}$]^{ura} [(THAT-S-IT)$_{SV}$]^{urv}
S056: §[(YES)$_{SAdv}$]^{ura} <PALM-UP>$_{ad}$ [(GIVE)$_{SV}$]$^{urv-I}$ [(YES)$_{SAdv}$]^{ura} <PALM-UP>$_{ad}$
S056: 'I feel...'
S055: 'You feel more deaf, don't you? Because I realised... Yes, that's it.'
S056: 'Yes... erm... It makes me feel... yeah.'

(LSFB Corpus, session 27, task 4, 00:32 - 00:36)

Another possibility is that dependency clauses have an adjunct, a parenthesis in the discourse or a DM embedded. These are rectional units 'plus' (+) as in example (31). The signer is explaining that kites are chosen according to the strength of the wind on the Beaufort scale. She makes a parenthesis, the insertion of FORGET PT:PRO1, in the averbal dependency clause governed by the adjective BETTER.

(31)
[(IF FS:BF IT-IS APPROXIMATE GSIGN APPROXIMATE <FORGET PT:PRO1>$_{insert}$ GSIGN SIX)$_{SRg}$ (BETTER)$_{SAdj}$ (PT:DET SMALL)$_{SO}$]$^{ura+}$
'If Beaufort is approximately... I forgot... erm... six, it is better to take a small one.'

(LSFB Corpus, session 27, task 15, signer S055, 02:42 - 02:48)

Non-dependent elements can be embedded within the rectional unit as we just saw, but they can also be outside the dependency structure so that clauses get connected, the signer can futher elaborate what s/he is saying, etc. In the following section, some of these cases are explained together with some examples.

4.3.1.2 Non-dependent elements

Adjuncts and DMs are elements that stay out of the dependency structure. Example (32) takes the clause in example (27) and the following one. The two clauses express a sequence, i.e. one event happens after the other. This meaning is made explicit by the sign AFTERWARDS that does not take part in the dependency structure of any verb as it is a DM. The nuclei of the two clauses are the depicting sign of movement DS:GO-UP and the fully-lexical sign PLAY respectively (Johnston, 2015).

(32) [(START SCHOOL)$_{SRg}$ (DS:GO-UP)$_{SV}$ (SCHOOL)$_{SO}$ (UNTIL TIME-TEN)$_{SRd}$]^{urv} <AFTERWARDS>$_{md}$ [(PLAY)$_{SV}$ (FIFTEEN MINUTES)$_{SRd}$]^{urv}
'When it was time to start school, we went upstairs to the classroom until ten o'clock. Afterwards, we played for fifteen minutes.'

(LSFB Corpus, session 21, task 3, signer S044, 02:46 – 02:53)

PALM-UP (see chapter 5) is a grammaticalised co-speech gesture that can have several functions in the different SLs where it has been studied; for instance, it can be a DM (also called connective in the other studies). Sometimes, this DM function is expressed by PALM-UP accompanied with a mouthing in the surrounding SpL because PALM-UP serves as an unspecified manual frame for the integration of spoken components (McKee and Wallingford, 2011). In these cases, the DM function of PALM-UP was assigned on the basis of the meaning of the mouthing (van Loon, 2012). On the other hand, there are occurrences in which there is no mouthing but the function of PALM-UP is assigned with respect to the context. In example (33), the signer is saying that he usually prefers subtitles on the TV news instead of interpreters, although there is one interpreter who translates more clearly than the others.

(33) [(PT:PRO3)$_{SS}$ (SL)$_{SV}$]^{urv} <PALM-UP>$_{md}$ [(AGAIN SUBTITLES DS:SIZE-SUBTITLES)$_{SS}$ (AGAIN BETTER)$_{SAdj}$]^{ura} <PALM-UP>$_{md}$ <PALM-UP>$_{md}$ [(ONE LADY SL INTERPRETER PT:PRO3)$_{SS}$ (AGAIN MORE CLEAR)$_{SAdj}$]^{ura}
'They sign, although subtitles are better, yes. But there is a lady working as a sign language interpreter who is more clear.'

(LSFB Corpus, session 2, task 3, signer S004, 05:05 – 05:15)

There are three clauses. The nucleus of the first is the sign glossed as SL, which functions as a verb meaning 'to sign'. The nuclei of the second and third clauses are the signs glossed as BETTER and CLEAR respectively. Although both function as adjectives, they are the nuclei of the two clauses because copulative verbs in LSFB are not overtly expressed. There are also three palm-ups that are out of the dependency structure of these three nuclei (i.e. they are DMs) and whose role is to connect the three clauses. The first PALM-UP expresses a concession (denial of the expectation created by the signer when he says that interpreters sign) and the second punctuates the discourse (the marker stresses the end of the signer's claim). None of these two are accompanied by a mouthing, so the context was used to label them with a function. The last PALM-UP expresses an opposition (a pragmatic counter-expectation) and is accompanied by the mouthing 'mais' in French, which means 'but'.

4.3.1.3 Special cases

In this section, some tricky cases for the segmentation of clauses linked to SL data will be tackled. Repetitions as well as reported speech are presented in Tanguy et al. (2012) for spoken French. Indeed, these issues are also present in SL data but they need to be treated from a different point of view. In addition, an account of what to do with rhetorical questions and pointing signs used to start discourse will be given.

Repetitions The phenomenon of repetition is fairly common in SLs and many studies have been devoted to the issue. The pioneering studies focused on the repetition of verbs ('verb sandwiches' in terms of Fischer and Janis (1990) and 'verb echoes' in terms of Pinsonneault (1994)). Repetitions (also know as reduplications or doublings) have attracted more and more attention from scholars (Vermeerbergen and De Vriendt, 1994; Pfau and Steinbach, 2006; Nunes and Quadros 2008; Sze, 2008b; Crasborn et al., 2009; Wilbur, 2009b; Börstell, 2011; to name some of the works). More recent accounts have widened the perspective of repetitions and have shown that they may take different forms and work at different linguistic levels (Filipczak and Mostowski, 2013; Kimmelman, 2013; Notarrigo et al., 2016).

According to Notarrigo et al. (2016), repetition structures within the same turn can be: (i) contiguous, when the repeated components are (near-)contiguous (there may be a pause or a palm-up in between); (ii) non-contiguous, when the repeated components are separated by at least one sign; and (iii) framing, when the repeated component is symmetrical and encloses a central element (from one sign to several clauses). Regardless of the form, repetition structures may belong to the grammatical, semantic or pragmatic domain.[21]

In the syntactic coding protocol for spoken French by Tanguy et al. (2012), repetitions and self-repairs do not receive specific treatment. In both cases, the repeated component is contiguous and always belongs to the same clause. In a SL segmentation protocol, repetition structures deserve a section to account for their complexity: firstly because these structures are not only contiguous but also non-contiguous and framing, and secondly because they are used for very different linguistic purposes. The examples given in Tanguy et al. (2012) can be also found in the LSFB Corpus. In (34), the signer repeats the first person pronoun PT:PRO1 to bid for the floor and attract the other informant's attention.

(34) [(**PT:PRO1**++)$_{SS}$ (BUY)$_{SV}$ (LAND HOUSE NOTHING)$_{SO}$]^{urv}
'I I I bought land without a house.'

(LSFB Corpus, session 2, task 4, signer S003, 07:46 – 07:50)

[21] The aim here is not to go into detail about the different existing repetition structures as in Notarrigo et al. (2016), but to explain the principle of syntactic segmentation. For a comprehensive explanation of the topic with examples in LSFB and Flemish SL (VGT), I refer the reader back to the source.

In (35), the signer repeats the sign SCHOOL in a self-repairing structure. To begin with, she produces the sign using both hands (2H). Since this is a one-handed sign, she corrects herself by repeating the one-handed sign.

(35) $[(\text{YES})_{SAdv}]^{ura}$ $[(\textbf{SCHOOL-2H}$ GSIGN $\textbf{SCHOOL}$ GSIGN $\textbf{SCHOOL}$ PT:LOC$)_{SRg}$ (INTERPRETER PT:PRO3$)_{SS}$ (IT-IS SL$)_{SO}$ (ADAPT$)_{SV}$ *false start* (PT:PRO1$)_{SS}$ (REALISE$)_{SV}$ (INTERPRETER WHAT ADAPT$)_{SO}$ (WHY SIGN$)_{SRd}]^{urv-I}$
'Yes, at school... erm... school... oh dear... at school interpreters would adapt *(false start)* I realised that interpreters would adapt their sign language because when they signed...'

(LSFB Corpus, session 27, task 14, signer S056, 04:56 – 05:04)

In both examples, the syntactic segmentation procedure is the same as for spoken French, i.e. the repeated components stay within the same clause. These repetition structures are easy to identify and no further interpretation is needed. Let's move to the examples that are prototypical of SL data and that require a deeper analysis. When segmenting into clauses, repetition structures may be found within the same clause or split into different clauses. These two possibilities are tied to the existence of a nucleus or nuclei as illustrated below.

In example (36), the signer is asking the other informant for her opinion about the change of school in the 1980s after the process of federalisation in Belgium. There is a syntactic repetition in which the signer asks a question by using a framing structure with a wh-sign (Sandler and Lillo-Martin, 2006; Cecchetto, 2012; Notarrigo et al., 2016).[22] Since there is only one nucleus in the example, i.e. FEELING, the repetition of WHAT is within the same clause.

(36) $[(\textbf{WHAT}$ FEELING $\textbf{WHAT})_{SAdj}$ (DS:CHANGE-POSITION$)_{SO}]^{ura}$
'What do you think about the change of school?'

(LSFB Corpus, session 21, task 3, signer S044, 07:55 – 07:57)

In example (37), the signer is explaining why she likes music. The repetition of GIVE aims to create an enumeration of the feelings that music produces to the signer (Notarrigo et al., 2016). This time the four repetitions are separated into four different clauses because they behave like nuclei. The only exception found so far to this rule of giving separate treatment to each repetition of a nucleus are the cases in which the nucleus is repeated contiguously in order to serve grammatical purposes such as to express intensity, plural, reiteration, duration and reciprocity (Notarrigo et al., 2016).

[22] Framing structures with a wh-sign are a fairly common phenomenon that has already been reported in different SLs such as Croatian SL (HZJ) (Šarac Kuhn and Wilbur, 2006), Finnish SL (FinSL) (Savolainen, 2006), New Zealand SL (NZSL)(McKee, 2006), Australian SL (Auslan) (Johnston and Schembri, 2007) and Italian SL (LIS) (Branchini et al., 2013).

(37) [(PT:DET)$_{SS}$ <GSIGN> <PALM-UP> (**GIVE**)$_{SV}$ (A-LITTLE CALM)$_{SO}$]^{urv}
[(**GIVE**)$_{SV}$]$^{urv-I}$ [(ANNOY STRESS)$_{SRg}$ (**GIVE** MUSIC KNOW RELAX)$_{SV}$]^{urv}
[(**GIVE**)$_{SV}$ <SAME>$_{md}$ (TAKE)$_{SO}$]^{urv}
'It... erm... calms me, it makes me... When I am annoyed or stressed, I know that music soothes me. It sort of takes me away.'

LSFB Corpus, session 27, task 15, signer S056, 00:16 – 00:23)

In example (38), the signer says that his children left home. The nucleus of this clause is the sign LEAVE-PLACE.B, which is repeated contiguously in order to express the plural. Consequently, all occurrences of the token belong to the same clause and are not separated into different ones.

(38) [(CHILD **LEAVE-PLACE.B++**)$_{SV}$]^{urv}
'My children left.'

(LSFB Corpus, session 2, task 4, signer S004, 07:44 – 07:45)

Constructed dialogue Both in spoken and signed languages, individuals use different mechanisms to quote the words and thoughts of others. This phenomenon is commonly known as 'reported speech' in SpLs and is termed 'constructed dialogue' or 'role shift' in the SL literature (Lillo-Martin, 2012). From the point of view of syntactic analysis, the chunk of discourse that is quoted functions as the direct object of the verb introducing what somebody said, claimed or asked, among others. Nevertheless, Tanguy et al. (2012) advocate an independent treatment. For them, what is found before the verb introducing the reported speech is one clause and what follows the verb is a different clause. In addition, the first clause containing the introductory verb is not considered incomplete.

In example (39), the signer is explaining some differences between deaf and hearing culture. He says that hearing people are brief when they introduce a friend to somebody else, whereas deaf people tend to give a lot of details and take more time. Interestingly, the clause introducing the reported speech is averbal. The pronominal sequence PT:PRO1 behaves as the nucleus that introduces the reported segment and it is layered with a change in body position and a change in gaze, which is a feature of role shift in LSFB (Meurant, 2008a).

(39) [(ALWAYS HEARING PT:PRO2 MEET FRIEND)$_{SRg}$ (PT:PRO1)$_{SPron}$]^{ura}
[(PT:PRO3)$_{SS}$ (PT:POSS1 FRIEND)$_{SN}$]^{ura} [(PT:PRO3 NAME)$_{SS}$
(PT:PRO3)$_{SPron}$]^{ura}
'When a hearing person meets a friend, he says "he is my friend, his name is this."'

(LSFB Corpus, session 2, task 4, signer S003, 00:03 – 00:08)

Rhetorical questions Maybe one of the trickiest issues when adapting the Basic Discourse Units Model to the signed modality is the existence of rhetorical questions. Rhetorical questions commonly use a wh-sign with a set of nonmanuals that make it look like a wh-question. However, the signer does not expect to receive an answer

from the other person, but the rhetorical question is used to put together two pieces of information (Valli and Lucas, 2000). This information may be a subject and a verb or a subordinate clause, or even two clauses (Vermeerbergen, 2010). In the selected LSFB sample, rhetorical questions put together two parts of the same clause as in example (40). The signer utters two clauses in which she tells a past memory at school. In the second clause, there is a rhetorical question with the wh-sign WHY, which is used to introduce a right governed sequence.

(40) [(PT:PRO1)$_{SS}$ (NEVER FORGET)$_{SV}$ (CLASSROOM GREEN)$_{SO}$]^{urv} [(LOVE)$_{SV}$ (**WHY** BECAUSE COMPLETE DEAF TEAM)$_{SRd}$]^{urv}
'I will never forget the school trips to discover nature. I loved them because all the deaf were together.'

(LSFB Corpus, session 27, task 3, signer S055, 03:50 – 03:56)

So far, no examples of rhetorical questions relating two clauses have been found in LSFB. If this structure appeared in a larger sample, the wh-sign would not be considered part of the dependency structure of the clauses and it would be treated as an adjunct or a DM. Hence, no general rule can be established for rhetorical questions: each case needs to be analysed and afterwards a decision needs to be made.

Pointing signs Sometimes, signers use a pointing sign to start a discourse unit or to bid for the floor. In example (41) (copied from example (39) with more context), the signer has been asked about the differences between deaf and hearing culture. He first offers the floor to his interlocutor but then starts another discourse unit by using a pointing sign.

(41) [(YES)$_{SAdv}$] [WHAT PT:DET] [**PT:DET**] [(ALWAYS HEARING PT:PRO2 MEET FRIEND)$_{SRg}$ (PT:PRO1)$_{SPron}$]^{ura} [(PT:PRO3)$_{SS}$ (PT:POSS1 FRIEND)$_{SN}$]^{ura} [(PT:PRO3 NAME)$_{SS}$ (PT:PRO3)$_{SPron}$]^{ura} <THAT-S-ALL>$_{md}$
'Yes, what do you think? When a hearing person meets a friend, he says "he is my friend, his name is this". That's all.'

(LSFB Corpus, session 2, task 4, signer S003, 00:02 – 00:08)

In example (29), here repeated as (42) for the reader's convenience, signer S044 bids for the floor with the pointing sign and overlaps with what S045 is saying.

(42)
S045: [(NS:IRSA NS:WOLUWE TEAM)$_{SS}$ (AGAIN PLAY AGAIN)$_{SV}$]^{urv}
§[(FOOTBALL)$_{SO}$ (PLAY AGAIN)$_{SV}$]^{urv} [(LESS)$_{SAdv}$]^{ure}
S044: §[**(PT:DET)**] [(EVERYDAY)$_{SAdv}$]^{ure} [(LESS)$_{SAdv}$]^{ure}
S045: 'The teams at IRSA and Woluwe still §play football... Less often, yes.'
S044: '§Not everyday, less often.'

(LSFB Corpus, session 21, task 3, 04:10 – 04:16)

Regardless of whether the signer starts a discourse unit within his/her turn or bids for the floor, pointing signs with this function are out of the dependency structure of the clause.

4.3.2 Prosodic segmentation

Prosodic segmentation may be seen as a major challenge in adapting the Basic Discourse Units Model to the signed modality because of the obvious differences in modality between spoken French and LSFB. However, SL researchers working on prosody have proved that prosody is a phenomenon shared by all natural languages of the world, and that SL and SpL prosody share certain key properties (Wilbur, 1994; Nespor and Sandler, 1999; Sandler, 1999, 2005, 2012; Herrmann, 2012).

Prosodic segmentation in the Basic Discourse Units Model is governed by three principles. The first is that "prosodic segmentation should be reliable and, therefore, semi-automatic and /or relying on explicit rules and acoustic correlates of boundaries" (Degand et al., 2014, p.248). The second is that prosodic segmentation should not be influenced by syntactic analysis, which is why both procedures should be as independent as possible. The third and last requirement is that the units resulting from prosodic segmentation should work at the level of discourse production and interpretation. These three principles need to be taken into account for the adaptation of this model to the signed modality. Perhaps the most striking differences are that semi-automatic prosodic segmentation in SLs is not a reality yet,[23] which is why this step will be done manually and that visual cues will be selected instead of 'acoustic correlates'. Despite using a different software for segmentation (Praat is used for spoken French), the independence of prosodic segmentation vs. syntactic segmentation is also warranted by ELAN that allows tiers to be hidden.[24]

The semi-automatic annotation of prosodic units, roughly understood as chunks of discourse that are delimited by strong prosodic breaks, in the Basic Discourse Units Model establishes three different types of boundaries: minor, intermediate and major. Degand et al. (2014, p.249) following Mertens and Simon (2009) claim that "[m]inor boundaries are not taken into consideration because the agreement between automatic detection and manual validation is very low". Although the detection of intermediate boundaries is reliable, only major boundaries are taken into account for the establishment of basic discourse units (BDUs). Therefore, the adaptation of the model will not distinguish between the three kinds of boundaries. Instead, I will establish a set of visual cues comparable to the three correlates that constitute major boundaries for SpLs: "a [...] silent pause longer than 250 ms; an extra-lengthening (the syllable is three times longer than the syllables in the context); a sharp rise of F0 (intra-syllabic F0 rise superior to then semi-tones), even when the F0 rise does not correlate with the lengthening of the syllable" (Degand et al., 2014, pp.248-249).

[23] Recent developments in video recognition are facilitating the analysis of the movement of the hands as well as of non-manual markers. For instance, SLMotion (Karppa et al., 2014) is open-source software developed for the analysis of SL data. It recognises both manual and non-manual activity, which could help in automatising the segmentation of signed productions. For future research, it would also be interesting to use this tool or another similar one to test the reliability of the present SL segmentation methodology.

[24] Both syntactic and prosodic segmentation are performed manually by the same annotator because there are no semi-automatic tools for prosodic segmentation in SLs so far. Hence, the annotation is rendered as independent as possible by hiding the tier for syntactic segmentation in ELAN while prosodic segmentation takes place. The annotator will hardly remember what syntactic units were like when delimiting prosodic units as large datasets are used for this research.

Prosodic segmentation is concluded by attributing an intonation contour to major and intermediate boundaries. Although falling and rising tones cue different syntactic or discourse functions and therefore provide a finer description of units (ibid.), this final step will be discarded in the adaptation of the Basic Discourse Units Model to the signed modality. The reasons for this decision are that (i) the information provided by intonation contours has not so far been required for the purposes of this study, and (ii) it would be a time-consuming task that would make the annotation process too long and not feasible.

Before moving to the visual cues that will be used for prosodic segmentation, a couple of particularities regarding prosody in SLs have to be pointed out. The first one is that both manual and non-manual elements produce visual cues that mark prosodic structure. Visual prosodic cues indicate either the duration of phrases (*domain markers*) or their end (*boundary markers*) (Wilbur, 2000, 2009a). On the one hand, domain markers spread over prosodic constituents, which means that they often appear at the start of a constituent and disappear or change at the end of the constituent (Ormel and Crasborn, 2012). They include head and body movements, changes in eyebrow position and in eye gaze. On the other hand, boundary markers (also known as *edge markers*) segment discourse into rhythmic units as they are punctual in nature (i.e. they do not spread) (Pfau and Quer, 2010). They include eye blinks, short head nods, pauses and holds (Herrmann, 2012). Some boundary markers are the one-to-one equivalents of the acoustic correlates (see sections below) participating in the delimitation of prosodic units in the Basic Discourse Units Model.

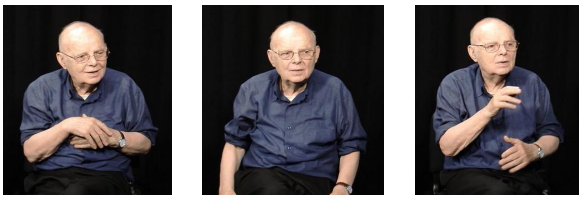
The second specificity of SLs is that visual prosodic cues rarely appear in isolation. They rather combine sequentially or simultaneously with other prosodic cues in what is called 'prosodic layering' (Wilbur, 2000). Maybe the most apparent case is when a non-manual marker is aligned with a manual marker (for instance, a pause layered with an eye blink), but different nonmanuals can also align (for instance, a head nod layered with an eye blink). Evidence of prosodic layering in the delimitation of boundaries has been found for several SLs such as ASL (Hochgesang, 2009; Nicodemus, 2006, 2009), BSL (Stone, 2009; Fenlon et al., 2007; Fenlon, 2010), DGS (Hansen and Heßmann, 2007; Herrmann, 2009, 2012), FinSL (Jantunen, 2007), LSFB (Gabarró-López and Meurant, 2014b) and STS (Börstell et al., 2014), to name some examples. In most of these studies, layering of different prosodic cues is considered more conclusive than a single cue.

Bearing in mind these considerations on visual prosody, I propose to take pauses, sign holds and eye blinks as equivalents of the three major prosodic boundaries in the Basic Discourse Units Model. These three cues are boundary markers that "may be seen as equivalents to phrase final lengthening and boundary tones in spoken languages" (Herrmann, 2012, p.368). Pauses and sign holds (or lengthened signs) can constitute a boundary when they appear alone, whereas eye blinks will only be taken into account as boundary markers if they are layered with another boundary or domain marker. In what follows, the three cues are defined and the choice of eye blinks layered with another prosodic cue is justified. Examples are also given where they help make a point clear.

4.3.2.1 Pauses

Pauses can be found in both the flow of speech or the signing flow, so the same name is used for the acoustic and the visual cue (i.e. it is a one-to-one equivalence). In line with Fenlon (2010), pauses are defined in this dissertation as periods of no signing at all. Other authors such as Notarrigo and Meurant (2014) consider all stops of the hands as pauses. They draw a distinction between stops during a sign (S1), i.e. sign holds, and stops between signs (S2), i.e. periods without manual activity. Moreover, S1 and S2 are divided into sub-groups that propose a more fine-grained description of these phenomena. Although the definition of pauses that is used in this dissertation only takes a part of Notarrigo and Meurant's definition, their sub-categories will be adopted for the description of pauses and sign holds.

S2 includes pauses in which hands are crossed (S2:crossed), hands are along the body (S2:body) and hands are relaxed in the neutral space (S2:neutral). Figure 4.5 illustrates these three possibilities. Any of these three pauses will mark the end of a prosodic boundary. The type of pause will not be annotated as it does not seem to provide us with relevant information for the purposes of this study. The length of pauses is not measured either, although the length of a pause is what distinguished an intermediate and a major boundary in the Basic Discourse Units Model. This may be seen as a shortcoming in this adaptation, but the lack of a semi-automatic procedure for prosodic annotation would make the segmentation procedure too long and therefore not feasible.



S2:crossed S2:body S2:neutral

Figure 4.5: Types of pauses between signs (S2)

The identification of S2:crossed and S2:body is straightforward, but S2:neutral may be confusing because a very short pause and a transition movement may be sometimes difficult to distinguish. The baseline established by Notarrigo and Meurant (2014) to identify a pause is five frames (200 ms) as they claim that a stop could not be detected below this number. However, layering with another prosodic cue such as a blink makes it possible to spot shorter pauses as well. In order to disambiguate this situation, I will consider that there is a pause when the hands stay in the same position for at least two frames (80 ms).

4.3.2.2 Sign holds and lengthened signs

The extra-lengthening of a syllable is another acoustic cue that delimits prosodic units in the Basic Discourse Units Model. Instead of only one equivalent, two visual

cues will be taken into account this time: sign holds, i.e. when the handshape of a sign is held for a longer duration, and lengthened signs with respect to the context, i.e. when the movement is longer than it usually is. Notarrigo and Meurant (2014) establish three subcategories for the stops during a sign (S1): the handshape is held at the beginning of the sign (S1:start), the handshape is held in the middle of the sign (S1:middle) and the handshape is held at the end of the sign (S1:end). Their presence in the LSFB sample analysed by the authors is very different though: few occurrences of S1:start, no occurrences of S1:middle and many S1:end occurrences. S1:start commonly produces an effect of hesitation, whereas S1:end may mark stress as well as other functions depending on the layering of nonmanuals.

Since hesitations are not considered an acoustic correlate that marks prosodic boundaries in the Basic Discourse Units Model, S1:start will be discarded for segmentation purposes. The same applies to S1:middle due to their scarcity in the data. Therefore, the only type of holds that will be taken into account to delimit prosodic units are S1:end together with the cases of sign lengthening. As happened with pauses, neither the type of hold nor the function of the sign hold or lengthened sign are annotated. Neither sign holds nor lengthened signs are treated separately in line with Herrmann (2012).

The transition between a hold or a lengthened sign and the following sign is produced by a change of handshape parameters. However, there are cases in which the transition between a hold or a lengthened sign and the following sign is too blurry to establish a boundary in between. In example (43), the signer is explaining the different games they used to play at the boarding school for the deaf, and says that they were very keen on them.

(43) BEFORE STRONG **PLAY** PALM-UP
'We used to be keen on playing games.'

(LSFB Corpus, session 21, task 3, signer S045, 02:20 – 02:22)

The sign PLAY is lengthened and followed by PALM-UP. Although the handshape of the two signs is very different (PLAY is articulated with both hands closed, the thumbs and little fingers extended, palms facing the signer and a movement of the wrist), the transition between them is not abrupt but somehow connected (see Figure 4.6).

Figure 4.6: Transition between PLAY and PALM-UP

The signer does not change the handshape and the orientation at once, but she keeps the handshape and relaxes the wrist so that the orientation of PLAY changes (i.e.

the palms are upwards). Then, she extends all the fingers and produces PALM-UP. The boundary of the prosodic unit in this particular case would be found at the end of the PALM-UP particle, which is layered with a head nod. The intonation used by the signer puts both signs together and no boundary can be traced in between.

4.3.2.3 Eye blinks layered with another prosodic cue

Last but not least, a sharp rise of F0 marks a boundary in the Basic Discourse Units Model. Finding an equivalent for this cue was not a straightforward decision. Pauses in the signing flow were the equivalent of pauses in the flow of speech, and sign holds or lengthened signs were the equivalent of lengthened syllables. Spontaneously, one could think of exaggerated signing as a possible equivalent for a sharp rise of F0. The main problem that this choice poses is that there is not a semi-automatic tool that can annotate an exaggerated sign, so this annotation would become somehow arbitrary and would depend on the annotator's perception. This contradicts one of the requirements that governs prosodic segmentation in the Basic Discourse Units Model, namely that it must "[rely] on explicit rules and acoustic correlates of boundaries" Degand et al. (2014, p.248).

In order to find a more objective visual cue with explicit rules, a revision of the SL literature on prosody was in order. From the four boundary markers (eye blinks, short head nods, pauses and holds), eye blinks were selected because they are widely acknowledged as a prosodic function of marking boundaries in the signed modality (Wilbur, 1994; Sze, 2008a; Brentari and Crossley, 2002; Crasborn et al., 2004; Herrmann, 2010) and they segment the discourse into rhythmic units (Pfau and Quer, 2010; Herrmann, 2012) as raises in F0 do. Moreover, their identification is governed by a rule, i.e. when eyelids close and open again, that does not depend on the annotator's own perception. However, not every eye blink is prosodically relevant as they may serve other linguistic purposes or be physiologically motivated (Wilbur, 1994; Sze, 2008a; Herrmann, 2012).

Maybe the most comprehensive classification of the different types of eye blinks is that proposed by Herrmann (2010) based on DGS data.[25] Taking into consideration the classifications of eye blinks proposed by Wilbur (1994) and Sze (2008a), she distinguishes seven types of eye blinks: (i) IP blinks that mark intonational phrase boundaries; (ii) PP blinks that mark phonological phrase boundaries; (iii) sentence initial blinks that are produced before a sentence; (iv) lexical blinks that are produced parallel to a lexical sign and related to the lexical sign itself; (v) reflexive blinks that are triggered by a manual movement in front of the face as a protective reflex; (vi) cognitive trigger blinks that are produced during slips of the hand, pondering, etc.; and (vii) physiologically induced blinks to wet the eyes.

The first three types of blinks are prosodic, whereas the other four are non-prosodic. Only prosodic blinks are relevant for the delimitation of prosodic units, although their

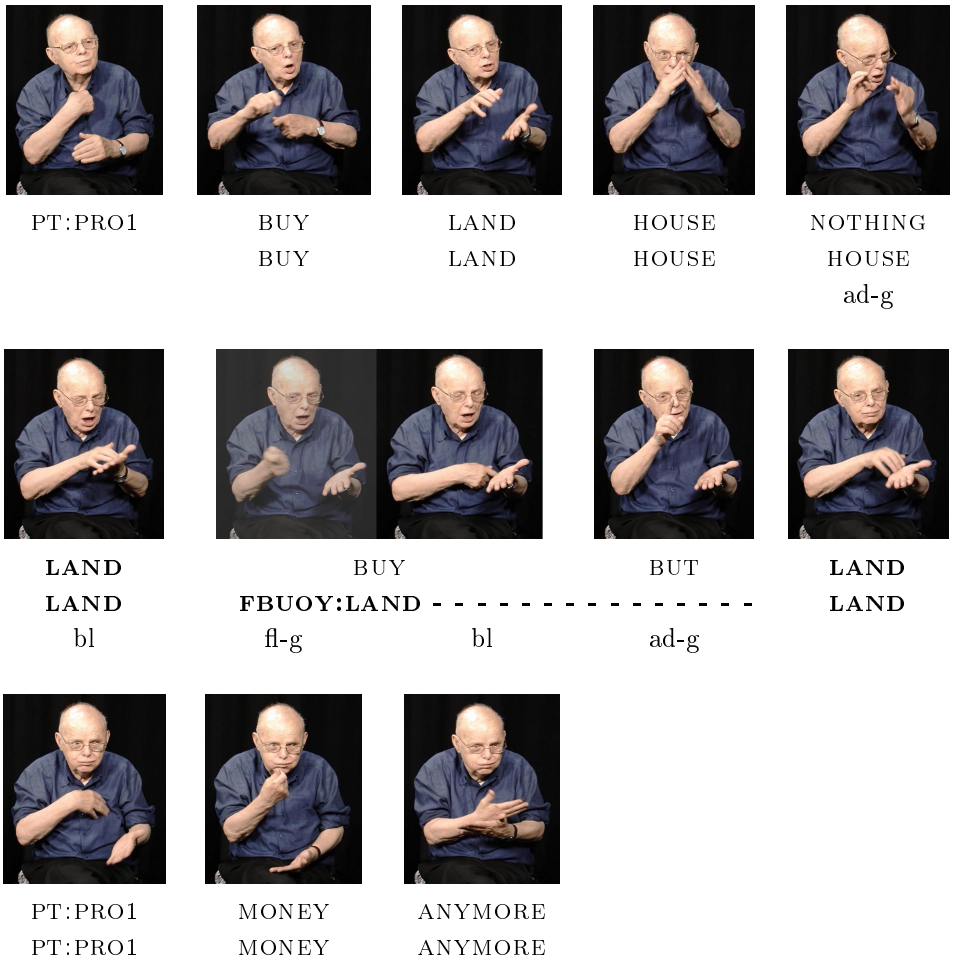
[25] Comparing this classification with that of Wilbur (1994) and of Sze (2008a) is beyond the scope of this section, so I refer the reader to Herrmann (2010) for this purpose.

prosodic function (i.e. intonational phrase, phonological phrase or sentence initial markers) will not be analysed for segmentation purposes. Herrmann distinguishes between prosodic and non-prosodic blinks by analysing syntactic constituency and sentence structure together with intonational contours and other non-manual features such as eyebrow movement, eye aperture, eye gaze, head movement, body movement, mouth gestures, and facial expressions (ibid., p.22). Her syntactic criterion for the identification of prosodic blinks will not be followed because it would contradict one of the principles of the Basic Discourse Units Model, namely that prosodic segmentation has to be done independently of syntactic segmentation. The identification of prosodic blinks will be restricted to those occurring with another manual or non-manual prosodic cue. This decision is further supported by Gabarró-López and Meurant's (2014b) work on prosodic segmentation in which it was found that one of the most common markers of boundaries when delimiting discourse units in LSFB are blinks layered with another cue.

There are two cases in which prosodic blinks, even if layered with another non-manual cue, will not be considered boundary markers: blinks co-occurring with non-dominant hand spreading and blinks co-occuring with a hesitation particle. On the one hand, non-dominant hand spreading appears after a two-handed sign when the weak hand perseveres with the same handshape.[26] Nespor and Sandler (1999) and Sandler (1999) claim for Israeli SL that non-dominant hand spreading extends to the edge (right, left or both) of intonational phrases. I will assume that this applies to other SLs as well, so when blinks (layered or not with another nonmanual cue) occur during non-dominant hand spreading, they will be considered as intermediate boundaries that do not participate in the delimitation of prosodic units. Figure 4.7, copied from example (41) with more context, illustrates a case in which non-dominant hand spreading occurs after the second time the sign LAND is produced (first picture, second row). The signer has his gaze directed towards his addressee (ad-g) while he signs NOTHING, then he blinks (bl) during the articulation of LAND and changes his gaze direction towards his right side (fl-g) while he is articulating BUY (second picture, second row). At the end of this sign, he blinks again and changes his gaze direction once more towards the addressee. These two blinks with the change in direction would mark two prosodic boundaries, but in the end they do not because of the non-dominant hand spreading of LAND.

[26] From a discourse perspective, the perseveration of a handshape on one hand while the other keeps on signing is called a 'buoy' (Liddell, 2003) (see chapter 5). Although the concept of buoys is not used in prosody because neither the form of perseveration nor its discourse function are taken into account to mark the edges of intonational phrases, the types of buoys will be mentioned in the following examples for a matter of coherence with the annotation throughout this dissertation.

LSFB Corpus, session 2, task 4, signer S003, 07:46 - 07:52

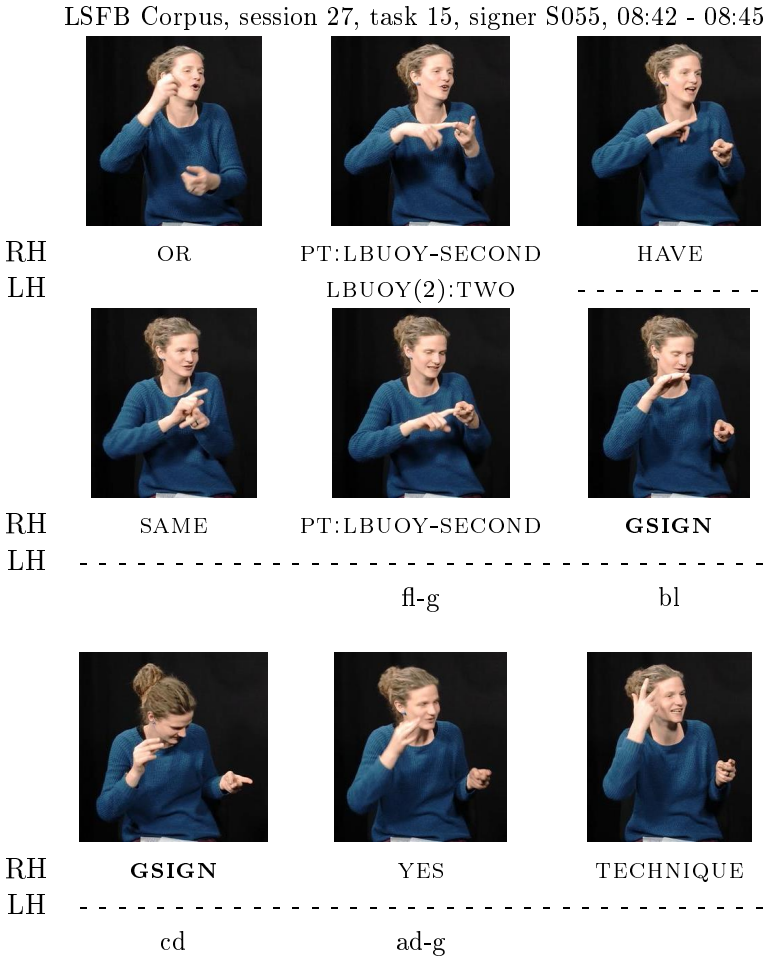


'I bought land without a house. I bought the land but I didn't have enough money.'

Figure 4.7: Example of two eye blinks layered with a change in gaze direction during non-dominant hand spreading

On the other hand, hesitations are fairly common in spontaneous speech. According to Degand et al. (2014, p.249), "hesitations are not confounded with prosodic breaks in discourse processing", which is why they are not considered boundary markers in the Basic Discourse Units Model. They will not have the status of boundary markers in this adaptation of the model either, even if they may align with prosodic non-manual cues because the modality favours so. In LSFB, hesitations are usually expressed with gestures (GSIGN) that layer with nonmanuals such as wiggling fingers aligned with a blink or a deviated gaze as in Figure 4.8 (third picture, second row).

In this example, the signer is explaining the different modality competitions that exist for kitesurfing. She uses two gestures, one as a hesitation (third picture, second row) and the other for word searching (first picture, third row). They are aligned with blinks; changes in head position, i.e. the chin goes down (cd); and changes



'On the other hand, there are also (competitions about)... erm... yes, the technique.'

Figure 4.8: Example of blinking during hesitations

in gaze direction, i.e. to the right side of the signer before the two gestures and addressed to the interlocutor after them. Despite the length of both gestures and their alignment with non-manual cues, they will not be considered boundary markers.

4.3.3 Basic Discourse Units

The final step in this adaptation of the Basic Discourse Units Model consists of establishing basic discourse units (BDUs) where syntactic and prosodic units coincide. Figure 4.9 illustrates what segmentation into syntactic units (clauses in terms of Dependency Syntax), prosodic units (chunks of discourse that are delimited by strong prosodic breaks) and BDUs looks like. The first two tiers are devoted to the annotation of the manual activity, the third is for syntactic units (S### - SyU), the fourth is for prosodic units (S### - PrU) and the fifth for BDUs (S### - BDU).

On the right side of the screenshot, the part containing the tiers is expanded for ease of reading.

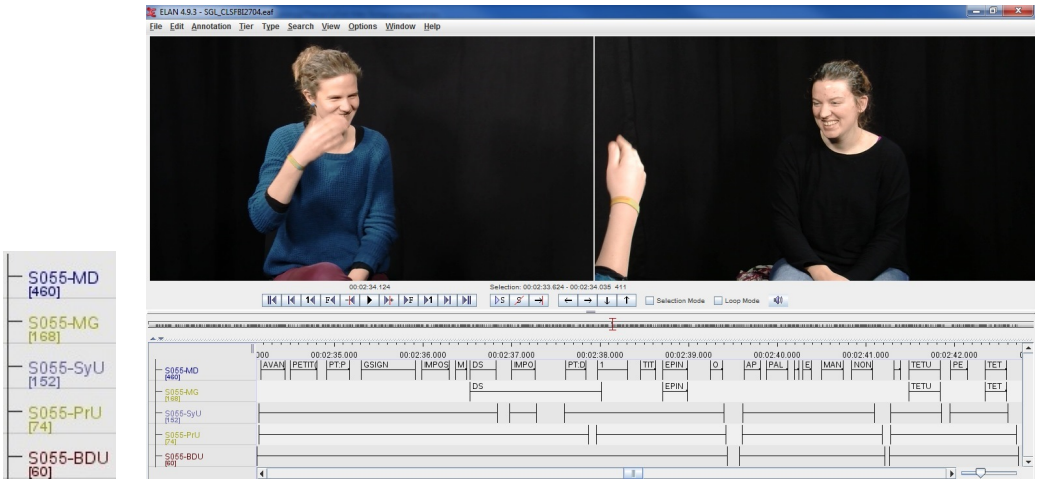


Figure 4.9: Screenshot of an ELAN file contaning syntactic units, prosodic units and BDUs

The five types of BDUs derived from the segmentation of SpL data in Degand and Simon (2009a,b) can be found in SL data. The difference between the five types depends on how syntactic and prosodic units align. Hence, BDUs may be congruent, syntax bound, intonation bound, mixed and regulatory.[27]

Congruent BDUs (BDU-c) consist of a syntactic and a prosodic unit that align as in example (44). The signer is saying that hearing parents do not know how to attract the attention of their deaf child. Graphically, it looks like the second BDU in Figure 4.9.

(44) [HEARING KNOW-NOT HOW DO ABOUT PT:DET]///
'Hearing do not know how to do it.'

(LSFB Corpus, session 27, task 4, signer S055, 02:11 – 02:13)

Syntax-bound BDUs (BDU-s) are the result of two or more prosodic units within a syntactic unit as in example (45). The signer is explaining her experience at school and how difficult she finds integration with the hearing.

(45) [PT:PRO1 WHEN PT:PRO1 STUDY SUPERIOR PT:LOC /// FEEL PERSON-BLOW]///
'When I went to college, I was shocked.'

(LSFB Corpus, session 27, task 4, signer S056, 00:14 – 00:17)

Intonation-bound BDUs (BDU-i) appear when there are several syntactic units within a prosodic unit as in example (46). The signer is talking about the difficulties

[27] In the examples that will follow, prosodic units are marked by /// which is used in the Basic Discourse Units Model to signal major prosodic boundaries.

of integration and compares the hearing of her school with the hearing people of her region. Despite being hearing, people in her region use a lot of gesturing and facial expressions because of their Italian origin. She also draws a parallel with the holidays she and her addressee spent in Rome. Graphically, an intonation-bound BDU looks like the third BDU in Figure 4.9.

(46) [PT:PRO1 CULTURE PLACE NS:LA-LOUVIERE PT:PRO1 MORE NS:ITALY] <IT-MEANS> [SPEAK INFORM] [SEE NS:ROME HOLIDAY] [SEE PERSON OBVIOUS FOR PT:DET]///
'In my region, La Louvière, people are mostly from Italy; I mean, they speak with their hands. You see our holidays in Rome? It was so obvious in people there.'

(LSFB Corpus, session 27, task 4, signer S056, 00:21 – 00:28)

Mixed BDUs (BDU-m) are a combination of syntax- and intonation-bound BDUs. This means that there are several syntactic and prosodic units before their boundaries coincide. In example (47), the signer is explaining the technique for kitesurfing. There are eight syntactic units and four prosodic units before the boundaries coincide. Graphically, a mixed BDU looks like the first BDU in Figure 4.9.

(47) <SAME> [TECHNIQUE] [PT:PRO2(7) WHAT KNOW TECHNIQUE] <DE:WOW> <OK> [TECHNIQUE IT-IS ALWAYS START IT-IS DS:KITESURFER-SIT IN WATER DS:HOLD-BAR] [PT:PRO1 TECHNIQUE KITE TECHNIQUE KITE PT:PRO1 DS:KITESURFER-SIT /// DS:HOLD-BAR /// MUST FIRST //// GSIGN MUST DS:PUT-UP-KITE DS:FORM-KITE KITE DS:KITE-FLY] [WIND IF WIND PT:LOC MUST PT:LOC]///
'Besides, there is the technique. Do you want to know the technique? Wow.. OK! You always start with your feet on the board lying on the water and holding the bar. When your feet are on the board and you are holding the bar, the first thing you must do is to put the kite up in the air. You have to place your kite depending on the direction of the wind.'

(LSFB Corpus, session 27, task 15, signer S055, 06:23 – 06:39)

Regulatory BDUs (BDU-r) are those whose only component is a DM. In example (48), the signer is explaining an episode from his life. The PALM-UP particle functions as a DM expressing a temporal meaning and it is both prosodically and syntactically detached from the previous congruent BDU and the following mixed BDU.

(48) [PT:PRO1 SIXTY-THREE MARRIAGE FINISH]/// <PALM-UP>/// [MOVE NS:LUXEMBOURG] [PT:PRO1 WORK /// GOOD.CHEST PLACE]///
'I got married in 1963. Then we moved to Luxembourg. I had job there with a good position.'

(LSFB Corpus, session 2, task 4, signer S004, 03:54 – 04:01)

Table 4.7 summarises the types of BDUs together with their acronyms, definitions and a graphic representation of what they look like.

Type of BDU	**Acronym**	**Definition**	**Graphic representation**
Congruent	BDU-c	The boundaries of an SyU and a PrU coincide.	SyU [ ] PrU [ ]
Syntax-bound	BDU-s	Several PrUs are comprised within a SyU.	SyU [ ] PrU [ ][ ]
Intonation-bound	BDU-i	Several SyUs are comprised within a PrU.	SyU [ ][ ] PrU [ ]
Mixed	BDU-m	There are several PrUs and SyUs before their boundaries coincide.	SyU [ ][ ] PrU [ ][ ][ ]
Regulatory	BDU-r	The BDU only contains a DM.	< DM > SyU [ ] PrU [ ]

Table 4.7: Summary of the types of BDUs

In the Basic Discourse Units Model, the types of BDUs (i.e. BDU-c, BDU-s, BDU-i, BDU-m and BDU-r) are annotated after their delimitation. There are many purposes for doing so, for instance investigating whether a particular type of BDU is more likely to appear in one genre than another as Martin et al. (2014) do for spoken French. However, this annotation does not seem to provide relevant information for the study of the position of DMs, which is why the type of BDU is not annotated so far, although it would be interesting to do so in future research.

4.3.4 Contributions of the model

The Basic Discourse Units Model has proved to be versatile as it is applicable to languages of different modalities when the necessary adaptations are made. We have seen that the same type of units (syntactic, prosodic and BDUs) exist in French and in LSFB. The main differences that the modality imposed were technical and linguistic. On the one hand, the software used in the Basic Discourse Units Model is Praat, which allows the study of speech; whereas the SL scientific community commonly uses ELAN, which enables video data to be treated. Despite the change, the possibility offered by ELAN of hiding and/or displaying tiers ensured that syntax and prosody could be treated separately, so the segmentation procedure was not altered. In the Basic Discourse Units Model, prosodic and syntactic mapping leading to BDU segmentation is performed automatically by means of a script running under Praat (Degand et al., 2014, p.251); whereas in SL the entire procedure was done manually, which makes it more time-consuming but anyway feasible.

On the other hand, linguistic adaptations due to the modality only concerned prosody as syntactic segmentation was performed following the principles of Dependency Syntax. It proved to be a flexible theory for the syntactic delineation of units as it could be used not only with French spoken data, but also with LSFB data (and probably with data from many other signed languages). Dependency Syntax has many points in common with the other framework that most SL scholars use in their works, i.e.

Role and Reference Grammar. So although no major adaptations for the delimitation of syntactic units were needed, the cases that are typical of the signed modality such as repetitions or rhetorical questions were commented. As for prosody, equivalent visual cues had to be found for the acoustic cues that mark major boundaries in spoken French. Two exact equivalents, i.e. pauses and sign holds or lengthened signs, were identified for pauses and lengthened syllables; whereas eye blinks layered with another visual cue were proposed as equivalents for sharp rises in F0. Not having analysed the frequency of any of the three visual cues that segment discourse, the blinking behaviour is perceived quite differently when analysing different signers: some of them seem to rarely blink in their productions, whereas others seem to do it more often. This may be due to the signing rate, the specific task, the mental state or the physical condition of a signer among many other factors (Herrmann, 2010). If any blink had been taken as a cue for prosodic segmentation, a great variation across signers would have been found as many physiological blinks (which depend on personal behaviours) would have been retained. The choice of blinks layered with another nonmanual allows blinks that are not prosodic to be excluded.

Last but not least, this adaptation of the Basic Discourse Units Model was conceived for LSFB and the examples given in section 4.3 only concern this language. However, the underlying idea of this model is not only to have a methodology for the LSFB data in this research, but also to offer a solution for a controversial issue in SL research, i.e. the segmentation of SL corpus data, for which a satisfactory solution has not yet been found. Since this dissertation also contains LSC data, the same model was applied and no changes were needed (see chapter 7). Hence, the model proposed here can be used with another SL without modifications. Bearing in mind that "[t]he gestural origin of nonmanuals used for linguistic purposes may account for typological similarities with regard to prosody across sign languages" (Herrmann, 2012, p.376), it can be claimed that this adaptation of the Basic Discourse Units Model is applicable to any SL, even from an unrelated family.

4.4 Summary

The objective of this chapter was to present the segmentation methodology that would be followed in this dissertation. First, the issue was introduced underlining the importance of delimiting units for discourse analysis, i.e. units are at the basis of the study of discourse structure. Afterwards, the existing pragmatic, prosodic and syntactico-prosodic segmentation approaches for both SpLs and SLs were described. Some SL case studies which were relevant to the purposes of this chapter were discussed too. The necessity of going through the different models (even SL models) was to argue why most of them were not convenient and only the Basic Discourse Units Model could offer a methodology suitable for the data in this research if some adaptations were made.

Pragmatic approaches have only been created for SpLs and include the Geneva Model, the Fribourg Model and the Val.Es.Co. Model. They were conceived for conversation analysis and the Fribourg Model has not been used for studies on DMs

yet. Since my data also contains monologues and the final goal of this dissertation is to study the position of DMs, these models were discarded for adaptation to the signed modality. Second, prosodic approaches include the Co-Enunciation Model and the Prominence Demarcation Model for SpLs, and the Segmentation into Discourse Units for SLs. The Prominence Demarcation Model was discarded straight away because it excludes DMs from the analysis. While the Co-Enunciation Model and the Segmentation into Discourse Units have been used for the study of DMs, the first was only developed for conversations and the second seems to be rather uninformative. Third, there is one syntactico-prosodic approach for SpLs, the Basic Discourse Units Model, and two for SLs, the Clause-Like Units Segmentation and the STS Clausal Segmentation. The main drawbacks of these last two were that they had only been used for narratives so far, leaving the features of conversation aside, and their focus was syntax, so larger chunks of discourse were not considered. The Basic Discourse Units Model resolves these two points as it is applicable to monologues and dialogues, and takes into account syntactic units as well as larger chunks of discourse (i.e. basic discourse units or BDUs).

The main contribution of this chapter is a proposal of a SL segmentation methodology based on the principles of the Basic Discourse Units Model that offers a solution to a controversial issue in SL research: the segmentation of SL corpus data. The procedure consists of three steps: segmentation into syntactic units, segmentation into prosodic units and delimitation of BDUs. The first two steps are carried out independently, which is why a tier is created for each one. When syntactic segmentation is done, the tier is hidden so that prosodic segmentation is not influenced. Syntactic segmentation is based on the principles of Dependency Syntax in which a clause contains a governor and its governed elements. This segmentation gives rise to three types of clauses: (i) verbal, in which the verb is the governor; (ii) averbal, in which another element such as a noun or adjective is the governor; and (iii) elliptical, in which clauses are incomplete but they can be interpreted as verbal dependency units when referring to the context as in answers. Moreover, these units may be interrupted or may contain an embedded non-dependent element. On the other hand, outside the clause there are ungoverned elements such as adjuncts or DMs, which are syntactically independent but not autonomous in discourse.

Prosodic segmentation is based on a set of visual cues so that the procedure is reliable and does not vary from one annotator to another. The three visual cues selected are: (i) pauses, defined as periods of no signing at all with hands along the body, crossed or in neutral space; (ii) sign holds or lengthened signs, the first defined as signs that keep their handshape frozen for a while and the second defined as signs whose movement is longer than it usually is; and (iii) eyeblinks layered with another prosodic manual or non-manual cue which segment discourse into rhythmic units. Another important point for the delineation of prosodic units is that hesitations are not considered prosodic breaks and are therefore discarded as a cue. Finally, the delimitation of BDUs consists of identifying the places in which syntactic and prosodic units coincide. As a result, there are five types of BDUs: (i) congruent, in which the boundaries of a syntactic and a prosodic unit coincide; (ii) syntax-bound, in which several prosodic units are comprised within a syntactic unit; (iii) intonation-bound,

in which several syntactic units are comprised within a prosodic unit; (iv) mixed, when there are several syntactic and prosodic units before their boundaries coincide; and (v) regulatory, in which the BDU is a DM.

Since this is a faithful adaptation of the Basic Discourse Units Model, it presents the same advantages that were mentioned above as compared to other SL models. First, it is not restricted to the delimitation of syntactic units as the Clause-Like Units Segmentation and the STS Clausal Segmentation are, but larger chunks of discourse that allow the study of different types of DMs are delineated as well. Second, it will give more informative results concerning the position of DMs than the Segmentation into Discourse Units because of the syntactic layer that is added to segmentation. Several positions are possible in the clause and in the BDU, which widens the perspective of the Segmentation into Discourse Units. Third, this adaptation is applicable to both monologues and dialogues, and to any genre. So far, the Clause-Like Units Segmentation and the STS Clausal Segmentation have been applied to narrative data. Despite the advantages of using narrative data, i.e. it is easier to elicit consistently and allows intra and inter-language comparisons, narratives are not frequently used in daily life within the Deaf Community, as in any other community. Instead, face-to-face conversations covering different genres constitute real language in use. SL corpora contain this type of data because tasks have been designed to elicit different types of dialogues as close as possible to natural productions. It is by exploring the wide range of genres included in SL corpora data that we will widen the perspective of linguistic studies and that we will be able to provide evidence in favour of or against the different conclusions about SL structure that have been drawn so far.

Chapter 5

Identification of discourse markers in signed discourse

Dalt l'illa
llampeguejada gira el far
Els gavians
s'arreceren dins meu, els crits
de la nit negra i els udols,
en mi també.

Sé prou que la claror
germina dins la fosca.
On és que som? Enlloc?
Fora de tot? Qui ve?
Si vols dormir tranquil pensa en les boies.

Joan Vinyoli (excerpt from the poem "Les boies", *Cercles*, 1979)

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General objective of this chapter

This chapter is devoted to the identification of discourse markers in sign languages. In particular, its aim is to explain how the discourse-marking status of buoys, PALM-UP and the sign SAME is determined in this dissertation. To begin with, the state of the art on buoys and the PALM-UP particle in different sign languages will be presented. To the best of my knowledge, there are no previous studies on the sign SAME, but its morpho-syntactic description can be found in the *Auslan SignBank* (a dictionary for Australian Sign Language). Afterwards, a set of criteria will be established for each of the three items to identify them in corpus data and to disentangle the occurrences with a discourse-marking function from those with another function. An additional criterion is presented for list buoys regarding the Question under Discussion, but proves to be a digression because it is not generalisable to all cases. Finally, the chapter concludes with a summary of its main contributions to the domain.

5.1 Introduction

The identification of discourse markers (DMs) is not a straightforward task in any language. The main issue is that (morpho-)syntactic criteria do not define DMs, but pragmatic and functional criteria are necessary for this purpose (Bolly, 2009). This means that one word or phrase may have a discourse-marking function when it is out of the clausal structure and it relates or punctuates clauses, and another syntactic function when it is found within the clausal structure. DMs do not belong to a single grammatical category, but there is a wide variety that includes adverbs (e.g. *well*), coordinating conjunctions (e.g. *but*), interjections (e.g. *yeah*), noun phrases (e.g. *sort of*), prepositional phrases (e.g. *in fact*), subordinating conjunctions (e.g. *because*), verbal phrases (e.g. *you know*) and possibly others. Some clarification with fictive and prototypical examples in English is in order. Examples (49) and (50) contain the same word, i.e. 'and', in different contexts.

(49) *She likes cats **and** dogs.*

(50) *I saw her at the party **and** she was drunk.*

If we assume that a clause is made up of a nucleus and its dependants in terms of Dependency Syntax (see chapter 4, sub-section 4.2.3.1), 'and' in example (49) belongs to the clausal structure as it is part of the dependant of the verb 'to like'. The verb 'to like' in English can govern a pronoun, a noun or a nominal sequence as is the case with 'cats and dogs'. On the other hand, 'and' in example (50) appears in the middle of two clauses that are governed by the verb 'to see' and 'to be' respectively. 'And' is out of the dependency structure of both verbs; it is a DM that puts together two events in a relationship of addition.

In example (51), the two clauses of example (50) have been copied and the DM has been changed. Since the DM has been replaced, the relationship between the two clauses has changed as well: 'in fact' introduces a comment and not an addition as 'and' did. Note that although 'and' and 'in fact' are DMs, the grammatical category is different: while the first is a coordinating conjunction, the second is a prepositional phrase. Hence, (morpho-)syntactic criteria concerning the form of the word or words (the same one in examples (49) and (50)) and their grammatical category (different in examples (50) and (51)) will not tease apart DMs from other items with a non-discourse-marking function. The word or words will have to be interpreted in terms of their discourse function in order to determine their discourse-marking status.

(51) *I saw her at the party, **in fact**, she was drunk.*

These differences concerning the function of a particular token and the grammatical category do not only apply to DMs in spoken languages (SpLs), sign languages (SLs) face the same problems too. In the following examples extracted from the LSFB (French Belgian SL) Corpus, the sign SAME is repeated. In (52), SAME functions at the level of the clause. The governor of the clause is POSSIBLE and it is preceded by SL ALL SAME, which is one of its dependants. Being an adjective here, SAME qualifies the sign SL (meaning 'signs' here). On the other hand, (53) contains two clauses (separated by square brackets for ease of reading), both governed by HAVE,

which is repeated twice. SAME is not a dependant of any of them, but it relates both clauses with a meaning of addition. Therefore, SAME works at the discourse level (here understood as what goes beyond the sentence (Schiffrin et al., 2001), see chapter 2) as a DM and not at the clausal level as an adjective as in (52).

(52) [IF ALL TEACHER WELL FOLLOW BOOK SL ALL **SAME** SL POSSIBLE]
'If all teachers strictly followed the sign language book, it would be possible for all signs to be the same.'

(LSFB Corpus, session 2, task 11, signer S003, 08:32 - 08:36)

(53) [HAVE SEVERAL NS:BERCHEM COME NS:NAMUR] <**SAME**> [PT:LOC NS:CHARETTE HAVE SEVERAL]
'There are several people from Berchem who have come to Namur. And there are several people from La Charette.'

(LSFB Corpus, session 2, task 11, signer S003, 04:09 - 04:14)

As previously mentioned, SpLs face the issue of the plurality of grammatical classes that DMs can have (see section 2.2 in chapter 2), which adds a layer of difficulty to their identification. However, the different grammatical classes have been well defined in SpLs long ago (that's why when one sees a word, one can say whether it is a verb, noun, adjective, etc.) and have been documented, at least, in dictionaries. Conversely, defining and assigning grammatical classes in SLs is far from being solved. As Johnston (2015, p.60) claims:

> "The grammatical class [...] is usually not shown in any morphological feature in the form of the sign or, at least, is not unambiguously associated with a grammatical class such as 'ly' is for adverb in English. A given [...] sign form is usually able to be used with or without modifications in more than one type of syntactic slot (and hence grammatical class)."

Moreover, dictionaries documenting SLs are traditionally bilingual, i.e. one can search for a word in the surrounding SpL and find the corresponding sign. Monolingual dictionaries that describe all the signs of a SL are still under construction. Most of them are being enriched with corpus data thanks to the advent of referential corpora[1] and they contain different kinds of information. The grammatical class is rarely present because of the previously mentioned difficulty to assign it.

In the two examples in which SAME appeared above, the sign is articulated in the same way, but its grammatical classes are different. SAME is an adjective in example (52), and it is a conjunction in example (53). There is no morphological feature in the articulation of the sign that distinguishes one grammatical class from the other, only the context in which the sign appears can tell us which grammatical class applies.

[1] Among these dictionaries, there is the *Auslan SignBank* (`http://www.auslan.org.au/dictionary`) for Australian SL, the *BSL SignBank* (`http://www.bslsignbank.ucl.ac.uk/dictionary`) for British SL and the *Dictionnaire de LSFB en ligne* (`http://www.dicto.lsfb.be`), to name some examples.

In examples (50) and (51), this difficulty of assigning the grammatical class was not present: when one sees 'and', one knows that it is a coordinating conjunction in the same way that when one sees 'in fact', one knows that it is a prepositional phrase. For those cases in SpLs in which the same word may have different grammatical classes (e.g. 'so' in English can be an adverb or a conjunction), the different grammatical categories can be found in any English monolingual dictionary. In LSFB, as in most SLs, it is not possible yet to have this resource.

These examples of the sign SAME prove that the same problems regarding the identification of DMs in SpLs are found in SLs, and even more, that assigning the grammatical class is still more complex in SLs. The modality adds another issue to the analysis of SLs: there are not only conventional signs in a SL text, but there are also signs with various degrees of lexicalisation. According to Johnston (2015, p.13), manual activity is divided into:

- Fully-lexical signs: "highly conventionalised signs in both form and meaning in the sense that both are relatively stable or consistent across contexts" (ibid.), so they can be listed as dictionary entries. An example of a fully-lexical sign would be the sign SEE in Figure 5.1, which is copied from the *Dictionnaire de LSFB en ligne* (Sonnemans, 2016). Although it may present variations depending on who is looking at who/what or where the entity to be seen is placed, the form and meaning do not change from one context to another.

Figure 5.1: Sign SEE

- Partly-lexical signs: "combinations of conventional and non-conventional (highly contextual) elements" (ibid.) in the sense that some parameters of partly-lexical signs do not have a stable form. This part of the form is filled in context and will lead to a context-dependent interpretation of the whole form. In Figure 5.2, the signer is articulating a partly-lexical sign that means 'taking a small cup or a glass with a handle'. Reference to the context is necessary in order to completely understand the meaning and the entity it refers to.[2]

[2]In some contexts, this sign can be a fully-lexical sign meaning 'aperitif' or 'taking the aperitif' (see chapter 4). In this particular case, the sign can be listed in a dictionary as it is conventionalised and its meaning is not restricted to depicting the handling of an object.

Figure 5.2: Partly-lexical sign meaning 'to take a small cup or glass with a handle'

- Non-lexical signs: a large category that is essentially made up of gestures. They are defined as manual and non-manual intentional communicative body acts "that appear to have no language-specific conventionalised form/meaning pairing of their own" (ibid., pp.14-15). Sometimes gestures are shared with the surrounding SpL culture and may have discourse-marking functions, on occasions. Figure 5.3 illustrates an example of a dismissive gesture meaning 'it's all right' that can be found in the surrounding SpL culture.

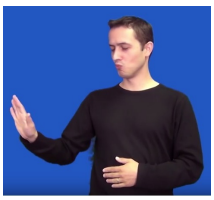


Figure 5.3: Gesture meaning 'it's all right'

The different types of manual activity, which are sometimes difficult to tease apart, present a specificity for the analysis of signed productions, as speech and gesture in spoken productions can be easily distinguished because of the different channels of production. As a result of the different types of manual activity, a comprehensive study of DMs in a SL should at least include the three types of manual activity (i.e. fully-lexical signs, partly-lexical signs and gestures) in order to take into account the different possibilities that manual articulators allow and in order to establish some general criteria that somehow palliate the delay in the study of DMs.

Indeed, the selection of DM candidates for this dissertation includes an example of each of the three categories mentioned above: the sign SAME, i.e. a fully-lexical sign; buoys, i.e. a group of partly-lexical signs (ibid.); and the PALM-UP particle, i.e. a gesture. These three items were considered to be good DM candidates for different reasons:

- **Buoys**: they have clearly been acknowledged as having a discourse function in the literature (Liddell, 2003). However, this group of partly-lexical signs is so heterogeneous in form and function that the claim about their discourse function can be called into question. It would be interesting to find evidence to support or refute such a claim from a different point of view, i.e. investigating whether they can function as DMs.

- **PALM-UP**: previous research on other SLs concludes that it has many functions including a connective one. Connectives are indeed included in the category of

DMs according to the annotation protocol followed in this dissertation (Crible, 2014). Moreover, different authors such as Amundsen and Halvorsen (2011) and McKee and Wallingford (2011) underline the necessity of more research to be conducted on PALM-UP from the perspective of DMs.

- **SAME**: it has not been studied before, although it can be found in different urban SLs such as Australian SL (Auslan), Italian SL (LIS), Flemish SL (VGT), SL of The Netherlands (NGT), etc. In LSFB and in Catalan SL (LSC), it is very frequent in natural discourse[3] and seems to be very productive, so it stands out as a good DM candidate.

These three elements exist in the two SLs under study, LSFB and LSC, and at least PALM-UP and buoys are fairly common across SLs.[4] The advantage of choosing three items shared by many SLs is that a basis for cross-linguistic research will be established leading to typological studies on DMs. These studies will allow light to be shed on the differences between SLs regarding discourse structure as well as on the properties of manual items that share the same form. In what follows, the three DM candidates will be tackled in the following order: buoys (5.2), PALM-UP (5.3) and the sign SAME (5.4).

5.2 Buoys

Buoys are a group of partly-lexical signs (Johnston, 2015) and the first DM candidates that will be tackled in this chapter. This section is devoted to them and is divided into three sub-sections. Sub-section 5.2.1 focuses on the state of the art on buoys: the different types are defined and illustrated with examples in LSFB. Subsequent studies that deal with buoys from different perspectives are also summarised here.

Sub-section 5.2.2 sets out the criteria for the identification of buoys and their possible discourse-marking status. Most existing studies do not detail how buoys are identified in the data, so it is sometimes unclear whether the forms taken into account in each study are the same. This dissertation establishes a list of criteria for the annotation of each type of buoy so that they can be reproduced in other studies. Afterwards, the three criteria that need to be fulfilled by a buoy to be considered a DM are laid out, namely: (i) to be syntactically optional, (ii) to be non-truth-conditional, and (iii) to constrain the inferential mechanisms of interpretation processes. This proposal is unprecedented in the field of SL linguistics and makes the identification of discourse-marking tokens replicable to other datasets.

[3] As a matter of fact, the ID-gloss assigned to the sign same is the fourth most frequent in the LSFB Corpus (see section 5.4).

[4] No study argues so far against the existence of PALM-UP in any SL. As for buoys, their existence is reported in several Western and Middle Eastern SLs (see 5.2.1) as well as in Eastern SLs such as Japanase SL (JSL) (Kikuchi and Bono, 2016). Only Nyst (2007) claims that manual simultaneous constructions are rare in Adamorobe SL (AdaSL, used in Ghana and not related to any SL of a large Deaf Community) and, even more, that "the use of 'list buoys' [...] is a strategy not attested" (ibid., p.143).

Sub-section 5.2.3 presents a theory, the Question Under Discussion (QUD), which represents discourse in the form of a tree that has different branches, called moves (Büring, 2003). The QUD has been mostly applied to fictive examples in SpLs so far, but not to SL corpus data. Nevertheless, it was considered to be relevant for the identification of buoys with a discourse-marking function because some list buoys can underline the switch from one move to another. In the end, this hypothesis was refuted because only two signers use list buoys in this way under certain conditions (i.e. some semi-prepared productions in the expository genre). The QUD cannot be, thus, generalised as a criterion for the identification of DMs produced by any signer and in any genre.

5.2.1 Previous studies

At the level of discourse, the concept of 'buoys' is commonly used to refer to the activity of the non-dominant hand in simultaneous constructions.[5] The term was first coined for American SL (ASL) by Liddell (2003) with the following definition:

> "Signers frequently produce signs with the weak hand that are held in a stationary configuration as the strong hand continues producing signs. Semantically they help guide the discourse by serving as conceptual landmarks as the discourse continues [...] Some buoys appear only briefly whereas other may be maintained during a significant stretch of signing" (ibid., p.223).

Liddell established a classification of different possible forms that he called list, theme, fragment, pointer and depicting buoys. **List buoys** are numeral signs that are held and used to make associations with from one to five ordered or unordered entities (Liddell, 2003). The digits of a list buoy can be extended from the beginning, i.e. static list buoys, or they can be extended in some sort of chronological order or as they come to the signer's mind, i.e. sequentially built list buoys (Nilsson, 2007). Regardless of how the list buoy is presented, the index finger of the strong hand touches one finger of the weak hand before or after the description of an entity, and the weak hand may remain or drop during the chunk of discourse related to this entity until the appearance of the next numeral form.

Two examples[6] of list buoys can be found in figures 5.4 and 5.5. On the one hand, Figure 5.4 illustrates an example of a static list buoy. The signer enumerates three

[5] The first works devoted to the role of the non-dominant hand in simultaneous constructions date back to the 90s (Engberg-Pedersen (1994) for Danish SL (DTS), Pinsonneault and Lelièvre (1994) and Miller (1994ab) for Quebec SL (LSQ)), although the issue had been already mentioned in previous studies, e.g. Friedman (1975) on the syntactic functions of the non-dominant hand in American SL (ASL). Research on the non-dominant hand is not only restricted to syntax and discourse, but it has also been investigated from the point of view of prosody, particularly in Israeli SL (ISL) (Nespor and Sandler, 1999; Sandler, 1999; Sandler, 2006; Sandler and Lillo-Martin, 2006; to name some works). For an overview on simultaneous constructions, see the articles in Vermeerbergen et al. (2007).

[6] In this section, only the pictures of buoys are shown for illustrative purposes; that's why sometimes examples do not contain a picture of all signs. The context in which they appear is presented within the text and the translation of the full excerpt is given below (the part missing is in parenthesis). In addition, all examples are fully glossed in the following sub-section (5.2.2).

(DVD, clip E1, 00:03 - 00:14)

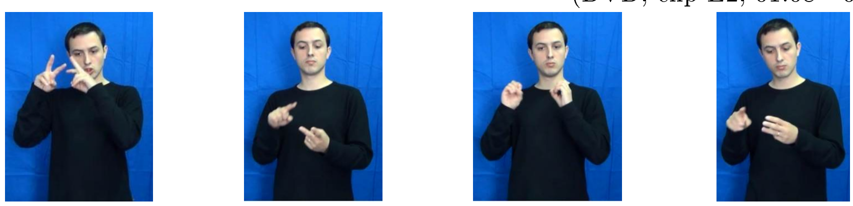
RH	PT:LBUOY-FIRST	FS:LSFB	PT:LBUOY-SECOND
LH	**LBUOY(8):THREE**	- - - - - - - - - - - - - -	- - - - - - - - - - - - - -

RH	FS:PSF	PT:LBUOY-THIRD	FS:SFE
LH	- - - - - - - - - - - - - -	- - - - - - - - - - - - - -	- - - - - - - - - - - - - -

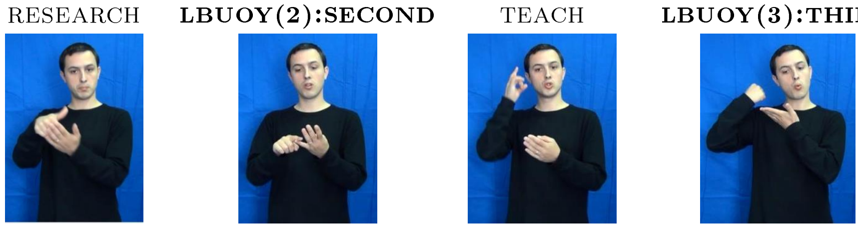
'(I am going to sign about three communications systems): LSFB, PSF and SFE.'

Figure 5.4: Example of a static list buoy

(DVD, clip E2, 01:08 - 01:13)



RH	RESEARCH	PT:LBUOY-SECOND	TEACH	PT:LBUOY-THIRD
LH	RESEARCH	**LBUOY(2):SECOND**	TEACH	**LBUOY(3):THIRD**



RH	TRAINING	PT:LBUOY-FOURTH	CULTURE	HERITAGE
LH	TRAINING	**LBUOY(4):FOURTH**	CULTURE	HERITAGE

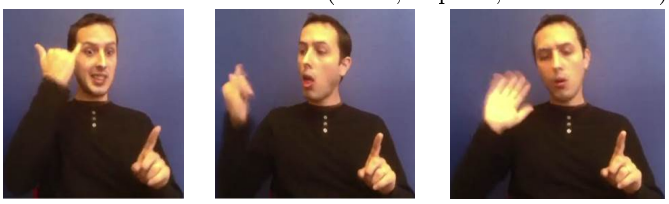
'(The LSFB Corpus will be published for the purposes of) research, teaching, training and safeguarding cultural heritage.'

Figure 5.5: Example of a sequentially built list buoy

communication systems, namely French Belgian Sign Language (LSFB), Pidgin Sign Language (PSF) and Signed Supported French (SFE).[7] On the other hand, Figure 5.5 presents an example of a sequentially built list buoy that is used to enumerate the objectives of collecting the LSFB Corpus.

Theme buoys are formed with a raised and stationary vertical index finger on the weak hand meaning that an important discourse topic is being discussed (Liddell, 2003). The strong hand goes on signing while the theme buoy is produced and may point at it. In Figure 5.6, the signer says that if you have an idea and other people dawdle, you need to leave them and take the initiative. The idea, which is the topic of discourse, is represented by the theme buoy.

(DVD, clip A2, 01:28 - 01:31)



RH	IDEA	DAWDLE	LEAVE
LH	**TBUOY:IDEA**	- -	

'(If somebody has an idea) and the others dawdle, leave them.'

Figure 5.6: Example of a theme buoy

Fragment buoys usually appear after a two-handed or double-handed sign, when the handshape of the sign is maintained in the non-dominant hand while the dominant one goes on signing. A fragment of a sign is considered a fragment buoy, when the signer assigns semantic significance to it by using a pointing sign or a directed gaze towards the fragment (Liddell, 2003). In Figure 5.7, the signer is presenting a situation related to communication support workers. He signs TEXT and keeps the flat handshape of the sign while the other hand articulates several signs. He uses a pointing sign and his gaze is also directed towards the fragment in order to give it semantic significance.

[7] These three terms are fingerspelled in the LSFB text, but only the first letter is shown in the example. The same rules apply for other pictures representing a fingerspelled word.

(DVD, clip A1, 10:52 - 10:54)

'This text is a hard one. Could you please go and phone? There you go.'

Figure 5.7: Example of a fragment buoy

Pointer buoys are articulated with an extended finger that points towards the place in which an important element in the discourse is placed (Liddell, 2003). Figure 5.8 shows an excerpt from an interview in which the signer has been asked what happens with sign neologisms. He answers that new signs are created when a concept is unknown. The pointer buoy is used to point towards the new concept.

(DVD, clip M2, 01:53 - 01:56)

'(You can assign a new sign if) the concept is not known.'

Figure 5.8: Example of a pointer buoy

Depicting buoys are depicting signs that are maintained to show the position of an entity or signal the spatial relationship between two elements (Liddell, 2003). In Figure 5.9, the signer is telling a tale and he describes a place where there is a lake surrounded by a fence.

(DVD, clip N1, 03:03 - 03:07)

RH	FENCE	WATER	DS:LEVEL-OF-WATER
LH	FENCE	**DPBUOY:FENCE**	- - - - - - - - - -

'(He saw) a fence surrounding a lake.'

Figure 5.9: Example of a depicting buoy

Vogt-Svendsen and Bergman (2007) add another type of buoy, i.e. the **point buoy**, in Swedish SL (STS) and Norwegian SL (NTS). It takes the form of an extended or flexed index, or the form of a flat hand with the thumb in a radial or palmar position. In both cases, the point buoy "represent[s] a point in time or space" and is "used for visualising temporal and spatial relations between entities" (ibid., p.217). In Figure 5.10, the signer is talking about how internet browsers have improved. He uses space in order to create a scale and the point buoy establishes the point in which the 1.0 version of Firefox is found. He says that the new Firefox version overtakes the old one.

(DVD, clip M2, 07:15 - 07:18)

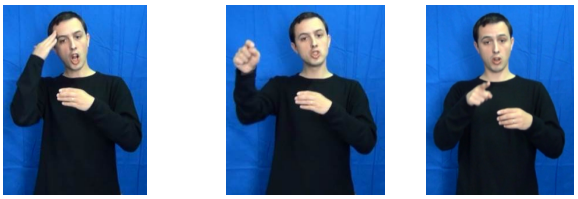
RH	**PBUOY:ONE-POINT-ZERO**	- - - - - - - - -	- - - - - - - - -	- - - - - - - - -
LH	PT:DET	FIREFOX	NEW	OVERTAKE

'(Before there was the) 1.0 version. The new Firefox overtakes it.'

Figure 5.10: Example of a point buoy

Finally, Mesch and Wallin (2013) present an additional buoy in STS, i.e. the **delimit buoy**, which takes the form of "all fingers relaxed gathered and slightly bent at both distal knuckles with the thumb in opposition, or lateral." It represents the delimitation between an inner and an outer element. In Figure 5.11, the signer asks the informants of the LSFB Corpus for permission to show the videos to foreign researchers. He establishes a delimitation between Belgium (inner element represented by the delimit buoy) and foreign researchers (outer element placed outside the delimit buoy with the repetition of the determiner PT:DET++).

(DVD, clip E2, 03:04 - 03:07)



RH	FOREIGN	PT:DET++	PT:PRO2
LH	**DBUOY:BELGIUM**	- - - - - - - - - - - - - - - - - - - -	

'(Once recordings are finished, the videos in which you appear will be given to) people outside Belgium.'

Figure 5.11: Example of a delimit buoy

Table 5.1 displays a summary of the different categories of buoys described so far, their definitions, the SL in which they were first defined and the authors.

Category	**Definition**	**SL**	**Authors**
List buoy	Numeral signs that are held and used to make associations with from one to five ordered or unordered entities.	ASL	(Liddell, 2003)
Theme buoy	A raised and stationary vertical index finger meaning that an important discourse topic is being discussed.	ASL	(Liddell, 2003)
Fragment buoy	A fragment of the previous sign that is assigned semantic significance.	ASL	(Liddell, 2003)
Pointer buoy	An extended finger that points towards the place in which an important element in the discourse is placed.	ASL	(Liddell, 2003)
Depicting buoy	A depicting sign that is maintained to show the position of an entity or signal the spatial relationship between two elements.	ASL	(Liddell, 2003)
Point buoy	An extended or flexed index, or a flat hand with the thumb in a radial or palmar position used to represent a point in time or space from which temporal and spatial relations between entities can be established.	STS and NTS	(Vogt-Svendsen and Bergman, 2007)
Delimit buoy	All fingers relaxed gathered with the thumb in a lateral or opposed position representing the delimitation between an inner and an outer element.	STS	(Mesch and Wallin, 2013)

Table 5.1: Summary of the categories of buoys established so far

Buoys have been investigated from different angles in these SLs and in many others. Some studies aimed to examine the functions of buoys or of a particular buoy (Liddell et al., 2007; Vermeerbergen and Demey, 2007; Villameriel, 2014; Hansen and Heßmann, 2015), whereas other studies included the group of buoys or a particular category in a larger research project (Hendriks, 2007; Leeson and Saeed, 2007; Nilsson, 2007; Filhol and Braffort, 2012; Kimmelman, 2014; Sinte, 2015; Kimmelman et al., 2016). These studies are summarised below.

From the perspective of cross-linguistic studies, Liddell et al. (2007) investigate the use of list, theme, fragment and pointer buoys in ASL, STS and NTS. They attest to their existence in the three SLs with similar forms and functions, so they raise the question of why there are so many similarities in form and function across unrelated SLs. Vermeerbergen and Demey (2007) compare the use of three kinds of simultaneous constructions in VGT signers with co-speech gestures in Flemish speakers. Their study tackles numeral signs (i.e. list buoys), pointing signs (i.e. pointer and point buoys) and lexical signs held (i.e. fragment and depicting buoys); and they find out that there are many more similarities than expected in both the form and function of buoys in SLs and co-speech gestures in SpLs.

So far, there have been two studies that have focused on the form and function of list buoys. The first is that of Villameriel (2014), who carries out exploratory research about the formal, semantic and pragmatic features of list buoys in Spanish SL (LSE) using a corpus of mostly narrative productions with eight different signers. He finds that list buoys in LSE may be articulated using handshapes that have not been described in other SLs, but their semantic and pragmatic function is the same as list buoys in other SLs. The second study is that of Hansen and Heßmann (2015), who investigate the semantic use of finger loci (i.e. what kind of referents can be represented by each of the digits of a list buoy) in German SL (DGS) and the possibilities of articulation across different genres (information programmes, narrative interviews and private conversations). Their results prove that (i) list buoys are more frequent in informative and formal texts than in interviews or private conversations, (ii) informative texts are planned productions in which the function of list buoys is to underline text cohesion and mark text structures, and (iii) some signers often use list buoys, whereas others use them rarely.

These four studies have been devoted to buoys or to a particular type of buoy, but there are other works in which buoys have appeared as part of a larger research project. Leeson and Saeed (2007) draw on Fauconnier's Mental Space theory in order to study how simultaneous constructions in Irish SL (ISL) foreground and background attention. They attest the existence of buoys in ISL, but they consider them to be a phonetic feature of communication and claim that simultaneous constructions may be used for listing, focus partitioning and narrative dynamism. Nilsson (2007) investigates the activities of the non-dominant hand in STS when it does not participate in a two-handed sign, and organises them in a continuum from more active to less active. Buoys are situated very close to the right edge of the continuum meaning that they constitute one of the activities of the non-dominant

hand in which it actively "contributes to the discourse production and to the content of the discourse" (ibid., p.180).

Hendriks (2007) describes manual simultaneity in narrative productions in Jordanian SL (LIU). She attests the existence of buoys in her data, but she claims that "they do not have to be held on the non-preference hand, and they are by no means limited to the categories listed in Liddell (2003)" (ibid., p.245). She goes further, arguing that the category of buoys is not necessary in LIU as "these constructions can be seen as well-formed instances of simultaneity and are closely paralleled by structures that contain elements that would not be considered buoys" (ibid., p.254). Her work is the first that calls into question the necessity of the category of buoys. Such questioning was revisited some years later by Kimmelman et al. (2016).

In a project aiming to generate animations and automatically produce SL utterances via a virtual signer, Filhol and Braffort (2012) investigate the functions that fragment buoys can have in French SL (LSF) and they later compare the results with Greek SL (GSL) and DGS. For them, there are two possibilities: either the fragment buoy participates in a 'qualification/naming' structure in which the strong hand qualifies the buoy like an adjective, with a name-sign or fingerspelling; or the fragment buoy "is held because it is needed again after the one-handed sequence" and is "seen as a parenthesis in a discourse" (ibid., p.64). This sheds light on the 'semantic significance' that the signer assigns to fragment buoys (Liddell, 2003), but the question of whether other possible semantic categories apply remains open.

Kimmelman (2014) scrutinises the role of buoys in Information Structure[8] in NGT and Russian SL (RSL). He claims that the six types of buoys presented above (the delimit buoy is not mentioned) are the result of conflation of form and function, which is why he groups them into three categories: list,[9] fragment (including depicting buoys) and pointing (including pointer and point buoys). Although he acknowledges that theme buoys potentially express "relevance of the information on the strong hand" (ibid., p.39), they do not appear in his work. His results show that weak hand holds[10] are commonly used to express discourse functions such as noun as topic (pointing, fragment and possibly list buoys), verb as sentence topic (fragment buoys) or anchoring a referent (pointing buoys). However, they may also fulfil other functions at different linguistic levels, namely phonetic (fragment buoys), syntactic (pointing, fragment and possibly list buoys) and iconic (fragment and pointing buoys).

Sinte (2015) investigates the expression of time in LSFB and analyses the use of point buoys for this purpose. In a corpus containing conversational and descriptive

[8] Information Structure is defined as "a small set of instructions with which the hearer is instructed by the speaker to retrieve the information carried by the sentence and enter it into her/his knowledge-store" (Vallduví, 1992, p.18).

[9] In his data, he does not find list buoys but hypothesises that, as reported for ASL by Davidson (2012), list buoys are a strategy of coordination among others. List buoys function as general coordinators that can be interpreted as either disjunction or conjunction depending on non-manual marking.

[10] The term 'weak hand hold' used by Kimmelman (2014) and Kimmelman et al. (2016) is the equivalent of the term 'buoy' used in this dissertation following Liddell (2003).

productions, she finds that the two handshapes described for the point buoy in STS and NTS (Vogt-Svendsen and Bergman, 2007) are the same in LSFB, and that both configurations share the same features. She claims that the difference between point buoys and other types of pointing signs (so-called 'simple pointings') is that the first have an anchoring role – reinforced by a directed eye gaze towards the hand articulating the buoy or towards the place where the buoy is pointing at – that supports a temporal reference.

Along the lines of the works that call into question the category of buoys (Hendriks (2007) on the necessity of such category and Kimmelman (2014) on the conflation of form and function), Kimmelman et al. (2016) compare weak hand holds in narratives and conversations in two SLs, NGT and RSL. Although weak hand holds are specific to the signed modality because of the existence of two articulators, the authors prove that "holds can be analysed in terms of regular phonetic, syntactic, semantic, or discourse notions (or a combination thereof) familiar from the linguistic study of spoken languages" (ibid., p.211). The notion of buoys is thus found dispensable.

In Table 5.2, the studies presented above are summarised including the perspective, the main objective of the research project, the buoy or buoys analysed, the language, and the authors. Despite the evidence given to discard the metaphor of buoys in Kimmelman et al. (2016), the notion is kept within the framework of this dissertation because the authors themselves acknowledge that the metaphor still applies to some discourse and iconic holds (ibid., p.231). Since this dissertation deals with an aspect of discourse, i.e. discourse markers, the study of buoys from this new perspective can provide further evidence about the necessity or not of this notion. The authors also underline that further cross-linguistic research on weak hand holds needs to be conducted. This dissertation aims to fill this gap by including list buoys in the analysis, which were excluded in Kimmelman et al. (2016), and by studying LSFB and LSC.

Perspective	Objective of the work	Type of buoy	Language	Authors
Focus on buoys	Cross-linguistic study of the form and function	List, fragment, pointer and theme	ASL, STS and NTS	Liddell et al. (2007)
	Cross-linguistic study of simultaneous constructions and co-speech gestures	List, fragment, pointer, point and depicting	VGT and Flemish	Vermeerbergen and Demey (2007)
	Formal, semantic and pragmatic features of list buoys	List	LSE	Villameriel (2014)
	Semantic use of finger loci across different genres	List	DGS	Hansen and Heßmann (2015)
Focus on a larger study in which buoys appear	Study of simultaneous constructions that calls into question the notion of buoys	List, fragment, pointer and (theme)	LIU	Hendriks (2007)
	Study of simultaneous constructions drawing on Fauconnier's Mental Space theory	List and fragment	ISL	Leeson and Saeed (2007)
	Investigation of the activities of the non-dominant hand	List, pointer, (point) and theme	STS	Nilsson (2007)
	Generating animations in order to produce automatically SL utterances via a virtual signer	Fragment	LSF, DGS and GSL	Filhol and Braffort (2012)
	Role of buoys in Information Structure	Fragment, pointer, point, (theme) and (list)	NGT and RSL	Kimmelman (2014)
	The expression of time	Point	LSFB	Sinte (2015)
	Study of weak hand holds from a quantitative and qualitative perspective, and calling into question the notion of buoys	Fragment, pointer, point and (list)	NGT and RSL	Kimmelman et al. (2016)

Table 5.2: Summary of studies tackling buoys

5.2.2 Criteria for the identification of buoys and their discourse-marking tokens

As explained in the introduction of this chapter (see 5.1), the identification of DMs is an intricate issue for two different reasons. The first is that the same item may have a particular syntactic function when it belongs to the dependency structure of the clause, whereas it may have a DM function when it is out of the dependency structure of the clause and it connects or punctuates two clauses. The second reason is that DMs do not belong to a single grammatical class as this category includes adverbs, verbal phrases, etc. Hence, it is by interpreting the pragmatic function of the DM candidate that it is possible to know whether it belongs to the category of DMs.

So far, literature on DMs rarely proposes a general definition of the category. Studies either describe the variables that might affect the behaviour of DMs (Schiffrin, 1987; Brinton, 1996) or focus on case studies. The annotation protocol of DMs (Crible, 2014) used for the annotation of the three DM candidates under study in this dissertation contains one of the few existing general definitions of the DM category. Moreover, the advantages of this definition are twofold: it clearly details the items to be considered as DMs, and it establishes a broad category that comprises connective and non-connective items. The definition goes as follows:

> "DMs are a grammatically heterogeneous, multifunctional type of pragmatic markers, hence syntactically optional and non-truth-conditional, constraining the inferential mechanisms of interpretation processes. Their specificity as part of the [pragmatic marker] category is to function on a metadiscursive level as a cue to situate the host unit in a co-built representation of on-going speech. They do so by either signalling a discourse relation between the host unit and its context [...], expliciting the structural sequencing of discourse segments, expressing the speaker's metacomment on his phrasing, or contributing to interpersonal collaboration" (ibid., pp.3-4).

Three points of this definition will be selected as criteria for identifying buoys (as well as the two other DM candidates) with a discourse-marking function, namely (i) syntactically optional, (ii) non-truth-conditional and (iii) constraining the inferential mechanisms of interpretation processes (see p.19 in chapter 2 for further details and examples). These three criteria were selected because they are representative of the DM category, i.e. most of the literature on DMs agrees upon these three points (Schiffrin, 1987; Brinton, 1996; Fraser, 1996; Hansen, 2006; among other works, see p.20).

To the best of my knowledge, this is the first attempt in the field of SL linguistics to establish a set of criteria to identify DMs in real data. An additional criterion (which was thought to be relevant for list buoys with a discourse-marking function) was that they need to work at the level of the Question Under Discussion (QUD) by underlining the switch from one move to another. The QUD presents discourse in the form of a tree (Büring, 2003), in which the topic of discourse is at the top and

has different moves which are the different questions under discussion. Each question under discussion in turn has different moves that are its sub-topics (see sub-section 5.2.3 below for further clarification on this theory and to see what a discourse tree looks like).

In what follows, the classification of buoys presented above in 5.2.1 is repeated in the same order. On the one hand, the criteria used to identify each type of buoy in the data will be presented. On the other hand, the three criteria for teasing apart those buoys with a discourse-marking function from those fulfilling other functions will be applied to each type of buoy. As a result, I will prove that list buoys are the only category that can function as DMs.

5.2.2.1 List buoys = DMs

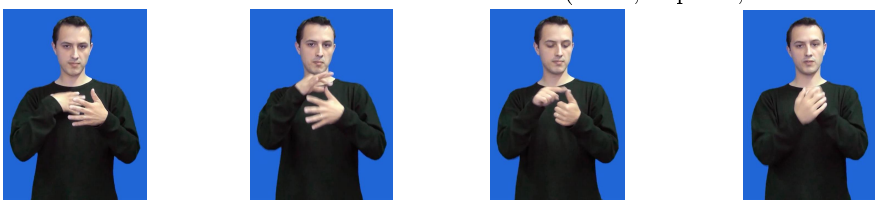
List buoys are numeral signs that are held and used to make associations with from one to five ordered or unordered entities (Liddell, 2003), and they can be sequentially built or static (Nilsson, 2007). Kimmelman (2014) and Kimmelman et al. (2016) hypothesise that list buoys may have different functions: syntactic ones (representing a subject, an object or an noun phrase head), discourse functions (representing thematic referents), and on the basis of Davidson (2012), expressing conjunction and disjunction. Therefore, list buoys have not been attested a discourse-marking function in the sense that they have not been said to be devices that establish discourse/coherence relations.

In the two sub-corpora used for this chapter (C1 and C2, both including LSFB data), all occurrences of list buoys were annotated and their scope (here understood as the stretch of discourse covered by the list buoy) presents many differences. A sign was annotated as a list buoy when it was a number articulated by either the dominant or the non-dominant hand that was held while the other hand continued to be active. The activity of the hand that is not articulating the list buoy can be of two types: (i) it can be directly related to the list buoy itself by using a pointing sign to one digit or manipulating digits, or (ii) it can be simultaneous to the list buoy without explicit reference to it, so the signer may extend the fingers while the other hand keeps on signing.

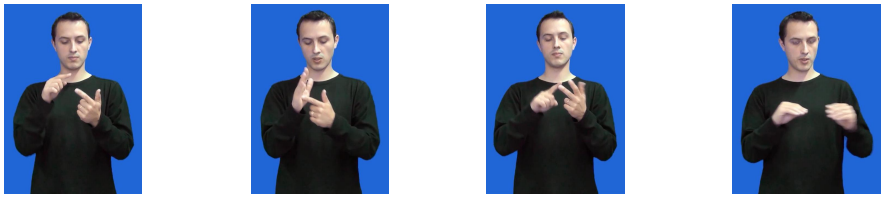
The annotation of list buoys and their scope reveals that list buoys can participate in an enumeration within the clause (so the articulation of each digit is followed by one sign or even by a short string of signs) or they can have a very wide scope that includes several clauses. In the first case, list buoys are found within the dependency structure of a clause and fulfil the syntactic functions suggested by Kimmelman (2014) and Kimmelman et al. (2016), or express a conjunction or disjunction within the clause as attested by Davidson (2012). Their scope was annotated as 'local' (see the annotation template in chapter 3). In the second case, list buoys are found outside the dependency structure of clauses and they seem to express a sequence of events; that's why they are potential DMs. Their scope was annotated as 'global' because it contains many clauses.

The following figures illustrate this dichotomy. Similarly to figures 5.4 and 5.5, Figure 5.12 presents one clause and one list buoy with five digits,[11] each one referring to the five sign parameters that the signer is explaining. The digits of the list buoy are found within the dependency structure of the clause in which they express a coordination.

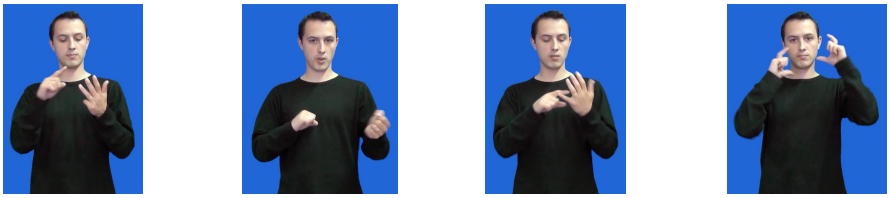
(DVD, clip M1, 00:20 - 00:27)



RH	IT-IS	PARAMETERS	PT:LBUOY-FIRST	HANDSHAPE
LH	IT-IS	PARAMETERS	**LBUOY(6):FIRST**	HANDSHAPE



RH	PT:LBUOY-SECOND	ORIENTATION	PT:LBUOY-THIRD	LOCATION
LH	**LBUOY(7):SECOND**	ORIENTATION	**LBUOY(8):THIRD**	LOCATION



RH	PT:LBUOY-FOURTH	MOVEMENT	PT:LBUOY-FIFTH	EXPRESSION
LH	**LBUOY(9):FOURTH**	MOVEMENT	**LBUOY(5):FIFTH**	EXPRESSION

'Sign language parameters include handshape, orientation, location, movement and non-manual marking.'

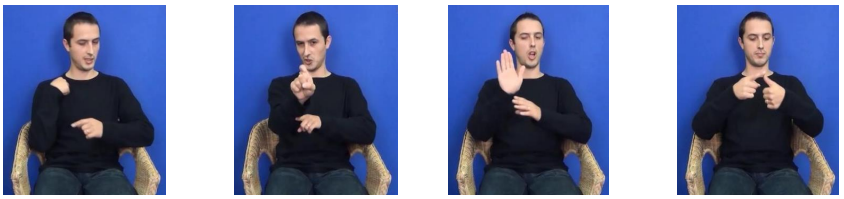
Figure 5.12: Example of a list buoy with a local scope

In Figure 5.13, there are several clauses and one list buoy with two digits.[12] The two digits are found outside the dependency structure of clauses and make explicit the sequencing of examples given by the signer when adapting the daily situations of the deaf to the hearing audience.

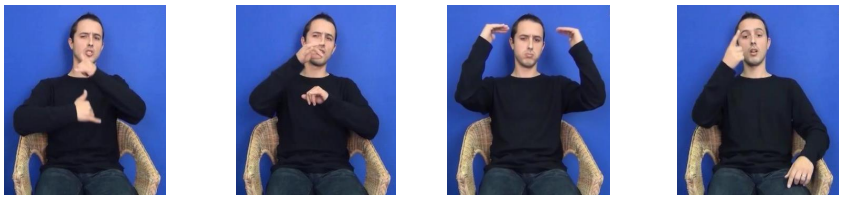
[11] Here the terms 'digit' or 'list buoy digit' refer to every finger that constitutes a list, whereas 'list buoy' refers to the combination of digits that build a unique entity.

[12] Since this example is too long, it cannot be fully illustrated with pictures. Only some pictures are shown and they are followed by ellipsis in brackets when there are still signs afterwards (see the translation for the full text). Only one clause is complete PT:PRO1 QUESTION, the others are not. For reasons of coherence throughout this example, I opt to avoid delimiting clauses. I only put in angle brackets those elements that are found outside the dependency structure of clauses. The example fully glossed and segmented into clauses can be found below when the first criteria for the identification of discourse-marking list buoys (i.e. syntactically optional) is presented.

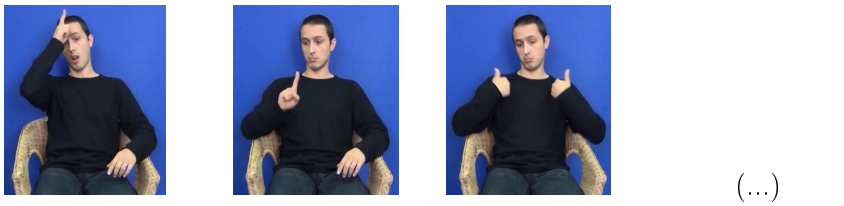
(DVD, clip A1, 04:55 - 05:22)



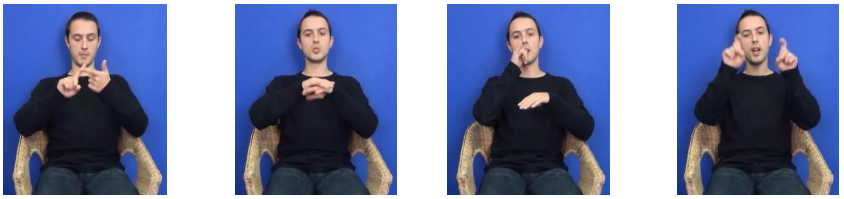
RH	PT:PRO1	QUESTION	<EXAMPLE>	<PT:LBUOY-FIRST>
LH			<EXAMPLE>	<**LBUOY(6): FIRST**>



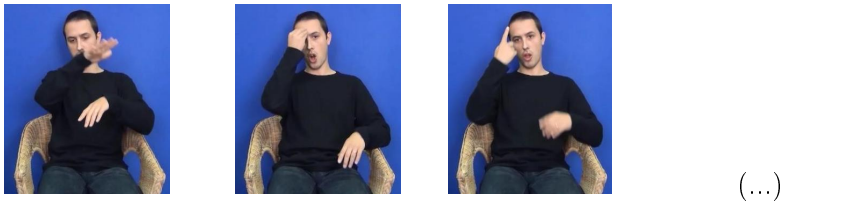
RH	INTERNATIONAL	CONFERENCE	HIGH-LEVEL	ONE
LH	INTERNATIONAL		HIGH-LEVEL	



RH	NS:GERMANY	DS:PERSON-GO	PERSON	(...)
LH				



RH	<PT:LBUOY SECOND>	ON	NS:ITALY	COUNTRY
LH	<**LBUOY(7): SECOND**>	ON		COUNTRY



RH	AREA	SCHOOL	ONE	(...)
LH				

'I have some questions for the hearing. First, if there was an international conference and a German interpreter did not translate into French very well... Would you accept it? Second, if your child went to a school in Italy where French was spoken, and the teacher spoke to him in a mix of French and Italian... Would you accept it?'

Figure 5.13: Example of a list buoy with a global scope

The first step to differentiate list buoys that can function as DMs from those that do not is to see whether they belong to the dependency structure of the clause. If they do participate in the dependency structure, they are excluded from further analysis. Conversely, if they are outside the dependency structure, the three criteria established above for discourse-marking buoys need to be fulfilled so that they can be considered DMs and assigned a domain and a function (see chapter 3). In what follows, I will show that list buoys fulfil these three criteria, so they can function as DMs and they are not another type of functional sequence such an insert or adjunct that is also found outside the dependency structure of the clause.

Syntactically optional → Yes When list buoys have a discourse-marking function, they are neither dependants in a clause nor do they have dependant elements. Unlike the dependants of a nucleus that are necessary for a clause to be complete, list buoys can be removed without consequences at the syntactic level for the clauses around them. In (54), the example illustrated in Figure 5.13 is completely glossed. Glosses are put in one line instead of two (one for the left hand and another for the right hand) for ease of reading. There are three clauses and three DMs with the following syntactic structure:[13] [SS SV] <md> <md> [SRg SS SV SS] <md> [SRg SV SS].

(54) [(PT:PRO1)$_{SS}$ (QUESTION)$_{SV}$] <EXAMPLE>$_{md}$ <**LBUOY(6):FIRST**>$_{md}$ [(INTERNATIONAL CONFERENCE HIGH-LEVEL ONE NS:GERMANY DS:PERSON-GO PERSON NS:GERMANY HEADPHONES SPEAK TRANSLATE NS:FRANCE SO-SO)$_{SRg}$ (PT:PRO2)$_{SS}$ (ACCEPT)$_{SV}$ (PT:PRO2)$_{SS}$] <**LBUOY(7):SECOND**>$_{md}$ [(ON NS:ITALY COUNTRY AREA SCHOOL ONE DS:CIRCULAR-SHAPE SPEAK NS:FRANCE PT:DET PT:POSS2 SON DS:PERSON-GO PT:PRO3 TEACHER DS:PERSON-GO SPEAK NS:FRANCE SO-SO POTATO NS:ITALY MIX)$_{SRg}$ (ACCEPT)$_{SV}$ (PT:PRO2)$_{SS}$]
'I have some questions for the hearing. **First**, if there was an international conference and a German interpreter did not translate into French very well... Would you accept it? **Second**, if your child went to a school in Italy where French was spoken, and the teacher spoke to him in a mix of French and Italian... Would you accept it?'

If list buoys were removed from (54), no clause would be syntactically altered. As shown in (55), there has been no change in the syntactic structure which now is: [SS SV] <md>[14] [SRg SS SV SS] [SRg SV SS].

[13] Syntactic annotation follows the principles presented in chapter 4, sub-section 4.2.3.1. Clauses are separated by square brackets, functional sequences by parentheses and the elements outside the dependency structure are delimited by square brackets. SS = Subject Sequence, SN = Nominal Sequence, SPron = Pronominal Sequence, SAdj = Adjectival Sequence, SAdv = Adverbial Sequence, SPrep = Prepositional Sequence, SV = Verbal Sequence, SO = Object Sequence, SRg = Left Governed Sequence, SRd = Right Governed Sequence, insert = Insertion, md = Discourse Marker.

[14] This stands for the sign EXAMPLE. As a DM, it could also be removed and the syntactic structure would not be altered.

(55) [(PT:PRO1)$_{SS}$ (QUESTION)$_{SV}$] <EXAMPLE>$_{md}$ [(INTERNATIONAL CONFERENCE HIGH-LEVEL ONE NS:GERMANY DS:PERSON-GO PERSON NS:GERMANY HEADPHONES SPEAK TRANSLATE NS:FRANCE SO-SO)$_{SRg}$ (PT:PRO2)$_{SS}$ (ACCEPT)$_{SV}$ (PT:PRO2)$_{SS}$] [(ON NS:ITALY COUNTRY AREA SCHOOL ONE DS:CIRCULAR-SHAPE SPEAK NS:FRANCE PT:DET PT:POSS2 SON DS:PERSON-GO PT:PRO3 TEACHER DS:PERSON-GO SPEAK NS:FRANCE SO-SO POTATO NS:ITALY MIX)$_{SRg}$ (ACCEPT)$_{SV}$ (PT:PRO2)$_{SS}$]
'I have some questions for the hearing. If there was an international conference and a German interpreter did not translate into French very well... Would you accept it? If your child went to a school in Italy where French was spoken, and the teacher spoke to him in a mix of French and Italian... Would you accept it?'

Non-truth-conditional → Yes List buoys with a discourse-marking function contribute to the non-conventional meaning of clauses and they do not affect the truth-conditional content of the clauses they connect. The truth conditions of (54) are the following:

- The signer asks a question.
- The signer asks the public whether they would accept a German not translating properly into French in a high-level conference.
- The signer asks the public whether, if their child attended a school in Italy, they would accept teaching being given in a mix of French and Italian.

If the two digits were removed, as in (55), the truth conditions of the clauses uttered by the signer would be the same:

- The signer asks a question.
- The signer asks the public whether they would accept a German not translating properly into French in a high-level conference.
- The signer asks the public whether, if their child attended a school in Italy, they would accept teaching being given in a mix of French and Italian.

Constraining inferential mechanisms → Yes List buoys with a discourse-marking function encode a particular type of coherence relation between two clauses (mainly sequencing and addition). The relationship between the clauses they connect is not left to pragmatic inference, but it is constrained by the list buoy so that the addressee processes this relationship in a particular way. If there were not list buoy digits in Figure 5.13, the addressee could infer that the signer is giving a list of two examples, that the two examples are alternatives, and possibly others. In example (54), list buoy digits constrain the cognitive process to a sequencing of examples. Conversely, there are no coherence relations explicitly determined in example (55), so different interpretations would be possible. For instance:

- A relation of addition of new information between the second and the last clause:

(56) I have some questions for the hearing. If there was an international conference and a German interpreter did not translate into French very well... Would you accept it? **And** if your child went to a school in Italy where French was spoken, and the teacher spoke to him in a mix of French and Italian... Would you accept it?

- A relation of alternative:

(57) I have some questions for the hearing. **On the one hand**, if there was an international conference and a German interpreter did not translate into French very well... Would you accept it? **On the other hand**, if your child went to a school in Italy where French was spoken, and the teacher spoke to him in a mix of French and Italian... Would you accept it?

5.2.2.2 Theme buoys ≠ DMs

Theme buoys are formed with a raised and stationary vertical index finger meaning that an important discourse topic is being discussed (Liddell, 2003). Theme buoys seem to be language-specific to ASL as they rarely appear in the literature. They are scarce and limited to young signers in STS and NTS (Liddell et al., 2007), not frequent in LSFB (Gabarró-López and Meurant, 2014a), and absent so far in the studies on NGT and RSL (Kimmelman, 2014; Sáfár and Kimmelman, 2015; Kimmelman et al., 2016).

All occurrences of theme buoys and their scopes were annotated in C1 and C2. The annotation of theme buoys relied on a combination of form and function; i.e. the signer had to articulate a raised and stationary vertical index finger that had to refer to an important discourse topic. Theme buoys can be produced by either the dominant or the non-dominant hand, and the hand that does not produce it can refer directly to the theme buoy with a pointing sign or can articulate other signs related to the topic. Unlike list buoys, no striking differences in terms of scope were found for theme buoys: they are usually held while the other hand produces from two to five signs, and they appear within one clause (i.e. theme buoys do not spread over clauses).

Since theme buoys represent a discourse topic, their function cannot be that of a DM. In what follows, further evidence to support this claim will be given by contrasting the theme buoy previously presented in Figure 5.6 with the three criteria established for buoys to be considered DMs. Although theme buoys are syntactically optional, they are neither non-truth-conditional nor do they constrain the inferential mechanisms of interpretation processes.

Syntactically optional → Yes Figure 5.6 is an excerpt from a discourse in which the signer says that if you have an idea and other people dawdle, you need to leave them and take the initiative. Two clauses are uttered to express this message and

only one, fully glossed and translated in (58), contains the theme buoy. The clause is a conditional with the following syntactic structure: [SRg SV].

	RH	[(IF	PT:DET	PERSON	IDEA
	LH				(**TBUOY:IDEA**)$_{SRg}$

(58)

RH	PT:PRO3	DAWDLE)$_{SRg}$	(LEAVE)$_{SV}$]	
LH	- -			

'If somebody has an idea and the others dawdle, leave them.'

IDEA is the discourse topic represented by the theme buoy and it is found in the protasis (the left governed sequence)[15] of the conditional clause. The existence of two articulators in LSFB enables the topic to be simultaneously doubled (the theme buoy appears at the same time as the sign IDEA) and that it is maintained while the three following signs are articulated. Hence, the theme buoy could be removed and the clause would keep the same syntactic structure [SRg SV] and remain syntactically complete because the topic is already mentioned once as in (59). The clause would be like one in a SpL in which the modality impedes the topic being doubled simultaneously and physically maintained while the following words are produced.

(59) [(IF PT:DET PERSON IDEA PT:PRO3 DAWDLE)$_{SRg}$ (LEAVE)$_{SV}$]
'If somebody has an idea and the others dawdle, leave them.'

Non-truth-conditional → No The theme buoy in example (58) represents the discourse topic because it was produced when the topic of the discourse, i.e. someone's idea, was articulated. Similarly to pronouns, theme buoys are "pro-conceptual schematic subpropositional forms" that contribute to the truth conditions of a particular clause (Hussein, 2008, p.72). In other words, both pronouns and theme buoys are empty of meaning, but they present grammatical features that allow the identification of their referents. For instance, if there is a 'he' in a clause, it will imply that the referent is someone singular and masculine. If this 'he' was taken to refer to someone who is not singular and masculine, the truth-conditional content of clause would change (ibid.).

What the theme buoy linguistically encodes in (58) (i.e. someone's idea) also contributes to the truth or falsity of the clause in which it occurs. For example, if the theme buoy was taken to refer to a thin and vertical entity instead of IDEA, the truth conditions of the clause would not be the same. Note the difference between the truth conditions of the clause when the theme buoy is taken to refer to the topic and when the theme buoy is taken to refer to a thin and vertical entity.

The truth conditions of (58) when the theme buoy is understood as the topic of discourse:

[15] The hyphens illustrate the spreading of a sign, in this case, the theme buoy. The modality means that a buoy that is part of a functional sequence can spread over another functional sequence in the same clause or over another functional sequence in a neighbouring clause. Thus, for ease of reading, the type of sequence is annotated just after the buoy and not at the end of spreading.

- The signer tells the public to leave people who dawdle when somebody has an idea.

The truth conditions of (58) when the theme buoy is understood as a thin and vertical entity:

- The signer tells the public to leave people who dawdle when somebody has an idea.
- There is a thin and vertical entity.

Constraining inferential mechanisms → No Despite referring to the discourse topic, theme buoys do not make explicit any type of discourse relation such as changing the topic, opening a new sequence, expressing contrast or many others. If the theme buoy is removed in example (58), no coherence relation can be inferred in its place without rendering the interpretation infelicitous as in (60).

(60) * If somebody has an idea **although** and the others dawdle, leave them.

Therefore, theme buoys do not constrain the inferential mechanisms of interpretation processes regarding the relationship of the clause in which they spread and the whole text.

5.2.2.3 Fragment buoys ≠ DMs

Fragment buoys appear after a two-handed or double-handed sign, when the handshape of the sign is maintained in one hand and the other goes on signing. This fragment is assigned semantic significance when a pointing sign or the gaze are directed towards it (Liddell, 2003). Filhol and Braffort (2012) claim that fragment buoys either participate in a 'quantification/naming' structure, in which the fragment buoy is qualified by the other hand, or constitute a parenthesis in discourse. More recently, Kimmelman (2014) provides a more fine-grained list of the possible functions, namely: syntactic (object, subject, verb/predicate, serial-verb construction, noun phrase head, adverb, wh-word and preposition), discourse-related (noun as topic, verb sentence topic and interjection/repair) and iconic (simultaneity and background in locative). So far, no discourse-marking function has been assigned to fragment buoys in the sense that they have not been said to be devices that establish coherence relations.

All tokens of fragment buoys and their scopes were annotated in C1 and C2. Fragment buoys can be produced either by the dominant or the non-dominant hand and they can appear after a one-handed or two-handed fully-lexical sign.[16] The two criteria proposed by Liddell (2003) to assign semantic significance to the fragment (i.e. a pointing sign or the gaze directed towards the fragment) are not valid for all productions. As Nilsson (2007, p.170) points out, sometimes fragment buoys "are not

[16]This distinction between holding a fully-lexical sign and a partly-lexical sign is important for the distinction of buoys. When partly-lexical signs are held, pointings become pointer or point buoys, and depicting signs become depicting or delimit buoys.

pointed at, and the gaze direction varies as a result of whether the story is told from the signer's perspective or from the perspective of a discourse participant". Therefore, a third criterion was added to identify fragment buoys in this dissertation: the fragment must be held without changes in the handshape, location and orientation during two or more signs articulated by the other hand.[17] At least one of these three criteria (the first two proposed by Liddell and the last one proposed in this research) need to be met for a fragment of a sign to be considered a fragment buoy.

In terms of scope, fragment buoys are held while the other hand articulates from two to seven signs. Their scope can be found within a clause or spread over clauses. In what follows, the example presented above in Figure 5.7 is repeated. After applying the three criteria that buoys need to fulfil to be considered DMs, it will be shown that fragment buoys cannot function as DMs. Although they are syntactically optional like list and theme buoys, they are truth-conditional and they do not constrain the inferential mechanisms of interpretation processes.

Syntactically optional → Yes The example in Figure 5.7 contains four clauses: [TEXT PT:FBUOY] [PT:PRO2 PLEASE GO-ORDER] [PHONE] [DS:TEXT-GIVE]. Its glosses and translation are reproduced in example (61) for ease of reading. The fragment buoy appears after the sign TEXT, spreads until the sign PHONE and is finally used as a depicting sign. The syntactic structure of the clauses is the following: [SN] [SS <insert> SV] [SV] [SV].

(61)	RH	[(TEXT	PT:FBUOY)$_{SN}$]	[(PT:PRO2)$_{SS}$
	LH	(TEXT	**FBUOY:TEXT**)$_{SN}$	- - - - - - - - -
	RH	<PLEASE>$_{insert}$	(GO-ORDER)$_{SV}$]	[(PHONE)$_{SV}$]
	LH	- -		
	RH			
	LH	[(DS:TEXT-GIVE)$_{SV}$]		

'This text is a hard one. Could you please go and phone? There you go.'

TEXT is the discourse topic. Similarly to the example of the theme buoy, the topic is held because the existence of two articulators in LSFB allows it. Again, the buoy (here a fragment) could be removed and the clause would not be syntactically incomplete: the topic has already been mentioned once and holding it is somehow redundant. This is illustrated in (62). The fragment buoy has been taken out, but the syntactic structure is the same as in (61): [SN] [SS <insert> SV] [SV] [SV].

[17]Taking two signs for the identification of a fragment buoy may be seen as arbitrary. There are two reasons behind this decision: (i) avoiding purely phonological phenomena (sometimes when a two-handed sign is followed by a one-handed sign, the handshape of the two-handed sign may be kept in the hand that does not participate in the production of the one-handed sign); and (ii) holding a fragment without variations in handshape, orientation and location for two signs or more takes an effort, so it must be somehow motivated.

(62) [(TEXT PT:FBUOY)$_{SN}$] [(PT:PRO2)$_{SS}$ <PLEASE>$_{insert}$ (GO-ORDER)$_{SV}$] [(PHONE)$_{SV}$] [(DS:TEXT-GIVE)$_{SV}$]
'This text is a hard one. Could you please go and phone? There you go.'

Non-truth-conditional → No Fragment buoys are truth-conditional elements. As a fragment of fully-lexical signs, they usually function as nouns, verbs or adjectives; so they contribute to the truth or to the falsity of a clause. In (61), the fragment buoy (a part of the sign TEXT) encoded the concept of 'text' and it refers to the state of affairs in the real world. The truth conditions of the clauses in which FBUOY:TEXT appears are the following:

- The text is difficult to understand.
- The signer asks an imaginary person to go to the phone and make a call concerning the text.
- The signer gives the text to the imaginary person.

If instead of TEXT there was another sign, the fragment would encode another concept that would falsify the clauses because their propositional content would not correspond to the representation of the real state of affairs. In (63), the sign TEXT has been replaced by the sign BOOK. Because of this change, the truth conditions of the clauses are not the same as those of (61) (see below).

RH	**BOOK**	PT:FBUOY	PT:PRO2	PLEASE	GO-ORDER
LH	**BOOK**	**FBUOY:BOOK**	- -		

(63)

RH	PHONE	
LH	- - - - -	DS:BOOK-GIVE

'This book is a hard one. Could you please go and phone? There you go.'

Truth conditions of (63):

- The book is difficult to understand.
- The signer asks an imaginary person to go to the phone and make a call concerning the book.
- The signer gives the book to the imaginary person.

Constraining inferential mechanisms → No Fragment buoys may fulfil different functions at the syntactic and discourse level, but in no case do they encode a coherence relation. Even though fragment buoys can spread over clauses, they do not constrain the inferential mechanisms of interpretation processes. That is, fragment buoys do not function on a metadiscursive level making explicit the relationship between the clauses in which they spread, or the relationship between the clause(s) in which they spread and the whole text. If the fragment buoy was removed as in (62), no coherence relation could be inferred because it would be an infelicitous interpretation as in (64).

(64) * This text **because** is a hard one. Could you please go and phone? There you go.

5.2.2.4 Pointer buoys ≠ DMs

Pointer buoys are articulated with an extended finger that points towards the place in which an important element in the discourse is placed (Liddell, 2003). According to Kimmelman (2014), pointer buoys can have different functions, namely: syntactic (object, subject and noun phrase head), discourse-related (anchoring a referent, noun as topic and interjection/repair) and iconic (background in locative). In fact, these functions are shared with the point buoy because the author does not distinguish between the two: "the term 'pointer buoys' and 'point buoys' are notions created by conflation of form and function of holds" (ibid., p.177). So far, no discourse-marking function in the sense of coherence relations has been assigned to pointer buoys.

The occurrences of pointer buoys as well as their scopes were annotated in C1 and C2. Similarly to theme buoys, the identification of a pointer buoy relies on a combination of form and function: the signer must articulate a pointing sign (an extended index finger or a flat hand with the thumb in a radial or palmar position) that is directed towards the place in which an important entity in discourse is situated. The pointer buoy can be produced by either the dominant or the non-dominant hand while the other hand articulates other signs related to the discourse entity. Concerning their scope, pointer buoys are maintained while the other hand produces a maximum of six signs, and they do not spread over clauses (i.e. they are always found within the same clause).

In what follows, the three criteria that buoys need to fulfil to be considered DMs are applied to the example presented in Figure 5.8. Pointer buoys are syntactically optional, but they are neither non-truth-conditional nor do they constrain the inferential mechanisms of interpretation processes.

Syntactically optional → Yes Figure 5.8 illustrates an example in which the signer is telling the interviewer that neologisms are created in LSFB when there is a new concept for which there is not yet a sign. He utters this in a conditional clause that is fully glossed and translated in (65). Its syntactic structure is the following: [SRg SAdj].

	RH	[(IF	PT:DET	FUTUR	KNOW-NOT	
	LH				(**PTBUOY:CONCEPT**)$_{SRg}$	
(65)	RH	PT:DET	WHAT)$_{SRg}$	(NEW)$_{SAdj}$]		
	LH	- - - - - - - - - - - - - -		(NEW)$_{SAdj}$		

'You can assign a new sign if the concept is not known.'

The pointer buoy establishes a noun, the concept (which does not have a sign yet), as a topic. In contrast to the example of the theme buoy in Figure 5.6 that was

fully glossed in (58), the signer does not articulate the topic when he produces the pointer buoy. On this occasion, it is known that the topic is the concept that does not have a sign because the interviewer mentioned it in the question. When the signer answered, he produced IF and afterwards a pointing sign PT:DET to refer to the concept without a sign. This reference was picked up by the pointer buoy while two signs were articulated, resulting in some kind of redundancy that having two articulators allows. Hence, the pointer buoy could be removed as in (66) and the clause would not be syntactically incomplete. The structure would remain exactly the same: [SRg SAdj].

(66) [(IF PT:DET FUTUR KNOW-NOT PT:DET WHAT)$_{SRg}$ (NEW)$_{SAdj}$]
'You can assign a new sign if the concept is not known.'

Non-truth-conditional → No As previously mentioned, the pointer buoy points towards the place in which an important discourse entity has been placed. Similarly to theme buoys, pointer buoys are pro-conceptual schematic subpropositional forms (Hussein, 2008); i.e. they are forms empty of meaning but presenting grammatical features that enable the identification of the elements they refer to. Therefore, they contribute somehow to the truth conditions of a particular clause. The pointer buoy in (65) linguistically encodes an 'unknown concept'. If it was taken to refer to something else (e.g. it was understood as a place where the action happens), the truth conditions of the clause would change. See the differences below between the truth conditions of the clause when the point buoy is taken to refer to an unknown concept and when the point buoy is taken to refer to a place.

The truth condition of (65) when the pointer buoy is understood as an unknown concept:

- New signs are given to unknown concepts.

The truth condition of (65) when the pointer buoy is understood as a place:

- New signs are given to unknown concepts in that place.

Constraining inferential mechanisms → No Pointer buoys may anchor a referent or establish a noun as topic in addition to other syntactic functions (Kimmelman, 2014). They do not encode a discourse relation such as cause, consequence, etc. If the pointer buoy was removed as in (66), no coherence relation could be inferred. Doing so would be an infelicitous interpretation as shown in (67).

(67) * You can assign a new sign if the concept **and** is not known.

Hence, pointer buoys do not constrain the inferential mechanisms of interpretation processes; i.e. they do not work at a metadiscursive level making explicit the relationship between the clause in which the pointer buoy spreads with the other clauses.

5.2.2.5 Depicting buoys ≠ DMs

Depicting buoys are depicting signs (i.e. a type of partly-lexical signs that encode a certain meaning that depends on the context) which are maintained to show the position of an entity or signal the spatial relationship between two elements. Kimmelman (2014) and Kimmelman et al. (2016) do not differentiate between fragment and depicting buoys. The second are somehow integrated into the first category and participate in iconic constructions including simultaneity and background in locative constructions. Having purely iconic functions, no discourse-marking function has been assigned to depicting buoys.

Depicting buoys were annotated in C1 and C2 together with their scopes. They can be articulated by either the dominant or the non-dominant hand, and identifying them relies on different criteria. The first criterion is that a depicting buoy is the result of the hold of a depicting sign. This criterion is the basis for differentiating between fragment buoys, which appear after a fully-lexical sign, and depicting buoys, which appear after a partly-lexical sign. Because of the differences in the definition and properties of fully-lexical and partly-lexical signs, the difference between the two types of buoys is kept. The second criterion is that there must be a spatial relationship between the buoy and the other hand. Sometimes the identification of a depicting sign is not straightforward because of the iconic nature of some signs. For instance, in Figure 5.9, the signer referred to a fence but it may be hard to decide whether he mentioned any fence or a fence with a particular shape. Since the relationship he established with water was spatial, the buoy is considered to be depicting. Finally, the third criterion is that the depicting buoy must be held without changes in handshape, location and orientation during two or more signs articulated by the other hand or be pointed at by the other hand in order to avoid annotating purely phonological phenomena.

Concerning their scope, depicting buoys are held while the other hand articulates from two to eleven signs. Their scope can be found within a clause or spread over clauses. In what follows, the example presented in Figure 5.9 is reproduced and the criteria that buoys need to fulfil to be considered DMs are applied. The only criteria that depicting buoys fulfil is to be syntactically optional, so they cannot function as DMs and their function is restricted to the creation of topographical real-space blends (Liddell, 2003).

Syntactically optional → Yes In the excerpt illustrated in Figure 5.9, the signer is telling a tale and he describes a place where there is a lake surrounded by a fence. The example fully glossed and translated is presented below in (68). Its syntactic structure is the following: [SS SV SO].

(68)
RH	[(PT:PRO3)$_{SS}$	(SEE)$_{SV}$	(FENCE	WATER	
LH			(FENCE	**DPBUOY:FENCE**)$_{SO}$	
RH	DS:LEVEL-OF-WATER)$_{SO}$]				
LH	- - - - - - - - - - - - - - - - -				

'He saw a fence surrounding a lake.'

The signer maintains the handshape of the sign FENCE after its articulation in one hand. As previously mentioned, the relationship established between the non-dominant hand (which articulates the depicting buoy) and the dominant hand (which signs WATER and DS:LEVEL-OF-WATER) is spatial, i.e. it illustrates a topographical real-space blend. LSFB, like other SLs, is iconic by nature, which is why signers tend to exploit to a maximum the use of the two hands in order to describe settings. Thus, removing the depicting buoy would make the clause less iconic, but it would not make it incomplete in the strict syntactic sense as the dependants of the nucleus SEE are articulated by the dominant hand. This is illustrated in (69), whose syntactic structure is the same as in (68): [SS SV SO].

(69) [(PT:PRO3)$_{SS}$ (SEE)$_{SV}$ (FENCE WATER DS:LEVEL-OF-WATER)$_{SO}$]
'He saw a fence surrounding a lake.'

Non-truth-conditional → No Similarly to fragment buoys, depicting buoys are truth-conditional elements because they contribute to the truth or to the falsity of a clause. In (68), the depicting buoy (a part of the sign FENCE) encoded the concept of a 'circular fence' that refers to the signer's representation of the state of affairs. The truth conditions of the clause in which this depicting buoy appears are the following:

- A male human saw a lake.
- The lake was surrounded by a fence.

If the sign FENCE was articulated in another way or another sign such as WALL was produced, the depicting buoy would encode another concept that would falsify the clause because it would not correspond to the representation that the signer has made himself of the state of affairs. In (70), the sign FENCE has been replaced by the sign WALL and the second truth condition is different from the second truth condition of (68).

(70)
RH	PT:PRO3	SEE	**WALL**	WATER	DS:LEVEL-OF-WATER	
LH			**WALL**	**DPBUOY:WALL**	- - - - - - - - - - - - - - -	

'He saw a wall surrounding a lake.'

Truth conditions of (70):

- A male human saw a lake.
- The lake was surrounded by a wall.

Constraining inferential mechanisms → No Depicting buoys fulfil iconic functions by representing topographical real-space blends. Although they can spread over clauses, they do not encode discourse relations such as contrast, reformulation, etc. that make explicit the relationship between clauses. If the depicting buoy was removed as in (69), no coherence relation could be inferred because such interpretation would be infelicitous (see (71) in which an alternative marker has been introduced).

(71) * He saw a fence surrounding **instead** a lake.

Therefore, depicting buoys do not constrain the inferential mechanisms of interpretation processes regarding the relationship between the clauses in which they spread or between the clause(s) in which they spread and the whole text.

5.2.2.6 Point buoys ≠ DMs

Point buoys "represent a point in time or space" and are "used for visualizing temporal and spatial relations between entities" (Vogt-Svendsen and Bergman, 2007, p.217). As mentioned above in 5.2.2.4, Kimmelman (2014) claims that both pointer and point buoys are the result of conflation of form and function. Consequently, the functions he proposes are shared by the two types of buoys and they are syntactic (object, subject and noun phrase head), discourse-related (anchoring a referent, noun as topic and interjection/repair) and iconic (background in locative). The discourse function of anchoring is also found by Sinte (2015), who claims that point buoys support a temporal reference with either a directed eye gaze towards the hand articulating the buoy or towards the place where the buoy is pointing. Regardless of whether the difference between pointer and point buoys is made, no discourse-marking function in terms of coherence relations has been assigned to point buoys.

Point buoys as well as their scope were annotated in C1 and C2. Identifying them relied on a combination of form and function similar to pointer and theme buoys. For a pointing to be annotated as a point buoy, the signer has to articulate a pointing sign (an extended index finger or a flat hand with the thumb in a radial or palmar position) directed towards a point in time or space. The point buoy can be produced by either the dominant or the non-dominant hand while the other hand is used to give information related to the temporal or spatial anchoring that the point buoy has established. Concerning their scope, point buoys are maintained while the other hand produces up to five signs, and they sometimes spread over clauses.

In what follows, the example presented in Figure 5.10 is reproduced in order to test the discourse-marking status of point buoys with the three criteria that buoys need to fulfil to be considered DMs. Since none of the three criteria are fulfilled (point buoys are not syntactically optional, they are not non-truth-conditional and they do not constrain the inferential mechanisms of interpretation processes); the non-discourse-marking status of point buoys is attested.

Syntactically optional → No In the example illustrated in Figure 5.10, the signer utters a clause in which he says that the new Firefox version overtakes the old

one. Although the example is fully glossed in the corresponding figure, it is repeated below in (72) with its translation and additional context. There are two clauses whose syntactic structure is the following: [SAdv SN SO] [SO SS SV].

(72)
RH [(BEFORE)$_{SAdv}$ (ONE-POINT-ZERO)$_{SN}$ (**PBUOY:ONE-POINT-ZERO**)$_{SAdv}$]
LH
RH (- -
LH [(PT:DET FIREFOX NEW)$_{SS}$
RH - - - - - - - -)$_{SO}$
LH (OVERTAKE)$_{SV}$]

'Before there was the 1.0 version. The new Firefox overtakes it.'

The point buoy is maintained in the right hand (the signer's dominant hand) and appears at the end of the first clause. The point buoy establishes the point at which the 1.0 version of Firefox is found, and this anchoring point is held during the second clause. Holding this anchoring point is necessary in order to place a referent which can be visually overtaken. Hence, the point buoy is not syntactically optional but it is needed by the nucleus of the second clause, i.e. the sign OVERTAKE.[18] If the point buoy was removed, the second clause would be syntactically incomplete as it would lack an object sequence: [SAdv SN SO] [SS SV].

(73)
* [(BEFORE)$_{SAdv}$ (ONE-POINT-ZERO)$_{SN}$ (**PT:ONE-POINT-ZERO**)$_{SAdv}$]
[(PT:DET FIREFOX NEW)$_{SS}$ (OVERTAKE)$_{SV}$]
'Before there was the 1.0 version. The new Firefox overtakes.'

Non-truth-conditional → No The point buoy points towards an important point in time or space. Similarly to theme and pointer buoys, point buoys are empty of meaning, but they contain some grammatical features that allow the entity they refer to to be identified. Therefore, they contribute somehow to the truth conditions of a particular clause. In (72), the point buoy refers to a specific point on a scale and linguistically encodes the '1.0 version'. If it was taken to refer to something else other than the '1.0 version' (e.g. the edge of a square object), the truth conditions of the clause would change as shown below.

The truth conditions of the clauses in (72) when the point buoy is understood as a reference to a specific point in a scale:

- In the past Firefox had a 1.0 version.
- There is a new Firefox version which overtakes the 1.0 version.

The truth conditions of the clauses in (72) when the point buoy is understood as a reference to a square object:

[18] Since the point buoy functions as an adverbial sequence in the first clause and as an object sequence in the second clause, it has been given two functional sequences. This is the only case in which the spreading of a buoy has been given a functional sequence.

- In the past Firefox had a 1.0 version.
- There is a new Firefox version which overtakes the 1.0 version.
- There is a square object.

Constraining inferential mechanisms → No The point buoy spreads over two clauses as a mechanism of cohesion, but it does not encode any kind of coherence relation between them. If a coherence relation was inferred instead of the point buoy, it would be an infelicitous interpretation as exemplified in (74).

(74) * Before 1.0 version **so** the new Firefox overtakes.

As mentioned above, point buoys are not syntactically optional; i.e. they participate in the dependency structure of clauses. Therefore, point buoys do not constrain the inferential mechanisms of interpretation processes by establishing a relationship between the clauses in which they spread or between the clause(s) in which they spread and the whole text.

5.2.2.7 Delimit buoys ≠ DMs

Delimit buoys represent the delimitation between an inner and an outer element by having "all fingers relaxed gathered and slightly bent at both distal knuckles with the thumb in opposition, or lateral" (Mesch and Wallin, 2013). This type has not been mentioned in other works on buoys. The form of the delimit buoy, and even the function in some cases, is quite similar to depicting buoys, so no discourse-marking functions seem to be assigned to delimit buoys. Their functions are iconic as they participate in the topographical description of space.

Delimit buoys and their scope were annotated in C1 and C2. They can be articulated by either the dominant or the non-dominant hand, and their identification relies on a combination of form and function. Delimit buoys must have the form of a circular container so that they can express that there is an inner an an outer element (which will distinguish them from fragment and depicting buoys). Delimit buoys usually appear after a sign such as GROUP (whose iconic nature is that of a container), when a part of the sign is maintained during at least two signs and/or the other hand explicitly refers to the delimit buoy with a pointing. However, delimit buoys can also be created during or after a sign that does not share its handshape as in Figure 5.14. Thus, they have been created on purpose (i.e. they are not the result of a phonological phenomenon); so the criteria of being held during at least two signs and being pointed at are optional.

In terms of scope, delimit buoys are maintained while the other hand articulates up to four signs and their scope does not spread over clauses, i.e. it remains within the same clause. The three criteria that are used to determine whether a buoy has a discourse-marking function are applied below to the example presented in Figure 5.11. Delimit buoys are syntactically optional, but they are neither non-truth-conditional nor do they constrain the inferential mechanisms of interpretation processes.

(Corpus LSFB, session 27, task 3, signer S055, 02:59 - 03:01)

RH	SCHOOL	PT:DBUOY	HAVE	SEVERAL	HEARING
LH		**DBUOY:SCHOOL**	- -		

'There were also several hearing pupils at school.'

Figure 5.14: Example of a delimit buoy created during the articulation of a sign that does not have its handshape

Syntactically optional → Yes Figure 5.11 illustrated an example in which the signer asks the informants of the LSFB Corpus for permission to show their videos to foreign researchers. The example is fully glossed and translated in (75), and its syntactic structure is the following: [SRg SPrep SV SO].

(75)

RH	[(CAMERA	FBUOY:CAMERA)$_{SRg}$	- - - - - -	
LH		(DS:PERSON-COME	RECORD	
RH	- - - - - - - - - - - - - - - - - - - -		(AFTER)$_{SPrep}$	
LH	PT:FBUOY	FINISH)$_{SRg}$		
RH	(GIVE)$_{SV}$	(BELGIUM	COUNTRY	
LH	(GIVE)$_{SV}$		(COUNTRY	
RH	OUTSIDE	FOREIGN	PT:DET++)$_{SO}$]	
LH	OUTSIDE	**DBUOY:BELGIUM**)$_{SO}$	- - - - - - - - - -	

'Once recordings are finished, the videos in which you appear will be given to people outside Belgium.'

The signer articulates the sign OUTSIDE and maintains the hanshape on his weak hand. Since the function of the hold is to show a relationship between what is inside Belgium and what is outside, the hold is considered a delimit buoy. As mentioned above in the sub-section devoted to depicting buoys (5.2.2.5), SLs exploit iconicity by using the two hands in order to describe settings. Consequently, if the delimit buoy drops, the clause is less iconic but remains syntactically complete. In (76), the delimit buoy has been removed and the syntactic structure remains the same as that in (75):[19] [SRg SPrep SV SO].

(76) [(CAMERA DS:PERSON-COME RECORD FINISH)$_{SRg}$ (AFTER)$_{SPrep}$ (GIVE)$_{SV}$ (BELGIUM COUNTRY OUTSIDE FOREIGN PT:DET++)$_{SO}$]

[19] The fragment buoy contained in this example has been also removed and the glosses simplified for ease of reading.

Non-truth-conditional → No Delimit buoys can appear after a sign by maintaining the same handshape in one hand or be created at the same time as the other hand articulates another sign with a different handshape. They represent the relationship between an inner and an outer element, but they are empty of meaning if they appear alone. In example (75), the delimit buoy is produced as a fragment of the sign OUTSIDE, but linguistically it encodes the concept of 'Belgium' which is used to make the relationship with foreign researchers. Hence, the delimit buoy contributes to the truth conditions of the clause in which it appears. If this buoy was taken to refer to something else other than 'Belgium' (e.g. an entity with a round shape), the truth conditions of the clause would change as shown below.

The truth conditions of (75) when the delimit buoy is taken to refer to Belgium:

- There will be recordings taking place in Belgium.
- The addressee of the video will participate in the recordings.
- When the recordings are over, the videos will be handed to researchers outside Belgium.

The truth conditions of (75) when the delimit buoy is taken to refer to an entity with a rounded shape:

- There will be recordings taking place in Belgium.
- The addressee of the video will participate in the recordings.
- When the recordings are over, the videos will be handed to researchers outside Belgium.
- There is a round entity with other entities around.

Constraining inferential mechanisms → No Delimit buoys fulfil iconic functions by representing topographical real-space blends. Although they can spread over clauses, they do not encode coherence relations such as cause, consequence, etc. that make explicit the relationship between clauses. If the delimit buoy was removed as in (76), no coherence relation could be inferred because it would be an infelicitous interpretation of the clause (see an example in (77), which contains a marker of opposition).

(77) * Once the recordings are finished, the videos in which you appear will be given to people outside Belgium **nevertheless**.

Therefore, delimit buoys do not constrain the inferential mechanisms of interpretation processes because they do not work at a metadiscursive level establishing a relationship between the clause in which they spread and the whole text.

5.2.2.8 Interim summary

In this sub-section, the criteria that are taken into account to identify buoys in the data as well as the criteria used to disentangle discourse-marking tokens from other tokens were presented. This information is summarised in Table 5.3. On the one hand, a different set of criteria was established to identify each type of buoy because of the differences in form and function. There are only two common features to any type of buoy. The first is that, in line with Hendriks (2007) and contradicting Liddell (2003), buoys can can be articulated by either the dominant or the non-dominant hand. The second feature is that the hand that does not articulate the buoy does not need to make explicit reference to the buoy.[20]

On the other hand, the criteria that determine whether a token of a buoy is a DM are common to the seven types (i.e. syntactically optional, non-truth-conditional and constraining inferential mechanisms). The study of the discourse-marking status of all buoys (i.e. whether they can make explicit a coherence relation) is unprecedented in the SL literature and reveals that only list buoys can function as DMs. This finding adds another function to the list proposed by Kimmelman (2014) and Kimmelman et al. (2016); and supports that "a sign-language-specific notion of 'buoy' is not needed" because the linguistic information they express is independent of modality (Kimmelman et al., 2016, p.214).

[20]Those buoys that are created by maintaining a part of the previous sign (fragment, depicting and some delimit buoys) are often identified thanks to a pointing towards the buoy. However, this is not compulsory if other conditions are fulfilled (see the column 'Others' in Table 5.3).

Type of buoy	Identification of tokens in the data				Identification of DM tokens			
	Form	**Function**	**Pointing directed towards the buoy**	**Others**	**Syntac. optional**	**Non-truth-cond.**	**Contrain inferential mech.**	**DM function**
List	A numeral sign	Not specified	Possible	The list buoy may be manipulated	✓	✓	✓	Yes
Theme	A raised vertical index	To mark a discourse topic	Possible	—	✓	—	—	No
Fragment	A fragment of a fully-lexical sign	Not specified	Obligatory unless (i) or (ii) are fulfilled	(i) held during at least 2 signs and/or (ii) directed gaze to the fragment	✓	—	—	No
Pointer	A pointing (index or a flat hand)	To point towards a discourse entity	Possible	—	✓	—	—	No
Depicting	A fragment of a depicting sign	To establish a spatial relationship	Obligatory unless (i) is fulfilled	(i) held during at least 2 signs	✓	—	—	No
Point	A pointing (index or a flat hand)	To signal a point in time or space	Possible	—	—	—	—	No
Delimit	A container (fragment of the previous sign or newly created)	To establish a relationship between an inner and an outer element	Obligatory for fragments of the previous sign unless (i) is fulfilled / Possible if newly created container	(i) held during at least 2 signs (if it is a fragment of the previous sign)	✓	—	—	No

Table 5.3: Summary of the criteria used to identify buoys and determining their discourse-marking status

5.2.3 An additional criterion for discourse-marking buoys?

The main underlying assumption of both discourse theories such as Discourse Graphbank (Hobbs, 1985), Rhetorical Structure Theory (Mann and Thompson, 1988; Taboada and Mann, 2006) and Segmented Discourse Representation Theory (Asher and Lascarides, 2003) on the one hand, and discourse theories such as the Question Under Discussion (Roberts, 1996, 2012; Büring, 2003) on the other, is that discourse is not linear but hierarchically organised and represented as a discourse tree (Riester et al., submitted).[21] Although these theories are devoted to the study of SpL discourse, their underlying assumption seems plausible for SL discourse and is thus adopted in the present research.

Unlike discourse theories, the goal of this dissertation is not to represent the structure of signed productions as graphs or complete trees, but to describe the discourse-marking functions of three DM candidates and how they make explicit coherence relations. For this purpose, discourse theories based on the Question under Discussion (QUD) provide a more flexible framework. Discourse trees are not made up of units from the text as in other discourse theories, but of implicit questions that are ordered by an entailment relation. Each implicit question is a move, i.e. a branch of the tree. The structure of a tree following the QUD allows us to see whether coherence relations take place when the implicit question changes or within an implicit question. If a DM facilitates the change of the implicit question, it will be likely to extend over a large chunk of discourse containing many clauses. Conversely, if a DM is found within an implicit question, it will be more likely to extend over two or few clauses. Such an analysis could cast light on the different discourse levels at which DMs work.

As mentioned in 5.2.2.1, list buoys are the only type of buoys that can have a discourse-marking function. When they do, their scope can extend over large chunks of discourse. Therefore, the hypothesis that these chunks could be the equivalent of an implicit question within the QUD was formulated. List buoys would underline the switch from one move to another. In addition, further evidence would be provided to support the discourse-marking function of list buoys in contrast to the other types. Let's illustrate this with example (78) and the representation of the discourse tree in Figure 5.15. They were selected from C2 (the sample containing conversations from the LSFB Corpus) and produced by signer S055 in task 15. Signers were asked to explain their hobby, their job or their passion giving details about the equipment that is needed, the specific gestures and actions, the rules that need to be followed, etc. Signers were given some time and even a sheet of paper in order to briefly prepare their productions. In this particular case, the signer decides to explain what kiteboarding is about. This production lasts for approximately eight minutes and the signer is rarely interrupted by the other who sits in front of her.

The general topic is 'Kiteboarding' and the implicit questions that make up the tree are structured in three levels. In each level, there is a list buoy digit that introduces

[21] See sub-section 2.2.2.3 in chapter 2 for further details on Rhetorical Structure Theory and Segmented Discourse Representation Theory.

one move (the lines of the moves concerned are thicker than the others). Even if this production is semi-prepared, the signer does not use all digits of the list buoy (she either uses another DM or leaves it to pragmatic inference). As a result, the digits (in bold) in example (78) do not appear in the order illustrated in the representation of the discourse tree: the first digit belongs to the second level ('What is powerkite?'), the second digit to the first level ('What is the technique?') and the third digit to the third level ('What is airstyle?'). The use of list buoys is not limited to implicit questions, but they also connect assertions (real parts of the text within each implicit question). Indeed, there are two list buoy digits that appear within the move 'How must the wind be?' connecting two assertions: 'it must be strong enough' and 'it must blow in the correct direction'.

(78) [IF KITE <GSIGN> IT-IS ON WATER] <GSIGN> <BUT> [HAVE ALSO <**LBUOY(2):TWO**> FS:POWERKITE] <IT-MEANS> [ENGLISH] [LBUOY(2):ONE-TWO ENGLISH] [PT:DET IT IS ON BEACH] [...] <**LBUOY(3):THIRD**> <SAME> [TECHNIQUE] <PT:PRO2(7)> [WANT KNOW TECHNIQUE] <DE:WOW> <OK> [TECHNIQUE IT-IS ALWAYS START IT-IS DS:KITESURFER-SIT INSIDE WATER DS:HOLD-BAR] [...] <**LBUOY(2):TWO**> <SAME> <LBUOY(2):TWO> <YES> [TECHNIQUE DS:JUMPING-KITESURF] [DS:CHOREOGRAPHY-KITESURF BEAUTIFUL]
'If it is erm kitesurfing, you do it on the water, so. But, **on the other hand**, there is also powerkite. It is an English word, the name of the two modalities is in English. Powerkite is practised on the beach [...] **Third**, there is also the technique. You want to know it? Wow, ok! You start on the water holding the bar [...] **Second**, there is also airstyle in which you make beautiful choreographies in the air.'

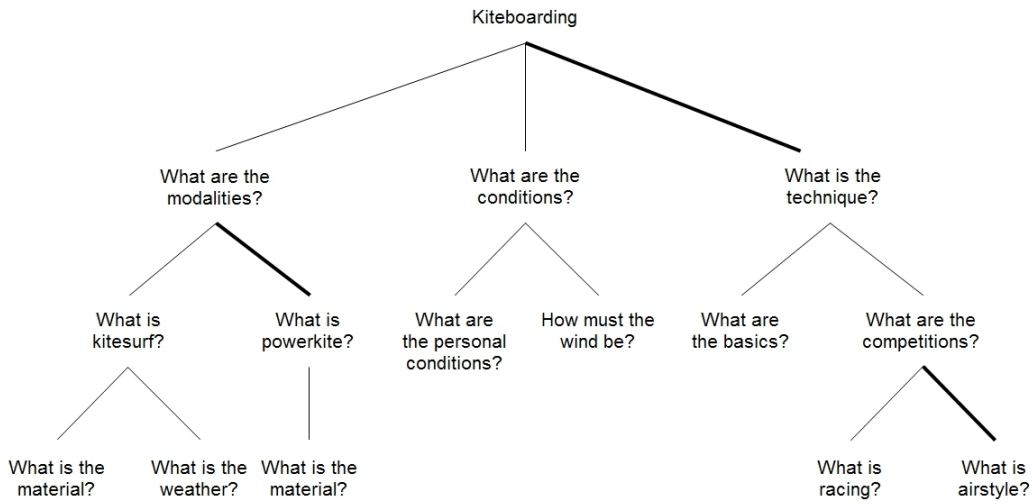


Figure 5.15: Representation of a discourse tree following the Question Under Discussion

This pattern of list buoys underlining the switch from one implicit question to another was only found in another discourse in C1: the explanation of the different

communication systems (DVD, clip E1). The clip lasts for almost nine minutes and it is a semi-prepared monologue. This way of organising discourse was neither found in the other productions of these two signers nor in the other productions of the other LSFB signers. Therefore, the conclusion which can be drawn is that list buoys switch from one move to another in QUD trees on limited occasions (i.e. semi-prepared explanations) and when the signer is prone to using list buoys (see the high frequency of use of list buoys in chapter 6, sub-section 6.3.2, for signer S055 in C2; and the high frequency of use of list buoys in Gabarró-López and Meurant (2014a) for the signer producing monologues in C1).

In short, it cannot be generalised that list buoys underline the switch from one implicit question to another in QUD trees as, in my data, list buoys are more frequent in connecting assertions. Although the QUD theory has not provided an additional criterion for the identification of DMs, it is worth underlining that this is the first time that this theory has been tested with SL corpus data as it had only been applied to fictive examples in SpLs before.

5.3 The PALM-UP particle

When signers communicate, they do not only articulate conventionalised signs but also gestures (Johnston, 2015). One example of this category is PALM-UP[22] which may sometimes have discourse-marking functions.

This section is devoted to PALM-UP and is divided into two sub-sections. Sub-section 5.3.1 contains the state of the art on PALM-UP: different studies that have been conducted for other languages (both spoken and signed) will be presented. So far, PALM-UP has been frequently used as a hodgepodge in which pointings and other gestures (or even fully-lexical signs in SLs) with pretty different functions were included. The reason for this variability is that definitions often lack clear criteria that allow PALM-UP to be teased apart from other signs or gestures. One of the main contributions of sub-section 5.3.2 is a set of phonological and semantic features that clearly delimit the PALM-UP category. The definition proposed here also includes activity on the lap for the first time in the literature on PALM-UP. The other contribution of this sub-section is that three criteria that PALM-UP must fulfil to be considered a DM are laid out, namely: (i) to be syntactically optional, (ii) to be non-truth-conditional, and (iii) to constrain the inferential mechanisms of interpretation processes. The

[22]There are no conventions established in the literature to refer to this gesture. In SLs, scholars use different terms: presentation gesture (Engberg-Pedersen, 2002), particle of indefiniteness (Colin et al., 2003) or WELL (Hoza, 2011). Others use capital letters as in ID-glosses, i.e. PALM-UP or PALM-UP particle (van der Kooij et al., 2006; Zeshan, 2006b; Amundsen and Halvorsen, 2011; van Loon, 2012). Another possibility is to use lower case letters (sometimes in italics) either in singular or plural, i.e. 'palm-up' or 'palm-ups' (McKee and Wallingford, 2011; Jarque et al., 2013; Mesch, 2016). This last author also uses the abbreviation PU. In SpLs, the use of lower case is also frequent, but the first letters are usually capitals; i.e. Palm Up Open Hand (Müller, 2004) and Open Hand Supine or palm-up family (Kendon, 2004). In this chapter, the term used by each author will appear in the summary of their respective works in the state of the art (sub-section 5.3.1). In this dissertation in general, either the gloss or the term in lower case will be used.

necessity of carrying out systematic in-depth research on PALM-UP from the point of view of DMs has been acknowledged in previous studies (Amundsen and Halvorsen, 2011; McKee and Wallingford, 2011), and these criteria are the first steps to be taken for this purpose.

5.3.1 Previous studies

Gestures are an integral part of linguistic communication (Sweetser, 2009), so they are used by both speakers and signers. The prototypical example of a gesture shared between speech and signing is PALM-UP. Its canonical form is shown in Figure 5.16. It is articulated in neutral space with one or two hands facing upwards and the fingers loosely extended. The hand or hands adopt this position by a rotation of the wrist, which sometimes may be absent if the speaker or signer is sitting and his/her hands are on the lap (McKee and Wallingford, 2011; van Loon, 2012).

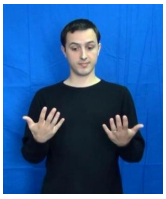


Figure 5.16: PALM-UP

This sub-section is split into two parts, one referring to PALM-UP in spoken languages (5.3.1.1) and the other referring to PALM-UP in signed languages (5.3.1.2). Special emphasis will be put on PALM-UP descriptions that include a discourse-marking function.

5.3.1.1 PALM-UP in spoken languages

In everyday situations, people move their hands while they speak. Palm-ups are one of the most frequently used gestures, they are found in all kinds of productions and they have been documented in many different cultures (Müller, 2004). Palm-ups have attracted the attention of different authors who have studied this co-speech gesture and have found different functions.[23]

After revising the literature and observing the recurrence of two core kinesic features (configuration and orientation) in her own data, Müller (2004) is the first to posit that Palm Up Open Hand gestures form a family. She claims that the origin of palm-ups can be found in the action of extending the open hand in order to offer, show or request something to somebody. As a result, their functions as co-speech

[23]It falls beyond the scope of this section to go through the different studies on this topic in SpLs. Instead, the focus will be on two studies, Müller (2004) and Kendon (2004), that will be later referred to when the state of the art on palm-ups in SLs is presented. For a summary of some works on palm-up in SpLs, see Müller (2004).

gestures include giving, offering and showing readiness to receive something even in contexts in which there are no physical objects (i.e. what is given or offered may be reasons, solutions or any other abstract referent).

Following this idea of gesture family and the functions of giving and offering, Kendon (2004) provides a fine-grained description of what he calls the Open Hand Supine or palm-up family of gestures. He separates palm-ups into three groups according to their articulation (palm presentation gestures, palm addressed gestures and lateral palm gestures) and establishes different pragmatic functions for each one. A summary of these forms and their role is provided below.

Palm presentation gestures are articulated in the immediate frontal space of the speaker and they are usually one-handed. They consist of a "wrist extension often combined with a slight lowering of the hand and followed by a hold" (ibid., p.265). Their functions include: (i) explaining the meaning of a term or a phrase, (ii) expounding the premises of conditions for understanding something, (iii) giving an account of circumstances that provide the setting for a narrative, and (iv) giving a conclusion or summary for something just said, or making a comment on it. All in all, the palm presentation gesture participates in the meta-discursive relationship between the stretch of talk in which it is produced and the rest of the speaker's discourse.

Palm addressed gestures are also one-handed and they are directed towards the interlocutor or another participant. The main functions found for this form of palm-ups are: (i) pointing, (ii) acknowledging someone as a source of something, (iii) indicating that the interlocutor is right, and (iv) offering or receiving information, an explanation or justification for something.

Lateral palm gestures are usually articulated with both hands separating from each other with a lateral movement. Sometimes they produce a movement backwards and the forearm makes an outwards rotation. Some functions of this category are: (i) expressing unwillingness or inability to intervene in a situation, (ii) admitting, accepting or claiming that something is obvious and nothing else can be added, (iii) asking a rhetorical question, (iv) responding to a proposal by neither accepting nor rejecting it, or (v) making an invitation. Unlike the palm presentation and the palm addressed gestures, the lateral palm gesture is usually combined with a shoulder shrug and facial expressions.

In conclusion, these three types belonging to the palm-up family of gestures are pragmatic markers that "[add] a layer of meaning beyond the meaning in the verbal component" (ibid., p.282). It seems that palm-ups have a high degree of conventionalisation among speakers as they are widely shared and used consistently by individuals while communicating (at least in continental Europe, Great Britain and the United States).

5.3.1.2 PALM-UP in signed languages

Palm-ups are a widespread phenomenon in SLs (Zeshan, 2006b; McKee and Wallingford, 2011; van Loon, 2012) and they are the fifth most common ID-gloss in the LSFB Corpus. Before the advent of SL corpora, the occurrences of PALM-UP in most sources had varying glosses linked to the mouthing component and to contextual interpretation (McKee and Wallingford, 2011). As a result of the high presence of PALM-UP in SLs and the plurality of functions that they can fulfil, several investigations have been conducted from different points of views. The SLs in which PALM-UP has been studied are the following: Danish SL (DTS) (Engberg-Pedersen, 2002), American SL (ASL) (Colin et al., 2003; Hoza, 2011), Turkish SL (TİD) (Zeshan, 2006b), SL of the Netherlands (NGT) (van der Kooij et al., 2006; van Loon, 2012), New Zealand SL (NZSL) (McKee and Wallingford, 2011), Norwegian SL (NTS) (Amundsen and Halvorsen, 2011), Catalan SL (LSC) (Jarque et al., 2013) and Swedish SL (STS) (Mesch, 2016).[24]

DTS Engberg-Pedersen (2002) refers to PALM-UP as *the presentation gesture*. The description of its articulation includes that it can be one-handed (with the other hand on the signer's lap) or two-handed. In both cases, hands are brought by a movement to a position in which they remain loose and flat, held palm-up and frequently outside the signer's shoulders. As its name indicates, the presentation gesture presents an object for inspection. In line with Müller (2004), this object does not need to be physical and can be an abstract referent or the discourse itself. The presentation gesture can also point towards present entities during communication in a formal way or place absent entities in the signing space.[25]

The data analysed by Engberg-Pedersen (2002) include one dialogue and eight monologues in DTS produced by deaf native signers. The functions found for the gesture under consideration are initiating a turn, providing and eliciting backchannel signal in dialogues, expressing agreement, expressing modality, being a hesitation marker, being a connective (usually expressing consequence), being a substitute for a predication, presenting the topic for consideration and outlining the relationship between topic and predicate. All these functions are assigned on the basis of the meaning of 'inspection' (which is an additional function that recovers every function) together with linguistic content and non-manual marking.

[24] These studies are presented below grouped by SL and in chronological order. However, the paper on NZSL (McKee and Wallingford, 2011) is in between the two papers on NGT (van der Kooij et al., 2006; van Loon, 2012). Since McKee and Wallingford's contribution is relevant to van Loon's work, the paper on NZSL (which was released in 2011) appears before the publications on NGT (one them dated at 2006).

[25] As in Kendon's (2004) analysis, the presentation gesture amalgamates PALM-UP with pointing signs. In this dissertation, pointings are excluded from the PALM-UP category because of differences in form and function (see sub-section 5.3.2).

ASL There are two studies that deal with PALM-UP in this SL.[26] The first one is that of Colin et al. (2003) that refers to PALM-UP as a *particle of indefiniteness*. It is articulated with a "5 handshape, palms facing upwards, [and] it involves a single outward movement" (ibid., p.6). Some additional features are that it can "cliticize phonologically (or to contract) with the sign that follows" (ibid., p.13), it can be one-handed or two-handed with a subtle movement, and may undergo perseveration in an utterance. The authors claim that the particle of indefiniteness appears in contexts in which there is some degree of uncertainty. The set of nonmanuals associated with its production include tensed nose, raised eyebrows, raised shoulders and a sudden shift in eye gaze to the left or right.

The particle of indefiniteness can function as a marker in wh-questions, in yes-no questions (in which case a strong request can be expressed via non-manual marking), in negative constructions and also in a transition between topics. It can also mean 'according to' and be used for the expression of certainty (i.e. modality). The conclusion drawn from this study is that the particle "semantically associates with some layer of the linguistic structure (a determiner, a noun phrase, a predicate, sentence polarity, or an entire proposition) and 'widens' the domain of reference in some direction that is contextually appropriate" (ibid., p.25).

The second study is that of Hoza (2011),[27] who refers to PALM-UP using the gloss WELL. The author points out its gestural origin and describes its articulation as both hands open in palm-up position to the sides of the body. He also reports the existence of a one-handed form that is less common. The one-handed form can also be articulated with a movement towards the addressee offering him the floor or indicating that he should continue.[28]

The discourse functions assigned to WELL in ASL are the following: pause filler (indicating the boundary between segments of discourse), indicator of a shift in discourse (change in perspective from reported speech to direct speech), device to maintain coherence (when there is a digression), turn-taking regulator (offering the floor or encouraging the addressee to continue talking) and mitigation of face-threats (specially in requests). The author underlines the importance of non-manual marking for mitigation and thus to show politeness in discourse.

TÍD For Zeshan (2006b), "PALM-UP consists of one or two hands held with the palm turned upwards" (p.135). She says that it is a very widespread configuration across SLs and that it is not clear whether it should be treated as a sign or as a gesture. The data she uses for her research is a video recording of both spontaneously

[26] PALM-UP has also been investigated from the point of view of translation and interpreting in ASL (see Winston and Monikowsky, 2003 and Roush, 2007 cited in Hoza, 2011), but these studies fall beyond the scope of this section that focuses on the productions of deaf signers.

[27] This study is focused on the discourse-marking functions of two gestures, HEY and WELL, which is why a more complete account is given in chapter 2.

[28] As mentioned above, this one-handed form with movement towards the addressee is not considered a PALM-UP token within the framework of this dissertation, but as a pointing in formal contexts in line with Engberg-Pedersen (2002). See the following sub-section 5.3.2 for further details.

produced texts and elicited examples that were discussed with a deaf signing assistant and checked for validity.

Five different functions are reported for PALM-UP in TÍD. It is a hesitation marker when it is found within the turn and the signer uses it to fill a pause so that s/he has the time to think about what comes next. The second function is that of an uncertainty marker or inconclusiveness marker, in which case it appears at the end of an utterance. The third function is to manually mark polar and content questions by being placed at the end of an utterance. Finally, PALM-UP is common in negation either as a clause-final maker in negative clauses (it is not a negator in itself but appears in combination with another negative marker) or as a negative marker (it is the only manual negative marker of the clause).

Depending on the function, PALM-UP co-occurs with different non-manual markers (e.g. shoulder shrug for uncertainty, and side-to-side headshake and backward head tilt for negation). Another property of PALM-UP is that it cliticises to high-frequency predicates and that it is affected by assimilation of handshape, location and handedness of the previous sign.

NZSL McKee and Wallingford (2011) define the canonical form of *palm-up* as "a rotation of one or both open hands towards an upward palm orientation" (p.214). The sign can present variants in its articulation as regards the fingers (more or less spread, more or less curved), the lateral hand movement and wrist rotation. This study of *palm-up* is the first to use data from a referential corpus. The selected sample (a total of 43'40") is made up of free conversation dialogues and informal interviews of 20 native and near-native deaf signers belonging to different age groups.

The results of data analysis include an account of: (i) the frequency of use and age-related distribution, (ii) the form (including hand dropping, handshape and location), (iii) the functions (including cohesive, interactive and modal functions as well as non-manual marking), and (iv) mouthings. As for the quantitative part, *palm-up* is the second most frequent sign in the sample. *Palm-up* is age sensitive: on a scale, older signers would be at one extreme with the highest percentage of use and functions (frame for mouthings, modality, begin a turn and provide or elicit backchannel). Younger signers would be at the other extreme with the lowest percentage of use and different functions (modality, provide or elicit backchannel and hesitation marker). As for middle-aged signers, they would be in the middle of the scale and the most common function of their *palm-ups* is to connect clauses. This age-stratified use of *palm-up* is the result of education: signing was prohibited when older signers were at school, which is why their vocabulary resources are poorer and they are more inclined to bimodal codemixing by using *palm-up* and mouthings at the same time.

With regard to the form, *palm-up* presents "phonological alternations in usage, including final lengthening, combination with index, location, assimilation and agreement perseveration" (ibid., p.223). These alterations do not show a systematic re-

lationship to function. *Palm-up* can also be articulated with one or two hands. Although the two-handed form is more frequent than the one-handed, the preference of one handshape over the other is due to idiosyncratic style. As *palm-up* is an unmarked hand configuration, both its handshape and its location may assimilate to those of surrounding signs.

The four main functions of *palm-up* in NZSL are cohesive (logical connector of clauses), modal (speaker's stance on the certainty, possibility, truth and evidential status of information), interactive (discourse and conversation management, e.g. turn management) and frame for mouthings. These categories are not exclusive, i.e. *palm-up* may fulfil a modal function at the same time as an interactive function. Non-manual markers convey meaning to *palm-up* and sometimes patterns can be observed such as "lowered corners of the mouth, raised or furrowed brows [...], eye squint, shoulder shrug, and the movement of the head and/or torso backwards or to one side" for modality (ibid., p.232). The mouthing of an English conjunction is frequent when *palm-up* has a cohesive function.

All in all, the authors conclude that *palm-up* has the characteristics of DMs because its uses in discourse reflect the defining features and functions of DMs. They also underline the need for further research from this perspective.

NGT There are two studies that deal with PALM-UP in this SL. The first is that of van der Kooij et al. (2006). Although they do not provide a definition of the form of PALM-UP, the illustrations suggest that it is similar to previous studies such as that of Engberg-Pedersen (2002). The analysis of PALM-UP in their data (a combination of the ECHO fable stories, elicited stories in dialogue setting and elicited complex sentences in monologue setting) reveals that it is a semantically and pragmatically empty manual form that hosts non-manual signals with a specific meaning. It may assimilate to the preceding sign and may be used directionally.

As for its functions, the authors found that PALM-UP is not restricted to ending a turn, but it can also appear at the end of smaller units such as sentences or clauses in which it is an evaluative marker or it is used for auto-comment.[29] A tentative explanation of the reason why PALM-UP appears there is that it is added to incomplete prosodic domains at the end of sentences so that they finish on a full foot (two syllables/movement units or one heavy syllable/complex movement).

The second study in NGT is that of van Loon (2012), which in turn is the most detailed and extensive in any SL so far. Her definition of PALM-UP is that it "is produced in neutral space with one or two hands, fingers loosely extended, and an outward movement resulting in an upward palm orientation" (ibid., p.6). Unlike previous studies on this topic, her research is not restricted to the description of discourse functions and articulation of PALM-UP, but she also investigates the frequency of its different functions and its position in discourse. For this purpose, a sample of

[29] In Coerts (1992) cited in van Loon (2012), PALM-UP in NGT is also found in the sentence-final position as a question particle in polar and content questions.

conversations of twelve native and near-native deaf signers from the Corpus NGT was selected totalling 31'38". Another difference with regard to other studies is that, together with those in NZSL (see above) and in STS (see below), it uses data from a large-scale referential corpus.

PALM-UP is classified into six groups (ordered from the most frequent to the least frequent): interactive, cohesive, modality, frame for mouthings, question particle and unidentifiable. These categories are inspired by McKee and Wallingford's (2011) classification. Each category (except the frame for mouthings and the unidentifiable) contains different functions. Interactive PALM-UP can be a pause filler (i.e. a non-lexical filler or a sign stretch) or a backchanneling signal, and it can also be used to end a turn or open a turn (in this last case, it can either precede constructed dialogue or bid for the floor). Cohesive PALM-UP is used as an elaborative marker or as a conjunction. When PALM-UP expresses modality, it can be a marker of evaluative stance, a marker of epistemic stance or express epistemic stance. Finally, as a question particle, PALM-UP can be used either for wh-questions or yes/no questions.

As mentioned above, PALM-UP is empty of meaning, so its functions depend greatly on linguistic context and co-occurring non-manual markers. For instance, non-manual markers for expressing modality are the same as in NZSL (McKee and Wallingford, 2011). Concerning the articulation of PALM-UP, it was found that it can spread over other signs and that it can assimilate the handshape and location of previous signs. As for its position, van Loon first segments discourse using the STAP segmentation (Dungen and Verbeek, 1999 cited in van Loon, 2012): the clause together with its subordinate clauses constitute the basic utterance, but coordinate clauses are taken as two separate units. Once clauses are delimited, a position is assigned; from the most frequent to the least frequent position: sentence final, within a sentence and sentence initial.

McKee and Wallingford (2011) proved that PALM-UP is age sensitive, i.e. older signers used it more frequently than younger signers. In NGT, this tendency seems to be reversed: younger signers produce more PALM-UP than older signers. Furthermore, young signers present a wider range of functions (the most common being pause filler, elaborative marker, evaluative marker and wh-question particle) than older signers (the most common functions being ending a turn, conjunction and frame for mouthings).

NTS Amundsen and Halvorsen (2011) present a preliminary study on PALM-UP and the sign DONE from the perspective of DMs. Similarly to van der Kooij et al. (2006), they do not provide a definition of the form of PALM-UP but the illustrations suggest that it is similar to previous studies. After analysing their data (a published non-fiction text and two types of elicited narratives including *Frog, where are you?* (Mayer, 1969) and personal impressions), the authors claim that PALM-UP can be found in different positions in NTS and can have different functions.

PALM-UP is used to end the turn in the text-final position with the Norwegian mouthing 'ferdig' (meaning 'done'). When PALM-UP is in an intra-textual position, it has two different functions. The first is to signal exemplification or elaboration of a topic or theme, in which case it has a text-structuring function as a DM. The second is to appear within a role shift as a quoted gesture reflecting emotions, reactions and attitudes via non-manual marking. Role shift and quoted gesture can be seen as DMs in discourse, but the question is what the status of quoted gesture alone is because it is not a DM by itself.

LSC Jarque et al. (2013) investigate the modal functions of palm-up and its implications for a grammaticalisation/discursivisation theory. Once again, a definition of PALM-UP is not provided, although the illustrations are the same that appear in previous publications. Their data (totalling 135 minutes) includes four semi-structured interviews in which there are eight deaf native LSC participants (adults and teenagers). The analysis reveals that palm-up may express deontic possibility, inability (resignation), uncertainty (lack of knowledge and lack of certainty), possibility and certainty (confirmation of agreement and certainty). Each of these functions is accompanied by a different group of non-manual markers, most of them similar to non-manual markers of modality in McKee and Wallingford (2011).

The results reported for the form do not differ from other SLs either: fingers can be extended or slightly curved, it can be articulated one-handed or two-handed, and the hand movement and location can be symmetrical or asymmetrical. Palm-up is a highly frequent element in LSC and modal functions are more common in adults than in teenagers. The authors conclude by claiming that the process of grammaticalisation/discursivisation starts with manual and non-manual gestures with discourse functions that become manual and non-manual discourse markers.

STS Mesch (2016) investigates manual backchannel responses in signers' conversations. Among these manual signals, there is palm-up (or PU), which in STS has the acknowledged function of signalling a change in turn and representing a type of reference to the topic (Ryttervik, 2015 cited in Mesch, 2016). No definition is provided for this sign, although the illustrations show a one-handed and a two-handed version that do not differ from other studies. This work also uses data from a large-scale corpus, the STS Corpus. 16 signers were selected with a balance of male and female as well as a balance in age (half of the signers are aged below 40, whereas the other half are aged over 40). The sample lasts for 35 minutes.

PU is the fourth most frequent backchannel manual signal after YES, the articulation of one lexical sign and lifting hands. Even if a PU produced by one of the signers in the conversation can overlap with the signs produced by the other signer (three or even more), it is not perceived as an interruption but as a 'simultaneous support'. As for the variants in the articulation of PU, data show that PU is not only produced in neutral space as suggested in previous research, but it can also be articulated on the lap (approximately a third of PU tokens in the sample). In addition, the use

of PU is age sensitive: younger signers produce fewer PU tokens than older signers, who show a preference for the sign (together with repetitions of signs and pointings) to provide backchannel over other signals such as lifting hands or the combinations 'YES + 1 sign' and 'PU + 1 sign'.

Summary of the functions of PALM-UP across SLs The existing studies on PALM-UP in different SLs have been presented above. The perspectives taken by scholars are varied and fulfil different objectives. PALM-UP was the focus of most works that mainly described its form and functions (Engberg-Pedersen, 2002; Colin et al., 2003; van der Kooij et al., 2006; McKee and Wallingford, 2011; van Loon, 2012; Jarque et al., 2013). In other publications, PALM-UP appeared as a device that fulfils a particular function in a larger study (Zeshan, 2006b; Mesch, 2016) or as a possible DM together with another sign or gesture (Amundsen and Halvorsen, 2011; Hoza, 2011). Tables 5.4 and 5.5 contain a summary of the most common functions of PALM-UP for each SL, the name that the particle receives and the authors.

PALM-UP is understood as a very broad category in which sometimes pointing signs are included. Expressing modality seems to be a fairly common function of PALM-UP in most SLs. No function appears in all SLs, which could be due to the different type of items taken into account (e.g. pointings), the different points of view from which PALM-UP is investigated, the size of the dataset for each study, the type of data (monologues vs. dialogues, elicited sentences vs. elicited discourse) and possibly others. Most studies tackle the differences in articulation of PALM-UP (one-handed or two-handed form, assimilation of handshape and location of surrounding signs), but none of these differences seems to have an effect on the function. Another interesting aspect of PALM-UP is that it is age-sensitive: older NZSL, LSC and STS signers use it more frequently than younger signers (McKee and Wallingford, 2011; Jarque et al., 2013; Mesch, 2016), whereas this tendency is reversed in NGT (van Loon, 2012).

SL	Particle's name	Authors	Pause filler	Provide and/or elicit backchannel	Open and/or end a turn	Connective or DM	Express modality	Frame for mouthings	Question particle	Others
DTS	Presentation gesture	Engberg-Pedersen (2002)	—	✓	✓	✓	✓	—	—	(i) outline topic-comment relationship, (ii) present discourse for inspection, (iii) present topic for consideration
ASL	Particle of indefiniteness	Colin et al. (2003)	—	—	—	—	✓	—	✓	(i) express a strong request for a reply, (ii) negative marker, (iii) transition between topic and predicate, (iv) meaning of 'according to', (v) widen the domain of referents
	WELL	Hoza (2011)	✓	✓	✓	✓	—	—	—	(i) indicator of a shift in discourse, (ii) mitigation of face-threats, (iii) politeness

Table 5.4: Functions of PALM-UP in different SLs (first part)

SL	Particle's name	Authors	Pause filler	Provide and/or elicit backchannel	Open and/or end a turn	Connective or DM	Express modality	Frame for mouthings	Question particle	Others
TİD	PALM-UP	Zeshan (2006b)	✓	—	—	—	✓	—	✓	(Only) manual negative marker in a clause
NZSL	*palm-up*	McKee and Wallingford (2011)	✓	✓	✓	✓	✓	✓	—	
NGT	PALM-UP	van der Kooij et al. (2006)	—	—	✓	—	✓	—	—	
	PALM-UP	van Loon (2012)	✓	✓	✓	✓	✓	✓	✓	
NTS	PALM-UP	Amundsen and Halvorsen (2011)	—	—	✓	✓	✓	—	—	
LSC	palm-up	Jarque et al. (2013)	—	—	—	—	✓	—	—	
STS	palm-up or PU	Mesch (2016)		✓	✓	—	—	—	—	Reference to the topic

Table 5.5: Functions of PALM-UP in different SLs (second part)

5.3.2 Criteria for the identification of PALM-UP and its discourse-marking tokens

In this research, PALM-UP is considered to be a gesture. Its definition includes the features found in previous studies, namely that it is articulated in neutral space with one or two hands facing upwards and fingers loosely extended. Although some works also add that the hand or hands adopt this position through a rotation of the wrist, this is not always the case in corpus data. The hand or hands can be placed in suppination following different paths because PALM-UP does not seem to have a lexical movement.

PALM-UP is maybe the trickiest DM candidate under study here because not only does it seem to be the most polysemous, but it is sometimes difficult to identify. Because of this double complexity, this sub-section will be divided into two parts. The first (5.3.2.1) will be devoted to the identification of the form, which is based on a set of phonological and semantic criteria. The second (5.3.2.2) aims to identify the discourse-marking tokens of PALM-UP. For this purpose, the three criteria established for buoys will be applied: (i) to be syntactically optional, (ii) to be non-truth-conditional, and (iii) to constrain the inferential mechanisms of interpretation processes.

5.3.2.1 Identifying the form

When working with oral corpus data, either spoken or signed,[30] the canonical production of words or signs may vary from what can be found in a dictionary entry because of the linguistic context, the immediacy of production and many other reasons. The same thing happens to PALM-UP. Since it is an empty form, its basic handshape varies considerably mainly because of the speed of production and surrounding signs (McKee and Wallingford, 2011). As a result, some tokens do not match the definition of the canonical form illustrated in Figure 5.16 at the beginning of sub-section 5.3.1. These non-canonical forms will be presented below. Afterwards, there will be another point on the forms that must not be mistaken for PALM-UP. Finally, the criteria that guide the identification of PALM-UP particles are summarised.

Which tokens are annotated as PALM-UP forms? The two main features in the definition of PALM-UP are its articulation in neutral space and the palm upwards with fingers loosely extended. To begin with, the position of the hands in neutral space and in front of the signer may vary as a result of the spatial location of surrounding signs and the rest position of hands. As shown in the first row of Figure 5.17, palm-ups can be articulated at the signer's side, in an almost vertical position or on the lap. Palm-ups can also be asymmetrical, i.e. the hands are found at different heights and their orientation may not be the same. Moreover, palm-ups can be articulated in other forms that differ from fingers loosely extended. Because of

[30] As mentioned at the beginning of chapter 4, the term 'oral' in this dissertation is used as the opposite to written and it is not restricted to audio-phonatory languages: it also includes visual-gestural languages that do not have a written form.

the natural flexing of fingers when hands are facing upwards, palm-ups can be articulated with fingers slightly curved inwards. They can also assimilate the handshape of the previous sign in one or two hands. These three last variations are illustrated in the second row of Figure 5.17.

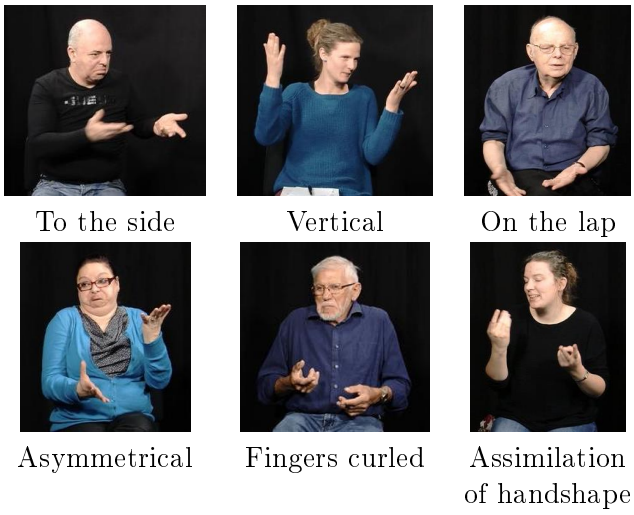


Figure 5.17: Examples of non-canonical PALM-UP forms

Sometimes, the palm of one or both hands is not completely oriented upwards. In two-handed forms, a token is glossed as PALM-UP if the palm of at least one hand is perpendicular to the floor or at an angle larger than 90° with the floor as illustrated in the pictures of Figure 5.17. In these cases in which the movement is not complete, the rotation of the wrist helps to distinguish PALM-UP from other gestures. If this movement is absent and the palms are perpendicular to the floor because of another movement such as a lifting, the token will not be considered a palm-up (see the point below on which tokens are not considered PALM-UP for further details).

The only exception to this general rule of the position of the palm with respect to the floor are the forms that I call 'reduced palm-ups' (see an example in Figure 5.18). The signer may have his/her hand on the lap and slightly rotate the wrist so that the palm forms a smaller angle than 90° with the floor. This case is different from those in which the signer's hand is on the lap and s/he lifts the fingers facing downwards without rotation of the wrist (what Mesch (2016) calls 'weak manual activity in lap'). To the best of my knowledge, apart from Mesch's study on backchannel in STS, there

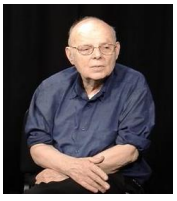


Figure 5.18: Reduced PALM-UP on the lap

is no other work that takes into account these reduced forms of PALM-UP. The motivation to not leave aside reduced forms is twofold: it neither excludes cases in which the signer uses a lower position "in order to not direct attention away from the primary signer" (ibid., p.32) nor cases in which the signer may have articulatory difficulties because of age (e.g. arthritis).

Which tokens are not annotated as PALM-UP forms? The PALM-UP category excludes those forms in which the movement neither involves a rotation of the wrist nor another path to get the palms in suppination. For instance, the signer in Figure 5.19 has his hands opened and fingers loosely extended. The movement he performs is displayed from its beginning until its end (from left to right). It is an outward and slightly upward movement without a rotation of the wrist. This kind of tokens are not considered palm-ups and they are therefore not annotated as such.

Figure 5.19: Another gesture not considered PALM-UP

Other forms discarded include other gestures, partly-lexical signs and fully-lexical signs whose form is very similar to PALM-UP. For example, signers (specially young ones)[31] frequently wiggle fingers in order to hold the floor and get some time to think about what to say. Their palms can be at different angles with the floor, but when they face upwards, the gesture looks similar to PALM-UP (specially if the movement of the fingers is not pronounced). This would be the equivalent of a 'hum' or 'erm' in English and it is considered a completely different form to PALM-UP.

In other works for both SpLs (Kendon, 2004) and SLs (Engberg-Pedersen, 2002; Hoza, 2011), PALM-UP includes pointings (i.e. partly-lexical signs) with the open hand facing upwards, fingers together or loosely extended, and a movement towards the interlocutor or towards entities that are either present or absent in discourse. These occurrences are excluded from the PALM-UP category in this dissertation because they have a completely different function, i.e. pointing towards referents. This function clearly differs from the other functions identified for PALM-UP in different SLs such as expressing modality, opening a turn, etc. Figure 5.20 illustrates an example in which S004 tells S003 that S003 has more experience related to signs than himself. Two pointing signs are articulated with the palm of the right hand facing upwards, fingers loosely extended and a movement towards his interlocutor.

[31] Wiggling fingers seems to be age-sensitive: it is a new gesture mainly used by young signers. It is rare in middle-aged signers and elderly signers do not use it at all. The reason that may justify this difference is that this gesture requires a supplementary effort of articulation that is hard for most elderly people.

(LSFB Corpus, session 2, task 11, signer S004, 06:32 - 06:35)

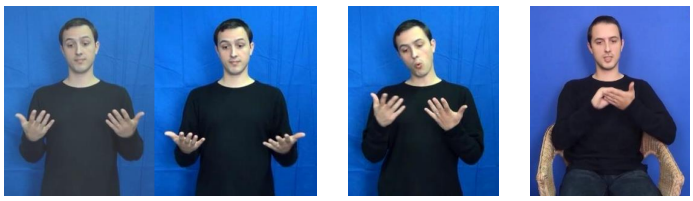
RH EXPERIENCE SL **PT:PRO2(5)**
LH EXPERIENCE SL

RH LINK **PT:PRO2(5)**
LH LINK

'You have some experience with signs, you are somehow related to them'

Figure 5.20: Example of two pointings similar to PALM-UP

Fully-lexical signs, which already have a fixed meaning, are not included in the PALM-UP category either. On the one hand, there are signs which are articulated with the palms facing upwards and fingers extended, but they have a slightly different movement (e.g. the sign NOW has the palm up, but a downward movement is performed during its articulation) or they have an obligatory non-manual marker that conveys a meaning (e.g. the sign OR can be articulated with a rotation of the wrist, fingers extended and palms up, but it is accompanied by a head tilt and sometimes by the mouthing 'ou' meaning 'or'). On the other hand, there are other fully-lexical signs that have one hand facing upwards, and the perseveration of this handshape in discourse can be sometimes misleading (e.g. the sign WRITE). These possibilities that are discarded from the PALM-UP category are illustrated in Figure 5.21.



NOW OR WRITE

Figure 5.21: Examples of fully-lexical signs to be distinguished from PALM-UP forms

Summary of criteria to identify the form In this dissertation, both full and reduced forms of PALM-UP are identified by taking into account both phonological and semantic criteria. The phonological criteria for full forms include:

- It is a one-handed or a two-handed form with the palm of the hand at 90° from the floor or forming a larger angle.
- It does not have a lexical movement, so the hand or hands get to this position following different paths.
- There cannot be a movement towards the interlocutor or another entity in discourse.

The phonological criteria for reduced forms are:

- It is a one-handed or a two-handed form with a rotation of the wrist that may leave the palm of the hand at a smaller angle than 90° from the floor.
- The rotation of the wrist is compulsory: lifting fingers or other actions without a rotation are excluded.
- There cannot be a movement towards the interlocutor or another entity in discourse.

Since the location and handshape of surrounding signs as well as having the hands resting on the lap may influence the articulation of PALM-UP, neither its articulation in neutral space nor the position of fingers is determinant for its identification. The semantic criteria to identify full and reduced forms include:

- The form must be empty of meaning, so it can not have the meaning of a pointing sign or the meaning of a fully-lexical sign.
- The meaning of PALM-UP will be conveyed by context, non-manual marking and position.

In a nutshell, the definition proposed for PALM-UP in the present work is the following:

> PALM-UP is a gesture that is produced in neutral space or below with one or two hands open to some extent. It does not have a lexical movement, i.e. the hand or hands get to this position following different paths. The form in itself is empty of meaning, which is conveyed by co-occurring non-manual marking, the context and the position.

Once phonological and semantic restrictions are clear, it is time to tease apart those PALM-UP forms with a discourse-marking function from those that have other functions at different levels. The criteria to proceed to this distinction are presented and exemplified in the following section.

5.3.2.2 Identifying discourse-marking palm-ups

Earlier in the introduction to this chapter (see 5.1) and in the sub-section devoted to the criteria for identifying buoys with a discourse-marking function (see 5.2.2), the complexity of determining the discourse-marking status of a word or sign was presented. On the one hand, a token (i.e. a word or a sign) may have a syntactic

function if it participates in the dependency structure of a clause, whereas it may have a discourse-marking function if it is outside the dependency structure of the clause and connects, structures or punctuates clauses. On the other hand, DMs are grammatically heterogeneous, which means that their grammatical class cannot be used as a criterion for their identification. Thus, deciding whether a token belongs to the category of DMs is the result of interpreting its pragmatic function.

Among the definitions of DMs that can be found in the literature, the one that was kept in this dissertation is that of Crible (2014) to describe DMs in spoken productions (see the definition and rationale in sub-section 5.2.2). Three points in this definition are selected to identify DMs in signed productions and here, in particular, to identify PALM-UP tokens with discourse-marking functions. These criteria (the same that were used to identify list buoys) include that DMs must be syntactically optional, they must be non-truth-conditional and they must constrain the inferential mechanisms of interpretation processes.

In addition to the features defining DMs, Crible's protocol contains a list of those elements of speech which are excluded from the DM category:

- Fillers, used to fill a pause to signal that the speaker is thinking and keeps his/her turn (e.g. 'uhm', 'erm', etc.).
- Interjections, used for phatic or modal expression linked to information state (e.g. 'oh', 'hey', etc.).
- Response signals, used to answer a question (e.g. 'yes', 'right', etc.).
- Epistemic parentheticals, used to express the speaker's stance (e.g. 'I think', 'I suppose', etc.).
- General extenders, used to widen the scope of the clause (e.g. 'or something', 'and things like that', etc.).
- Tag questions, used to check information or to ask if someone agrees with you (e.g. 'isn't it?', 'don't you?', etc.).
- Editing terms, used to signal production troubles on the part of the speaker (e.g. 'I don't know').

Interestingly, at least two of these elements (fillers and epistemic parentheticals) seem to take the form of PALM-UP in the SLs in which it has been studied. In what follows, the three criteria extracted from Crible's definition will be presented and exemplified. Afterwards, examples will be given of PALM-UP tokens fulfilling the functions of filler, epistemic parenthetical and interjection, which fall beyond the category of DMs.

Criteria Let's take some fairly common PALM-UP tokens with both a discourse-marking function (i.e. punctuating and ending a turn) and a non-discourse-marking function (i.e. expressing epistemic stance) in order to illustrate the three criteria.

In example (79), the signer is explaining a past memory and says that she missed a lot of things and had big communication problems when she was a kid. There are two clauses (separated by square brackets for ease of reading) and two palm-ups outside the dependency structure (between angle brackets), the first punctuates and the second ends the turn. The syntactic structure of these two clauses and the two palm-ups outside its dependency structure is the following: [SV SAdj SS] <md> [SAdj SV SAdj] <md>.

(79) [(LACK++)$_{SV}$ (STRONG)$_{SAdj}$ (PT:PRO1)$_{SS}$] <**PALM-UP**>$_{md}$ [(STRONG)$_{SAdj}$ (COMMUNICATION-NOT)$_{SV}$ (STRONG)$_{SAdj}$] <**PALM-UP**>$_{md}$
'I missed a lot of things **indeed**, I had big communication problems **yeah**.'

(LSFB Corpus, session 21, task 4, signer S045, 00:37 – 00:41)

In example (80), the signer is asked how his relationship with the hearing was. There are two clauses and the first contains two palm-ups that express epistemic stance and are found within the dependency structure. In fact, they are the nuclei of the first clause which has the following syntactic structure: [SRd SS SV].

(80) [(REAL LISTEN)$_{SRd}$ (PT:PRO1)$_{SS}$ (**PALM-UP** NOTHING **PALM-UP**)$_{SV}$] <ANYWAY>$_{md}$ [(PT:PRO6)$_{SS}$ (NOTHING OFFEND NOTHING)$_{SV}$ (HEARING ALL)$_{SS}$]
'I **do not know** if they really listened to me, but they were not offended.'

(LSFB Corpus, session 2, task 4, signer S003, 02:35 – 02:40)

To begin with, the two palm-ups in (79) (which have a discourse-marking function) are **syntactically optional** because if they were removed, the two clauses would remain syntactically complete. The two palm-ups have been removed in (81) and the syntactic structure of the two clauses that surround them remains the same as in (79): [SV SAdj SS] [SAdj SV SAdj].

(81) [(LACK++)$_{SV}$ (STRONG)$_{SAdv}$ (PT:PRO1)$_{SS}$] [(STRONG)$_{SAdv}$ (COMMUNICATION-NOT)$_{SV}$ (STRONG)$_{SAdv}$]
'I missed a lot of things, I had big communication problems.'

Conversely, the two palm-ups in (80) cannot be taken out because they are the nuclei of the clause. Doing so would leave the clause syntactically incomplete as shown in (82). The structure of the first clause in (82) is now [SRd SS SPron] and it does not have a verbal sequence (i.e. the two palm-ups), which are the governors of the clause.

(82) * [(REAL LISTEN)$_{SRd}$ (PT:PRO1)$_{SS}$ (NOTHING)$_{SPron}$] <ANYWAY>$_{md}$ [(PT:PRO6)$_{SS}$ (NOTHING OFFEND NOTHING)$_{SV}$ (HEARING ALL)$_{SS}$]
'I not if they really listened to me, but they were not offended.'

Second, the two palm-ups in (79) are **non-truth-conditional** because they contribute to the non-conventional meaning of the two clauses and they do not affect the truth-conditional content of the two clauses. If the two palm-ups were removed,

the truth conditions of the clauses would be the same. This can be illustrated by comparing the truth conditions of examples (79) and (81), which are exactly the same.

Truth conditions of (79):

- The signer missed a lot of things.
- The signer had significant communication problems.

Truth conditions of (81):

- The signer missed a lot of things.
- The signer had significant communication problems.

Although PALM-UP is a form empty of meaning, the signer in (80) conveys the meaning of expressing epistemic stance to both tokens via non-manual marking (body lean forward, movement of the head and pursed lips) and via the context. The expression of stance provides the clause with conventional meaning that refers to the state of affairs in the real world. So the truth conditions of (80) are the following:

- The signer is unsure about whether the hearing listened to him.
- The hearing were not offended.

If there were different non-manual marking co-occurring with the two palm-ups or two other signs instead of the two palm-ups, the clause would be falsified because it would not correspond to the representation of the real state of affairs. For instance, if the non-manual marker was a head nod expressing certainty, the first truth condition would be different:

- The signer is sure that the hearing listened to him.
- The hearing were not offended.

Third, the two palm-ups in (79) **constrain the inferential mechanisms of interpretation processes**. The meaning that the two palm-ups encode (punctuating discourse for the first and marking the end of the turn for the second) makes explicit the relationship between the two clauses and ongoing discourse that the interlocutor needs to infer. If they were removed, the message could be interpreted in a different way including other coherence relations (among others):

- A relation of addition of new information between the first and the second clause:

  (83) I missed a lot of things **and** I had big communication problems.

- A causal relation between the first and the second clause:

  (84) I missed a lot of things **because** I had big communication problems.

- An intention of the signer to hold the floor:

  (85) I missed a lot of things. **So**... I had big communication problems.

Conversely, the two palm-ups in (80) participate in the clause but they do not constrain its interpretation (in terms of coherence relations) with respect to other clauses and to the whole production in general. If a coherence relation was inferred instead of the two palm-ups, it would be an infelicitous interpretation as in (86):

(86) * I **although** not if they really listened to me, but they were not offended.

Elements excluded According to previous studies on PALM-UP, some of its most frequent functions across SLs are modality marker and pause filler. These functions have also been found in LSFB (Notarrigo and Meurant, 2014) as well as that of interjection (not very frequent), which has not been reported before to the best of my knowledge. These three functions do not belong to the DM category according to Crible (2014).

Example (80) illustrated a case in which two palm-ups express modality. It seems that modality in LSFB is expressed with the same non-manual marking that was found for NZSL and NGT, namely "lowered corners of the mouth, raised or furrowed brows [...], eye squint, shoulder shrug, and the movement of the head and/or torso backwards or to one side" (McKee and Wallingford, 2011, p.232). PALM-UP tokens with one or several of these nonmanuals associated and conveying this specific meaning will not be considered DMs. That said, palm-ups expressing or marking modality may be double-tagged with another discourse-marking function as in example (87). Here the signer is saying that when he was young he used to go everywhere by bike.

(87) [BIKE ALWAYS BIKE] <**PALM-UP**>
'I used to go everywhere by bike.'

(LSFB Corpus, session 2, task 3, signer S004, 01:14 – 01:16)

The signer ends his turn with a palm-up that is accompanied by a shoulder shrug. The meaning of PALM-UP is conveyed by a combination of linguistic context and non-manual marking. Linguistic context tells us that the token is at the end of the signer's turn, but non-manual marking tells us that the signer is expressing his stance. Since it has been acknowledged that PALM-UP may fulfil different modal and interactive functions at the same time (McKee and Wallingford, 2011) and it was impossible to establish clear criteria to disentangle one function from the other in the data, this palm-up marks both the stance and the end of a turn.

Another frequent function of PALM-UP is to be a pause filler. Since PALM-UP is empty of meaning, sometimes it may be hard to disentangle a pause filler from a DM expressing punctuation or planning (Bolly and Crible, 2015). It seems that the three functions (pause filler, punctuating DM and planning DM) go with a floating gaze and/or a movement of the head (see chapter 6, sub-section 6.4.3.3). However, there is not a clear non-manual distinctive feature that separates one function from another. In this research, the position is what distinguishes them. A palm-up will be

considered a pause filler if it is found within the clause, whereas it will be considered a marker of punctuation or planning if it is found outside the clause. In example (88), the signer is explaining his personal experience at work with hearing colleagues.

(88) [A-LITTLE PT:PRO1 <**PALM-UP**> A-LITTLE THIRTY YEAR HEARING INSIDE]
'I erm worked for almost 30 years with the hearing.'

(LSFB Corpus, session 2, task 4, signer S004, 01:34 – 01:39)

Example (88) displays one clause in which the palm-up token is embedded. The signer takes some time to think about the number of years he worked with hearing colleagues. In order to hold the floor, he manually fills the pause with a palm-up and directs his eye gaze away from his interlocutor. Note the difference with the first palm-up in example (79), which was a punctuation marker and appeared between two clauses.

Finally, the last function of PALM-UP that must not be taken as discourse-marking is interjection. In example (89), signer S004 is telling a past memory concerning a church. Signer S003 produces a palm-up that can be interpreted as an interjection showing surprise with respect to the story.

(89)
S004: [CHURCH PT:PRO1 PT:DET BREAK COLLAPSE]
S003: <**PALM-UP**>
S004: [CHURCH WOOD DS:TWO-WALLS DS:TWO-WALLS DS:SHAPE-ROOF SAME PT:DET NS:ROMANIA COUNTRY POOR SAME HOUSE]
S004: 'The church of the village collapsed.'
S003: 'Oh!'
S004: 'It was a church made of wood such as those that you may find in Romania or in poor countries.'

(LSFB Corpus, session 2, task 3, 3:40 – 03:51)

There are other functions that PALM-UP could fulfil and that could be found within the list of elements that Crible (2014) discards from the category of DMs. For instance, it could be used as a response signal, as a question tag or even as an editing term. In any case, the identification of DMs remains tied to the three previously mentioned criteria: being syntactically optional, being non-truth-conditional and constraining the inferential mechanisms of interpretation processes.

5.4 The sign SAME

The sign SAME, annotated as AUSSI ('also') in the LSFB Corpus,[32] is the fourth most frequent ID-gloss after depicting signs, the sign SL and the personal pronoun

[32]The decision to use the ID-gloss SAME to refer to this sign instead of the English translation of 'aussi' (i.e. 'also') was made because the use of SAME seems to be the most widespread gloss across SLs. As a matter of fact, it is used in the Auslan Corpus and in the BSL Corpus (whose glosses are in English). There are other corpora whose ID-glosses are in another SpL and the ID-gloss for the sign is also translated as 'same'. For instance, the LSC Corpus uses IGUAL in Catalan which can be translated as 'same' in English.

PT:PRO1. SAME is a fully-lexical sign whose canonical form consists of the indexes of both hands extended and coming into contact (generally once or twice) with an inward movement as in Figure 5.22. Its core meaning is that of resemblance or similarity in LSFB, but it is very productive in discourse.

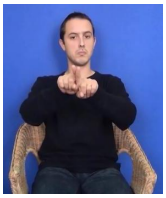


Figure 5.22: Sign SAME

This section is divided into two sub-sections. 5.4.1 is devoted to the only existing linguistic description of the sign, i.e. a dictionary entry in the *Auslan SignBank* of the sign glossed as SAME (identical form and similar meanings) that describes some of its features. 5.4.2 deals with the identification of the sign, in particular when it has a discourse-marking function. To the best of my knowledge, no in-depth research on SAME has been conducted in any SL yet, so this is the first attempt to do so from an almost unexplored field in SL linguistics, i.e. that of DMs.

5.4.1 Previous studies

The sign SAME also exists in other urban SLs such as VGT, LSF, LSC, LSE, Auslan and BSL, just to name a few examples. In all of them, the core meaning (sometimes reflected in a dictionary or lexical database) is that of similarity, likeness or sameness. The use of SAME in conversations reveals that it may have other functions at the discourse level, although they have not been documented so far.

The language resources site for Auslan, the *Auslan SignBank*, proposes a definition of the sign that is divided into three different sections:[33]

- As a **noun**, its core meaning is that of sameness and likeness.
- As a **verb** or **adjective**, its core meaning is that of sameness and likeness, and it is put between two nouns.
- As a **modifier**, it has three different meanings and a different position goes with each meaning:
    1. It is used when what somebody said is exactly like something else this person or somebody else said, i.e. the equivalent in spoken English of 'likewise', 'similarly' or 'in the same way'. The preferred position for this meaning is the beginning of a sentence.

[33] `http://www.auslan.org.au/dictionary/words/same-1.html`

2. It is used to add another person, thing, or aspect to a previous statement, i.e. the equivalent in spoken English of 'too', 'as well' or 'also'. There is not a fixed position in the sentence in this case.
3. It is used to say that another person or thing looks similar to another person or thing previously described, i.e. the equivalent in spoken English of 'like'. The preferred position is immediately before naming the second person or thing.

The functions of noun, verb and adjective are syntactic functions that remain at the clausal level. Conversely, the functions of modifier could be discourse-marking, specially the first two. On the one hand, the use of SAME to go back to somebody's words is that of a resuming DM whose function is to "signal the intention to link the upcoming segment to previous topic, to come back to the topic after a digression, a hesitation or a nonrelevant passage" (Crible, 2014, p.23). On the other hand, the use of SAME to add something to discourse is that of a marker of addition whose basic function is to provide another element within a topic or sequence (ibid., p.24).

5.4.2 Criteria for the identification of SAME and its discourse-marking tokens

Unlike PALM-UP, the identification of SAME is not that problematic, although many phonological variations can be found. In this sub-section, the different non-canonical forms of SAME are presented (5.4.2.1). Then, the three criteria for disentangling discourse-marking tokens of the sign from non-discourse-marking tokens (i.e. to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes) are set out and exemplified (5.4.2.2). Finally, a tricky case (i.e. SAME functioning as a hedge marker) is discussed.

5.4.2.1 Identifying the form

Early in sub-section 5.3.2, it was said that words or signs extracted from oral corpus data sometimes do not match their canonical form in a dictionary entry. The linguistic context, the immediacy of production and possibly other factors influence their form. In the case of SAME, the fingers may not be placed in the canonical form, it may also assimilate with the previous or the following sign and it may even be articulated one-handed using contact with the body or without contact in neutral space. These possibilities are illustrated in Figure 5.23.

The use of forms with fingers in a non-canonical position has been frequently found in all signers, so it is not idiosyncratic. The assimilation of the previous or following sign also seems common to all signers (in the first image of the second row of Figure 5.23, the signer assimilates a flat handshape with all fingers extended of the previous sign, i.e. CHANGE). One-handed forms are not very frequent and they seem to be only used by younger signers. Even if so many possible articulations are sometimes confusing, context and the intuition of deaf signers help identify the sign.

Tokens with the fingers in a non-canonical position

Assimilation of the previous sign | One-handed using contact with body | One-handed in neutral space

Figure 5.23: Examples of non-canonical forms of the sign SAME

5.4.2.2 Identifying discourse-marking tokens of SAME

Once the tokens of SAME are identified, it is time to decide which ones have a discourse-marking function and which ones do not. Determining the discourse-marking status of a word or sign is mainly the result of interpreting its pragmatic function as morpho-syntactic criteria are not valid (see section 5.1): the same word or sign may have a syntactic function (if it participates in the dependency structure of a clause) or a discourse function (if it is outside the dependency structure of the clause and it punctuates or relates the clause to other clauses). The grammatical class cannot be of use either because DMs are grammatically heterogeneous.

The three criteria that help the annotator to interpret the pragmatic functions of signs are extracted from Crible's (2014) definition of DMs in oral productions (see sub-section 5.2.2): DMs must be syntactically optional, they must be non-truth-conditional and they must constrain the inferential mechanisms of interpretation processes. List buoys and PALM-UP fulfil these three criteria when they are outside the dependency structure of clauses. However, there is at least one use of SAME that is usually embedded in the clause, i.e. hedge marker. However, as a DM, it fulfils the three criteria. These three criteria and the use of SAME as a hedge marker will be presented below in separate parts.

Criteria I will exemplify these three criteria with some fairly common uses of SAME in LSFB. At the beginning of the present chapter (see section 5.1), examples (52) and (53), here repeated as (90) and (91) respectively for the reader's convenience, illustrated two different tokens of the sign SAME. The syntactic structure of (90) is [SRg SO SAdj], whereas that of (91) is [SV SO] <md> [SO SV SAdj].

(90) [(IF ALL TEACHER WELL FOLLOW BOOK SL)$_{SRg}$ (ALL **SAME** SL)$_{SO}$ (POSSIBLE)$_{SAdj}$]
'If all teachers strictly followed the sign language book, it would be possible for all signs to be **the same**.'

(LSFB Corpus, session 2, task 11, signer S003, 08:32 - 08:36)

(91) [(HAVE)$_{SV}$ (SEVERAL NS:BERCHEM COME NS:NAMUR)$_{SO}$] <**SAME**>$_{md}$ [(PT:LOC NS:CHARETTE)$_{SO}$ (HAVE)$_{SV}$ (SEVERAL)$_{SAdj}$]
'There are several people from Berchem who have come to Namur. **And** there are several people from La Charette.'

(LSFB Corpus, session 2, task 11, signer S003, 04:09 - 04:14)

SAME is an adjective that qualifies the sign SL (meaning 'signs' here) in example (90), whereas it is a DM adding more information related to the same topic in example (91). When SAME is a DM, it is **syntactically optional** because it can be removed and the two clauses remain syntactically complete. This is illustrated in (92), in which SAME has been taken out but the syntactic structure of the clauses is the same as in (91): [SV SO] [SO SV SAdj].

(92) [(HAVE)$_{SV}$ (SEVERAL NS:BERCHEM COME NS:NAMUR)$_{SO}$] [(PT:LOC NS:CHARETTE)$_{SO}$ (HAVE)$_{SV}$ (SEVERAL)$_{SAdj}$]
'There are several people from Berchem who have come to Namur. There are several people from La Charette.'

Note the difference with SAME when it is an adjective in (90), in which case eliminating it leaves the clause syntactically incomplete because the sign participates in the dependency structure of the clause. The non-optionality of SAME for the clause to be syntactically complete cannot be observed in the syntactic structure that (93) presents [SRg SO SAdj], but in its translation (an adjective is missing), because SAME participates in the object sequence.

(93) * [(IF ALL TEACHER WELL FOLLOW BOOK SL)$_{SRg}$ (ALL SL)$_{SO}$ (POSSIBLE)$_{SAdj}$]
'If all teachers strictly followed the sign language book, it would be possible all signs.'

SAME in example (91) is **non-truth-conditional** because it contributes to the non-conventional meaning of the two clauses it connects and does not affect their truth conditions. This can be proved by comparing the truth conditions of (91) and (92), which are the same.

Truth conditions of (91):

- People from Berchem moved to Namur.
- People from La Charette moved to Namur.

Truth conditions of (92):

- People from Berchem moved to Namur.
- People from La Charette moved to Namur.

Conversely, SAME in example (90) is truth-conditional because it affects the truth conditions of the clause in which it appears. If instead of SAME there was another sign or signs as in (94), the current propositional content would not correspond to the real state of affairs.

(94) [IF ALL TEACHER WELL FOLLOW BOOK SL ALL **ONE HAND** SL POSSIBLE]
'If all teachers strictly followed the sign language book, it would be possible for all signs to be **one-handed**.'

So if the truth conditions of the two examples under inspection are compared, it can be observed that the first is the same in the two cases but the second truth condition changes.

Truth conditions of (90):

- Teachers do not follow strictly the sign language book.
- If they did, there would not be different signs.

Truth conditions of (94):

- Teachers do not follow strictly the sign language book.
- If they did, there would not be two-handed signs.

Because of its DM status, SAME **constrains the inferential mechanisms of interpretation processes** in example (91). It makes explicit that there is a coherence relation of addition between the two clauses, in which the second clause is something that supplements the idea expressed in the first clause. If SAME was removed as in (92), different discourse relations could be inferred. For instance:

- Listing different elements:

  (95) There are several people from Berchem who have come to Namur. **Second**, there are several people from La Charette.

- A relation of alternative:

  (96) There are several people from Berchem who have come to Namur. **On the other hand**, there are several people from La Charette.

No similar connecting or structuring function applies to SAME in example (90). If SAME was left out, a discourse relation could not be inferred because it would be an infelicitous as shown in (97).

(97) * If all teachers strictly followed the sign language book, it would be possible for all signs **however**.

A tricky case DMs are outside the dependency structure of clauses in terms of Dependency Syntax (Blanche-Benveniste et al., 1990). Nevertheless, the function of hedge marker is found embedded within the clause (Crible, 2014). This function is typically fulfilled by SAME in LSFB. In example (37) from chapter 4, here repeated as (98) for ease of reading, the signer is explaining why she likes music. The syntactic structure of the example is the following: [SS SV SO] [SV] [SRg SV] [SV <md> SO].[34]

(98) [(PT:DET)$_{SS}$ <GSIGN> <PALM-UP> (GIVE)$_{SV}$ (A-LITTLE CALM)$_{SO}$] [GIVE$_{SV}$] [(ANNOY STRESS)$_{SRg}$ (GIVE MUSIC KNOW RELAX)$_{SV}$] [(GIVE)$_{SV}$ <**SAME**>$_{md}$ (TAKE)$_{SO}$]
'It... erm... calms me, it makes me... When I am annoyed or stressed, I know that music soothes me. It **sort of** takes me away.'

(Corpus LSFB, session 27, task 15, signer S056, 00:16 – 00:23)

When SAME is a hedge marker, it expresses a lack of precision. The signer directs her gaze away from her addressee and holds the initial handshape of the following sign, i.e. TAKE. Both the non-manual activity (not directed gaze at the addressee) that is layered with SAME and the manual activity that surrounds it (short pause afterwards, wiggling fingers, a hold of the following sign in its initial handshape and other signs expressing approximation such as TITLE in Figure 5.24) are decisive for assigning the function of hedge marker.

Figure 5.24: Sign TITLE

In addition, SAME fulfils the three criteria used to identify DMs despite being embedded in the clause. First, it is syntactically optional because it can be removed and the clause remains syntactically complete. In (99), SAME has been removed and the clause is syntactically complete with the same dependency structure as in (98): [SS SV SO] [SV] [SRg SV] [SV SO].

(99) [(PT:DET)$_{SS}$ <GSIGN> <PALM-UP> (GIVE)$_{SV}$ (A-LITTLE CALM)$_{SO}$] [GIVE$_{SV}$] [(ANNOY STRESS)$_{SRg}$ (GIVE MUSIC KNOW RELAX)$_{SV}$] [(GIVE)$_{SV}$ (TAKE)$_{SO}$]
'It... erm... calms me, it makes me... When I am annoyed or stressed, I know that music soothes me. It takes me away.'

[34] GSIGN and PALM-UP in this clause are pause fillers, which is why they are not given a functional sequence.

Second, SAME is non-truth-conditional because the meaning it conveys is non-conventional and does not affect the truth-conditions of the clause. Below, the truth conditions of (98) and (99) are listed. If they are compared they are exactly the same, SAME does not alter them.

Truth conditions of (98):

- Music calms the signer.
- Music soothes the signer when she is stressed or annoyed.
- Music takes her away.

Truth conditions of (99):

- Music calms the signer.
- Music soothes the signer when she is stressed or annoyed.
- Music takes her away.

Third, SAME constrains somehow the inferential mechanisms of interpretation processes, in the sense that it makes explicit to the interlocutor that this information has to be taken as an approximation. If SAME were removed from the clause in which it appears, it would be difficult to give it another interpretation (as happens with other non-relational DMs such as those that start and end a turn, hold the floor, etc.) but still possible. Some possible interpretations could be the following:

- Alternative:

  (100) It... erm... calms me, it makes me... When I am annoyed or stressed, I know that music soothes me. It, **on the other hand**, takes me away.

- Reformulation:

  (101) It... erm... calms me, it makes me... When I am annoyed or stressed, I know that music soothes me. It, **actually**, takes me away.

The use of SAME as a hedge marker must be differentiated from its other uses within the clausal structure, specially when it is used as a conjunction in comparisons without discourse-marking value. In example (102), the signer talks about SL interpreters in France and compares their speed of signing with the speed of a train. The syntactic structure of the clause is the following: [SV SO SRd].

(102) [(HAVE)$_{SV}$ (WOMAN ONE TWO FOUR SL)$_{SO}$ (**SAME** TRAIN)$_{SRd}$]
'There are some women who sign like a train.'

(LSFB Corpus, session 2, task 3, signer S004, 06:06 - 06:09)

Here SAME is a conjunction that introduces the second part of a comparison. It neither has the manual and non-manual features of SAME as a hedge marker nor fulfils the three criteria that apply to the sign when it is a DM. The non-manual marking remains neutral, only the mouthing of the word 'comme' (which would be the equivalent of 'like') is produced during the articulation of the sign; and there is no surrounding manual activity indicating approximation.

Moreover, none of the three criteria used to identify DMs apply. First, SAME is syntactically obligatory for the clause to be complete. If SAME were removed as in (103), the syntactic structure of the clause would be the same as in 102 because the sign participates in a right governed sequence, but the clause would not be grammatically correct (see translation).

(103) * [(HAVE)$_{SV}$ (WOMAN ONE TWO FOUR SL)$_{SO}$ (TRAIN)$_{SRd}$]
'There are some women who sign a train.'

Second, SAME in (102) is truth-conditional because it relates to the signer's representation of the state of affairs. The truth conditions of (102) and (103) are listed below. The truth condition of (103) is different from the truth condition in (102) because of the absence of SAME.

Truth condition of (102):

- Some women sign as fast as a train.

Truth condition of (103):

- Some women sign a train.

Third, SAME in (102) does not constrain the inferential mechanisms of interpretation processes. If SAME is removed from the clause, no discourse relation could be inferred in its place because it would be an infelicitous interpretation as in (104).

(104) * There are some women who sign **because** a train.

5.5 Summary

This chapter was devoted to the identification of the form and the discourse-marking function of the three DM candidates under study; i.e. buoys, PALM-UP and the sign SAME. The difficulty of determining the discourse-marking status of signs is the same that has been described for words; i.e. (morpho-)syntactic criteria cannot be used, but pragmatic and functional criteria can (Bolly, 2009). That is, a sign (or word) can have a function at the clausal level and a different one at the discourse level. Two examples, one in which the sign SAME was an adjective and another in which it was a DM that related two clauses, illustrated this plurality of functions at different linguistic levels. In addition, DMs can have a wide range of different grammatical classes, which does not render identification any easier; in fact, it is an issue that is far from being resolved in SLs.

Another point that makes the analysis of DMs more complex in SLs is the existence of different types of manual activity. When signers communicate, they can produce fully-lexical signs (highly conventionalised signs in form and meaning, and stable across contexts), partly-lexical signs (signs combining conventional and non-conventional elements, which must be contextualised to understand their meaning) and gestures (non-lexicalised manual activity that is sometimes shared with the surrounding SpL culture) (Johnston, 2015). In order to take into account these three different possibilities and in order to establish some general criteria that somehow palliate the delay in the study of DMs in SLs, each DM candidate chosen in this dissertation belongs to one of the three types of manual activity. Moreover, the three candidates exist in different SLs and have been (at least buoys and PALM-UP) acknowledged a discourse function. In a nutshell, their main features are the following:

- Buoys: partly-lexical signs that appear when the signer maintains his/her hand in a stationary handshape while the other hand continues signing (Liddell, 2003). There are seven different types including the list buoy, the theme buoy, the fragment buoy, the pointer buoy, the depicting buoy, the point buoy (Vogt-Svendsen and Bergman, 2007) and the delimit buoy (Mesch and Wallin, 2013). Several studies from different perspectives have been conducted on this topic so far, but none from the point of view of DMs.

- PALM-UP: a gesture articulated in neutral space or below with one or two hands facing upwards and fingers loosely extended. The hand or hands adopt this position through different types of movements as PALM-UP is one of the few types that does not have a lexical movement. The discourse functions of this gesture have been investigated in different SLs and from different perspectives, but further research from the point of view of DMs is necessary (Amundsen and Halvorsen, 2011; McKee and Wallingford, 2011).

- SAME: a fully-lexical sign usually articulated in neutral space with the fingers of both hands extended and coming into contact (generally once or twice) with an inward movement. In LSFB (as well as in other SLs), it is used to indicate sameness or likeness. Although no research has been conducted so far on this sign, it seems to be highly productive in natural discourse.

Even though the definition of each item seems quite clear, criteria to identify the tokens in realistic corpus data were necessary in order to be consistent throughout the 2h and 22 minutes of LSFB data that were analysed for this chapter (C1, i.e. the sub-corpus mainly including monologues of one signer, and C2, i.e. the sample selected from the LSFB Corpus; see chapter 3). The criteria established in the literature to identify buoys were not very informative in general. A set of objective and reproducible criteria was proposed for each type, usually in a combination of form and function. The case of PALM-UP was quite the other way round: despite the existence of different definitions, authors include many different items under this category. In this dissertation, the features that define this gesture are refined (pointing signs are excluded) and expanded (the activity on the lap is included). This is necessary for a comprehensive and replicable study on PALM-UP, which is difficult to identify in natural corpus data because it is empty of meaning and rarely appears

in its canonical form. Since SAME has not been described before, this research is the first to provide a set of criteria to identify this sign.

Once DM candidates have been identified, one can determine whether they really have a discourse-marking function or not. For this purpose, three criteria were extracted from the definition in Crible (2014), namely: to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes. These three criteria were selected because most of the literature on DMs agreed upon them as defining features of the DM category. All three criteria had to be met for a token to be considered a DM. If that was not the case, the token was discarded from further analysis. The use of these three criteria provided a clear and unambiguous list of items that could later be assigned a particular discourse-marking function. Hence, these three criteria are efficient and sufficient to distinguish between discourse-marking and non-discourse-marking items in a SL.

Both PALM-UP and SAME proved to have discourse-marking uses but, in the case of buoys, only list buoys proved to have possible discourse-marking functions (here understood as expressing coherence relations and not other types of discourse relations). The other six types have syntactic functions, discourse functions of topic marking (not including coherence relations) or iconic functions. Therefore, only list buoys will be retained for the analysis of their discourse-marking functions in chapters 6 and 7 together with PALM-UP and SAME. The analysis of the other types falls beyond the scope of this dissertation which focuses on DMs. This difference between the different types of buoys supports the assertion that "holds can be analysed in terms of regular phonetic, syntactic, semantic, or discourse notions (or a combination thereof) familiar from the linguistic study of spoken languages" (Kimmelman et al., 2016, p.211) and that the notion of 'buoys' may be dispensable.

A fourth tentative criterion was tested with list buoys but it was not suitable for all discourse-marking list buoys. Since it seems that the scope of list buoys can extend over larger chunks of discourse than PALM-UP or SAME when they have a discourse-marking function, it was hypothesised that list buoys could change the implicit question within the discourse trees that follow the Question Under Discussion (QUD). That is, list buoys would work at a higher level of discourse than PALM-UP or SAME. These two would be found within implicit questions and their scope would be more likely to extend over two or a few clauses. After going through the two corpora that were used for this chapter (C1 and C2), list buoys only switched from one implicit question to another in QUD trees on limited occasions (i.e. semi-prepared explanations) and when the signer was prone to the use of list buoys.

In conclusion, this chapter contributes to the description of the three items (buoys, PALM-UP and SAME) in many different ways. To begin with, it provides a set of objective and reproducible criteria for each item that refines their description. It is the first time in LSFB that (i) every type of buoy in the existing typology is taken into consideration in order to draw conclusions about the discourse-marking status of the whole category; (ii) pointings signs are overtly excluded from the PALM-UP category, whereas reduced activity on the lap is included; and that (iii) SAME is

described. Second, the items are investigated from an almost unexplored field in SL linguistics, i.e. that of DMs. Only PALM-UP had at some stage been suggested as having a discourse-marking function, but the need for systematic and in-depth studies in this respect remained on the agenda (Amundsen and Halvorsen, 2011; McKee and Wallingford, 2011). This work fills this gap in LSFB. Third, this chapter provides a set of criteria to determine the discourse-marking function of any type of manual activity (fully-lexical signs, party-lexical signs or gestures). There are many advantages for doing so; for instance, this can be of use to other SLs and the starting point for cross-linguistic studies that allow the differences and similarities in the construction of discourse across languages of the signed modality to be underlined. Fourth, this is the first attempt to apply the QUD theory to corpus data as it had only been used with fictive examples in SpLs so far.

Chapter 6

Discourse markers in LSFB: list buoys, PALM-UP and SAME

To see a world in a grain of sand
And a heaven in a wild flower,
Hold infinity in the palm of your hand
And eternity in an hour.

William Blake (excerpt from the poem "Auguries of Innocence", 1803)

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General objective of this chapter

This chapter aims to provide an in-depth description of the three items under study in this dissertation – list buoys, the PALM-UP particle and the sign SAME – in French Belgian Sign Language, when they have a discourse-marking status. To this end, five aspects will be analysed for each item. First, the frequency of appearance per genre will cast light on whether some genres are more likely to attract these discourse markers than other genres. Genre is considered a source of variation in the use of discourse markers; for instance, list buoys are not likely to be found in narratives. Second, the frequency of use per signer will provide further evidence of the claim in some studies that some items are dependent on the signer's style or are age sensitive, namely Hansen and Heßmann (2015) on list buoys and McKee and Wallingford (2011), van Loon (2012), Jarque et al. (2013) and Mesch (2016) on PALM-UP. Third, the macro and micro functions of the three discourse markers will be described (including non-manual marking accompanying each type when expressing a particular function) in order to obtain the first picture capturing their different uses in natural discourse. Fourth, the position in the clause, the basic discourse unit and the turn will be established in order to see whether discourse markers in a language of the signed modality are restricted to initial positions (Schiffrin, 1987; Brinton, 1996; Fraser, 1996; Schourup, 1999). Fifth, the combination of function and position, in which the expected existence of a paradigm will be investigated. The final section summarises the results presented throughout this chapter as well as its main contributions.

6.1 Introduction

As mentioned in chapter 1, literature on discourse markers (DMs) in sign languages (SLs) is scare in contrast to the number of works that can be found about other aspects of these languages such as phonology or syntax. In spoken languages (SpLs), existing studies on DMs either adopt a theoretical approach or focus on case studies. On the one hand, theoretical research tackles the variables that might affect the behaviour of DMs. Although this perspective is wide because it takes the whole category of DMs (depending on the author's definition), it is rarely operationalised. On the other hand, case studies usually specify a method that is developed to investigate a certain type of elements such as markers of a particular relation (concession, contrast, etc.) or, more commonly, a particular DM. Since the object of study in these works is narrower, the method used to describe DMs is hardly reproducible on a larger sample (Crible, 2014).

The limited amount of research concerning DMs in SLs is of this second type: each scholar uses a particular methodology to describe a certain type of elements, e.g. gestures with a discourse-marking function (Hoza, 2011) and metatextual markers (Jarque, 2014) among others (see chapter 2, section 2.3). Despite the limitations of these works in terms of reproducibility to a larger sample including different types of DMs, results reveal that DMs in SLs have the same functions as in SpLs: not only do they link segments of discourse, but they also participate in the management of communication exchange between two signers. Perhaps the most striking difference that the modality allows is that DMs in SLs "occur manually, non-manually and spatially" (Metzger and Bahan, 2001, p.133).

For a matter of feasibility, this dissertation focuses on three DM candidates that occur manually.[1] According to Johnston (2015, p.13), manual activity is divided into fully-lexical signs, partly-lexical signs and gestures. In order to take into account these three different possibilities and in order to establish some general criteria that somehow alleviate the delay in the study of DMs, each DM candidate selected for this research belongs to a different type of manual activity: SAME (a fully-lexical sign), list buoys (partly-lexical signs) and PALM-UP (a gesture) (see chapter 5, section 5.1). Moreover, these items (especially list buoys and PALM-UP) are fairly common across SLs and SAME is comparable at least in French Belgian SL (LSFB) and Catalan SL (LSC), so their study will lay the foundations for the comparison among SLs regarding discourse structure and the properties of manual items that share the same form.

The data used for this chapter is a sub-corpus that was labelled as C2; i.e. a sample of the LSFB Corpus lasting for 1 hour and 28 minutes (p.46). It includes the dialogues of six signers, who were selected seeking a balance of age and gender, and contains four genres: argumentative, expository, narrative and metalinguistic productions (see chapter 3, section 3.2). The LSFB Corpus files were annotated by deaf annotators, so the tokens of the three items in the sample had been previously tagged. There are 38 list buoys, 583 tokens of PALM-UP and 236 tokens of SAME,

[1] Nonmanuals are also taken into account as complementing manual activity and helping in the disambiguation of some functions (see sub-sections 6.3.3, 6.4.3 and 6.5.3 below).

which makes a total of 857 tokens of potential DMs. These tokens were inspected and the discourse-marking status of some of them was confirmed on the basis of three criteria: to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes (see chapter 5; sub-sections 5.2.2, 5.3.2 and 5.4.2). Table 6.1 contains the total number of occurrences of the three DM candidates and the number of tokens that have a discourse-marking status.

Token	**Total of occurrences**	**DM status**
LIST BUOY	38	14
PALM-UP	583	347
SAME	236	110

Table 6.1: Number of list buoys, PALM-UP and SAME in C2

If a token had a discourse-marking status, it was given different tags concerning the type of DM (on a scale of relationality), its macro-function (the domain) and its micro-function.[2] In SpLs, DMs are identified using pragmatic and functional criteria (Bolly, 2009). In SLs, the same criteria apply but the modality enables meaning to be conveyed not only by manual but also by non-manual marking. Since some studies claim that the meaning of list buoys (Davidson, 2012) and PALM-UP (McKee and Wallingford, 2011; van Loon, 2012) is conveyed by non-manual marking (and the same could be hypothesised for the sign SAME), each DM token was given different tags concerning the accompanying non-manual marking (pp.54-55). Finally, each DM token was given a position in the clause, the basic discourse unit (Degand and Simon, 2005, 2009a,b) and the turn (see chapter 3, section 3.3, for the full annotation template).

The following sections will be devoted to the description of list buoys (6.3), PALM-UP (6.4) and SAME (6.5) when they have a discourse-marking status. In each section, five aspects will be described: (i) frequency of occurrence per genre, which will cast light on the genres where these discourse markers are more likely to occur; (ii) frequency per signer, which will provide further evidence to back up the studies claiming that some items are either dependent on the signer's style or age sensitive; (iii) functions of each DM, which will be the first picture capturing their different uses in natural discourse; (iv) their position (in the clause, the basic discourse unit and the turn), which is a feature that has rarely been analysed in the SL literature on DMs; and (v) the function-position paradigm, which will refine the description of each DM. The last section (6.6) highlights the main findings and contributions of this chapter to the domain.

[2]The analysis of non-discourse-marking functions of the three types falls beyond the scope of this dissertation. I refer the reader back to chapter 3, section 3.3, to see the controlled vocabularies containing the possible range of non-discourse-marking functions for list buoys, PALM-UP and SAME; and to chapter 5 to see some examples.

6.2 Background

Before going into detail with each DM, the possible tags that can be assigned to a DM to describe its functions and positions will be presented (6.2.1 and 6.2.2).

6.2.1 Describing the types, domains and functions of DMs

The protocol used in this dissertation for the annotation of DMs (Crible, 2014) provides a wide definition of DMs that includes "connecting devices that signal a discourse relation such as cause or contrast, as well as items functioning on other semantic levels such as text-structuring, metadiscursive or interpersonal" (ibid., p.15). This diversity within the DM category is captured with three parameters: type of DM, domain (or macro-function) and function (or micro-function). The domain and the function can be doubled in order to avoid arbitrary choices (e.g. when 'so' in English expresses consequence and punctuation, and no function seems to be predominant, a double tag is given). The three parameters are detailed below in the order of annotation, i.e. from the most general to the most concrete.

6.2.1.1 Type of DM

In the DM category, there are items of a 'conjunctive' nature (e.g. 'but' in English), whereas there are others showing no linking function at all (e.g. 'well' in English). There are three possible values that define the type of DM (ibid.):

- **Relational:** DMs that signal a relation between a host unit and a clause, a host unit and several units (e.g. thematic or informational units), and a host unit and the context.

  (105) *Mary likes pizza* ***and*** *George likes ice-cream.*

- **Non-relational:** DMs that "do not explicitly signal a relationship but rather signal various metadiscursive functions related to word processing, interpersonal management, structuring and punctuating speech" (ibid., p.16).

  (106) *She won't read that novel,* ***well****, it's not the kind of book she likes.*

- **Both:** DMs that express a discourse relation and non-connecting function at the same time.

  (107) *The teacher may not come,* ***so****... give the students something to do.*

6.2.1.2 Domain

The domain (or macro-function) groups the different functions that can be fulfilled by DMs (i.e. cause, consequence, punctuation, etc.) into some sort of larger category. The domain provides "a description by means of a bundle of features" (Cuenca, 2013, p.196) that contributes to the description of DMs in large corpora as it provides a

more general picture of the genres that attract certain type of functions in a language or languages (Crible, 2014). There are four domains (ibid.):

- **Ideational:** DMs that signal a relation between two discourse objects such as cause, consequence, etc. that exist in the real world.

  (108) *The fields are dry* ***because*** *it has not rained for months.*

- **Rhetorical:** DMs that express the speaker's meta-comment on his/her phrasing as in (109) as well as pragmatic relations between two discursive events such as subjective claims, implicit assumptions or speech-acts as in (110).

  (109) *You are not working hard enough,* ***I mean****, you should focus on your tasks.*

  (110) *She must be sick* ***because*** *she did not come to the office.*

- **Sequential:** DMs in this domain "explicitly signal the progressing steps of speech and thought" (ibid., p.18) and include the structuring of discourse segments at macro and micro-level as in (111), as well as the management of pauses as in (112).

  (111) *His parents gave him several instructions.* ***First****, he could not invite friends.* ***Second****, he had to come back home early.* ***Third****, he had to take care of his granny.*

  (112) *I won't take a vacation this year,* ***I don't know****, it depends on the boss.*

- **Interpersonal:** DMs that manage the exchange between speakers calling for attention or showing understanding.

  (113) *We expected that to happen,* ***you see****?*

6.2.1.3 Function

The function (or micro-function) "specifies the discourse relation or otherwise pragmatic function of the marker" (ibid., p.8). There is a closed list of thirty functions to which an additional function extracted from Bolly and Crible (2015) (a multimodal typology for the annotation of DMs that focuses on the speech-gesture interface) is added (see Table 6.2). The functions fulfilled by the three DMs under study will not be defined and exemplified here but in the corresponding section.

Type of DM	Relational / Non-relational / Both			
Domains	Ideational	Rhetorical	Sequential	Interpersonal
Functions	Cause Consequence Temporal Contrast Concession Condition Exception Alternative	Motivation Conclusion Opposition Relevance Reformulation Hedge Comment Specification Emphasis	Opening Closing Resuming Topic-shifting Quoting Enumeration Addition Punctuation Planning	Monitoring Face-saving Disagreeing Agreeing Elliptical

Table 6.2: Summary table of the values that describe the type of DM, domain and function

Note that the three parameters (type of DM, domain and function) are interdependent: the domain contains a restricted set of functions as illustrated in Table 6.2 and each function is given a type of DM (relational, non-relational or both) regardless of the domain. As a result, sometimes it is unavoidable to talk about the functions when dealing with the type of DM or with the domain.

6.2.2 Describing the position of DMs

In SpLs, the position of DMs has traditionally been considered one of their defining features and is now attracting more and more attention from scholars (see Briz Gómez and Pons Bordería, 2010; Estellés and Pons Bordería, 2014; contributions in Beeching and Detges, 2014; Uygur-Distexhe and Degand, 2015; among other works). In the first publications, DMs were said to occur in the initial position (Schiffrin, 1987; Hansen, 1997; Fraser, 1999; Schourup, 1999), whereas the medial and final positions were possible in few cases (Fraser, 1999). More recent studies have moved on from this old conception and have found that the "[utterance-final] position, while apparently less frequent, is not exceptional (in speech)" and, indeed, some DMs are restricted to this position (Degand, 2014, p.152).

At present, the position is investigated in terms of a functional paradigm. That is, the function of DMs is considered to be related to a certain position in a certain type of unit (Briz Gómez and Pons Bordería, 2010; Estellés and Pons Bordería, 2014). Furthermore, following Traugott (2012), some authors claim that the left periphery is likely to attract subjective meanings, whereas the right periphery attracts intersubjective ones (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). Hence, the study of the position provides a more fine-grained description of the function of DMs and a new approach to one of the main defining (and problematic) features of DMs, namely their polysemy.

In order to study the position of DMs, a theory of discourse units or a segmentation methodology is necessary to delineate units and assign a position in a coherent way.

In this dissertation, discourse units are delimited according to the Basic Discourse Units Model (Degand and Simon, 2005, 2009a,b) presented in chapter 4, section 4.3. The position is studied as regards the clause and the basic discourse unit (BDU). Additionally, the position of DMs in the turn is also investigated because it can shed light on the identification of polysemous DMs and on the interpretation of turn exchange (Fischer, 2000).

6.2.2.1 In the clause

The clause is defined in terms of Dependency Syntax (Blanche-Benveniste et al., 1990) as an utterance that contains a governor and its governed elements. There are seven possible values that describe the position of DMs in the clause. These values are mainly inspired by Degand (2014); Degand et al. (2014) and some ideas are taken from Crible (2014) with some adaptations:[3]

- **Left peripheral position:** the marker is to the left of the clause outside its dependency structure like the three DMs in example (111) repeated here as (114).

  (114) *[His parents gave him several instructions] <**First**> [he could not invite friends] <**Second**> [he had to come back home early] <**Third**> [he had to take care of his granny]*

- **Initial position:** the marker is at the beginning of the clause and somehow participates in the dependency structure as in conditional clauses as in (115).

  (115) *[**If** it doesn't rain, I'll go to the park]*

- **Medial position:** the marker is embedded in the clause between a governed element and the governor as in (116).

  (116) *[This issue is **sort of** delicate]*

- **Final position:** the marker is within the dependency structure of the clause after the governor (e.g. subordinate clauses introduced by subordinating conjunctions such as 'because') as in example (108) repeated here as (117).

  (117) *[The fields are dry **because** it has not rained for months]*

- **Right peripheral position:** the marker is to the right of the clause outside its dependency structure as in example (113) repeated here as (118).

  (118) *[We expected that to happen] <**you see**>*

[3] The examples that illustrate the positions in the clause are fictive and frequently copied from sub-section 6.2.1.2. Following the conventions in chapter 4, sub-section 4.2.3.1, clauses are delimited by square brackets and DMs by angle brackets.

- **Independent:** the marker is the only element of the syntactic unit with no surrounding clause nearby as in (119).

  (119) - *[She had difficulties in Physics]*
  - *<**That's right***>

- **Interrupted:** the position of the marker is unclear because the clause is either interrupted or incomplete as in (120), i.e. 'so' could express consequence or mark the end of the turn.

  (120) - *[It's not important]* *<**so***> (interruption)
  - *Sorry?*

When a DM is surrounded by two clauses as in (114), it can be confusing to assign it a position. Segmentation into BDUs provides an additional layer of analysis that helps decide which position applies. For instance, if in (114) there were a BDU boundary after 'first', 'first' would be in the right periphery of both the clause and the BDU. However, if the BDU boundary were before 'first', 'first' would be found in the left periphery of both the clause and the BDU.

6.2.2.2 In the basic discourse unit

BDUs are delimited where the boundaries of syntactic units (clauses) and prosodic units coincide (Degand and Simon, 2005, 2009a,b). There are eleven possible values (inspired by Degand et al. (2014) with some adaptations) that describe the position of DMs in the BDU. From these eleven values, four refer to the elements that are found on the left side of the BDU and four are their counterparts for the right side. The other three values correspond to the medial position, independent and interrupted. The following values are assigned to elements found on the left side of the BDU and the examples that illustrate them (except one) are presented in chapter 4, sub-section 4.2.3:[4]

- **Syntactico-prosodic left periphery:** the item is found to the left of the clause, both syntactically and prosodically detached (i.e. a regulatory BDU) as in example (20) simplified here as (121).

  (121) *<**bon***> /// *<mais> [pas nous]* ///
  '<**well**> /// <but> [not us] ///'

- **Syntactic left periphery:** the item is found to the left of the clause, syntactically detached but prosodically integrated as in example (122) copied from (Degand et al., 2014) and simplified here.

  (122) *<**alors***> *[il y a deux raisons]* ///
  '<**so**> [there are two reasons] ///'

[4] In the following examples, /// delimit the prosodic unit.

- **Prosodic left periphery:** the item is found to the left of the clause, syntactically integrated but prosodically detached as in example (18) simplified here as (123).

  (123) ***[l'invention du semestre européen*** */// qui soumet à l'approbation préalable de la commission /// les budgets des états nations /// nous ramène à une situation du droit de véto /// antérieure à la grande révolution de dix-sept-cent-quatre-vingt-neuf] ///***
  '[**the invention of the European semester** /// which submits to the prior approval of the commission /// the national budgets /// brings us back to the situation of the veto right /// previous to the great revolution of seventeen eighty nine]///'

- **Initial position:** the item is found at the beginning of the BDU and it is syntactically and prosodically integrated as in example (17) simplified here as (124).

  (124) *<euh>* ***[la première manifestation la première journée de grève*** *c'était le mouvement s'essouffle] ///*
  '<er> [**at the first demonstration on the first day of the strike** it was the movement ran out of steam ///'

- **Medial position:** the item can be embedded in the clause or not, but this item cannot be the first or the last item of the BDU as in example (21) here simplified as (125).

  (125) *[j'en remercie* ***<d'ailleurs>*** ***<cher Hervé>*** ***<cher Alain>*** *tout spécialement les ministres de la défense qui sont parmi nous ce soir]*
  '[I thank <**by the way**> <**dear Hervé**> <**dear Alain**> in particular the ministers of defence who are among us tonight]'

The counterparts for the right positions, which share the same properties as the left positions, are the following:[5]

- **Final position:** the item is found at the end of the BDU and it is syntactically and prosodically integrated.

- **Prosodic right periphery:** the item is found to the left of the clause, syntactically integrated but prosodically detached.

- **Syntactic right periphery:** the item is found to the right of the clause, syntactically detached but prosodically integrated.

[5]No examples are given here to illustrate these values because, to the best of my knowledge, studies on the peripheries following the Basic Discourse Units Model have focused on the left periphery so far. Although this may be seen as a shortcoming, the examples given for the left periphery are illustrative enough to enable the reader to understand the same concept for the right periphery.

- **Syntactico-prosodic right periphery:** the item is found to the right of the clause, both syntactically and prosodically detached (i.e. a regulatory BDU, see 4.2.3.1).

Finally, two values were added in order to take into account all the cases in C2:[6]

- **Independent:** the item is the only element of the syntactic unit with no surrounding clause.
- **Interrupted:** the position of the item is unclear because the clause is interrupted or not completed.

Derived from these definitions, the positions in which DMs will commonly be found are (for both the left and right side) the syntactico-prosodic periphery, the syntactic periphery, the medial position, an independent position and interrupted. That is, the positions in which the items are not syntactically integrated because of the definition of DMs.

6.2.2.3 In the turn

The position of DMs in the turn is the last variable taken into account for their description in this dissertation. In contrast to the position in the clause and the BDU, the position in the turn follows Crible (2014) who takes this parameter from Bolly et al. (2015). According to Fischer (2000), DMs may fulfil different functions with regard to the exchange of the speaker's role in conversation. These functions include turn-taking, turn-holding, turn-yielding, or supporting turns.

There are two reasons that motivate the study of DMs and their position in the turn. On the one hand, the position in the turn can shed light on the identification of polysemous DMs such as 'so' in English. If it is found in the initial or final position in the turn, it is likely to fulfil a function of the sequential domain such as starting or ending a turn; whereas if it is found in the medial position, it is likely to express consequence (ideational domain). On the other hand, the interaction of DMs and their position make it possible to interpret turn exchange (ibid.). So far, little research has been carried out for SLs on this topic (Bono et al., 2014; Casillas et al., 2015; De Vos et al., 2015; Mesch, 2016) and not from the point of view of DMs, which would further our knowledge on how exchanges take place between signers.

In this research, turns are delimited by the change of speaker. So even if there are long pauses in the signer's turn, it remains the same turn. In addition, if signers overlap when communicating, one turn is delineated for each unless one signer stops what s/he is saying and answers the other. As for the position, the four possible values and their definitions are the following:

- **Turn-initial:** the marker is the first element of the signer's turn and there can be no signs before.

[6] No examples are given either for these two cases as they were not found in the literature. However, this will not pose problems for understanding because their definitions are very similar to the same values that apply for the clause.

- **Turn-medial:** the marker is in any position of the signer's turn excluding initial, final and whole turn.

- **Turn-final:** the marker is the last element of the signer's turn, either by choice or by interruption.

- **Turn:** the marker constitutes the signer's entire turn and includes cases of co-occurrence or repetition of markers.

6.3 List buoys

List buoys are numeral signs held and used to make associations with from one to five ordered or unordered entities (Liddell, 2003). The digits of a list buoy can be extended from the beginning, i.e. static list buoys, or they can be extended in some sort of chronological order or as they come to the signer's mind, i.e. sequentially built list buoys (Nilsson, 2007). Regardless of how the list buoy is presented, the index finger of one hand touches one finger of the hand holding the list buoy before or after the description of an entity.[7] List buoys may remain or drop during the chunk of discourse related to this entity until the appearance of the next numeral form (see chapter 5, sub-section 5.2.1). In this research, no evidence was found relating the form of the list buoy (sequentially built or static, held during a chunk of discourse or dropping after its articulation) and its (non-)discourse-marking status.

As mentioned in the introduction (6.1), there is a total of 14 discourse-marking list buoys in C2. When the term 'list buoy' is used, it refers to all the digits that build a unique entity (from one to five digits). List buoys (and not the digits) are taken into account when counting the total of tokens of DMs. The reason for doing so is that the number of list buoy digits depends on the number of items that the signer wishes to mention, which is a different type of semantic-pragmatic factor than the choice of using list buoys at all. In the sample, the 14 discourse-marking list buoys found make up a total of 31 digits.

List buoys will be used to talk about frequencies, whereas digits will be used to talk about their position in discourse and the function-position paradigm. For the functions, both list buoys and their digits will be taken into account because there is one signer in C2 who occasionally uses one digit of the list buoy with a function that is different from the general function of the list buoy. The other signers do not do this at all: the same function is kept for all the digits of the same list buoy. All these aspects are explained in the following sub-sections.

[7] There are cases in which the list buoy is manipulated, but the function is not discourse-marking so it is not included here. There are also other cases in which list buoys are not touched by the other hand. However, they are not found in this sample so their discourse-marking status cannot be confirmed or negated at this point.

6.3.1 Frequency per genre

The expository genre (dialogues in which signers need to explain their hobby, their job or their passion giving details about the equipment that is needed, the specific gestures and actions, the rules that need to be followed, etc.) attracts the highest proportion of list buoys (seven occurrences). The metalinguistic genre (discussion about variations in LSFB) contains three list buoys, whereas the argumentative (discussion about hearing and deaf culture) and narrative (explaining a past memory) genres contain two list buoys each. Figure 6.1 illustrates these numbers.

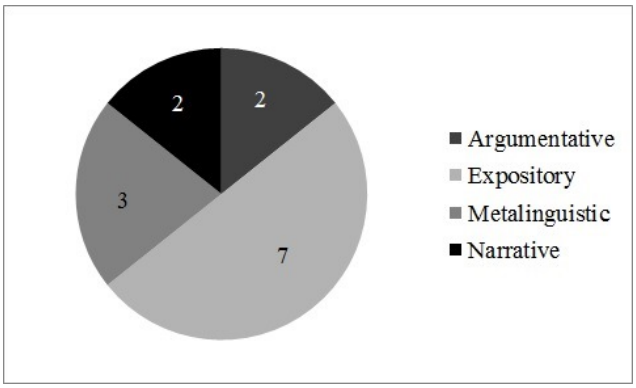


Figure 6.1: Distribution of the 14 discourse-marking list buoys per genre in C2

This distribution of list buoys is somehow surprising as, for instance, one would expect the argumentative genre to have more discourse-marking list buoys. They could be seen as a useful device to present arguments in favour of or against the advantages and disadvantages of being deaf in comparison to being hearing. However, the content of the dialogues that resulted from this task aiming to elicit an argumentation varies greatly from one age group to another. The younger signers are the only pair of informants to present arguments and to discuss the pros and cons, whereas middle-aged and older signers experience difficulty doing so. They usually explain their personal experience with hearing people, but they struggle to provide arguments. This difference between age groups may be due to the different levels of education that signers have received. Middle-aged and older signers in C2 have not attained a high level of education (they did not go beyond a professional degree) and have probably never been taught to debate. Conversely, the younger signers have gone to university and they have had to learn to present arguments for their assignments.

What seems to really make a difference in the distribution of list buoys is the degree of preparation. Previous research on list buoys in LSFB (Gabarró-López and Meurant, 2014a) and in German SL (DGS) (Hansen and Heßmann, 2015) proves that the more a discourse is prepared, the more it is likely to contain list buoys. Along these lines, the expository genre has the highest proportion of list buoys because it is a semi-prepared dialogue (signers are given some time to prepare their productions as well as a sheet of paper in case they want to take some notes). In contrast, the productions of the other three genres are spontaneous, i.e. the moderator asks a

question and the signers have to talk about it without any time to prepare what they want to say.

Another interesting point is that narratives have the same number of tokens as the argumentative and metalinguistic productions. Gabarró-López and Meurant (2014a) claim that list buoys are not used in narratives in LSFB. In the narrative productions of this study, the informant tells a tale in one and retells a cartoon in the other. However, list buoys are found in another piece of research on Spanish SL (LSE) in which narrative productions were elicited (Villameriel, 2014). The difference though is that the informants in this last study were not only asked to recount a piece of two films, but they also had to answer some questions about them such as the parts in which the stories are divided or the characters that appear in them. These questions prompt the use of list buoys in the answer. All in all, list buoys may be used in narratives if there is something else to tell in addition to the description of the setting. In the narrative productions studied in C2, signers recount a past memory that does not always involve the description of a setting but rather the explanation of a situation.

6.3.2 Frequency per signer

Hansen and Heßmann (2015) claim that the use of list buoys in DGS depends on the signer's style: some signers often use list buoys, whereas others use them rarely. The analysis of C2 reveals that the same is true in LSFB as illustrated in Figure 6.2.

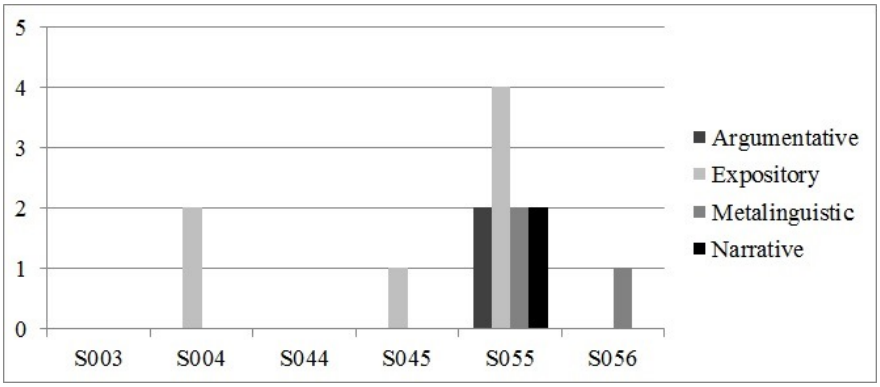


Figure 6.2: Distribution of discourse-marking list buoys per signer in C2

The graph shows a striking difference between S055 and the other signers. S055 produces 10 discourse-marking list buoys (i.e. 71% of the total); whereas S004 produces two, S045 and S056 produce one, and S044 and S003 produce none.[8] Interestingly, S055 and S056 are two women in their 20s born into deaf families who studied to degree level, but their use of list buoys is completely different from each other. These

[8] In sub-sections 6.4.2 and 6.5.2, an average of the total number of discourse-marking PALM-UP and SAME with respect to the total number of signs is given in order to avoid a biased picture of the frequency per signer. However, this average is not given in this sub-section because in no case did the number of list buoys per signer get to 1/100.

numbers support that the use of list buoys is idiosyncratic as neither age nor gender can justify it. Further research with a larger sample of signers would be needed to prove whether there are other variables such as the education model that influence the use of this device.

6.3.3 Type of DM, domains and functions

6.3.3.1 Type of DM

Bearing in mind the function that is given to list buoys in previous works (Liddell, 2003; Villameriel, 2008, 2014; Davidson, 2012; Jarque, 2014), it seems plausible to say that list buoys are relational discourse markers. Figure 6.3 shows that list buoys are indeed mostly relational (12 cases), but there are two cases in which they are relational and non-relational (i.e. they have received the tag 'both'). Surprisingly, the digits of the 14 discourse-marking list buoys may not share the same function, although this is an idiosyncrasy of one signer. Therefore, this graph illustrates the tendency of discourse-marking list buoys, but there are three cases in which the digits of the same buoy present different functions.

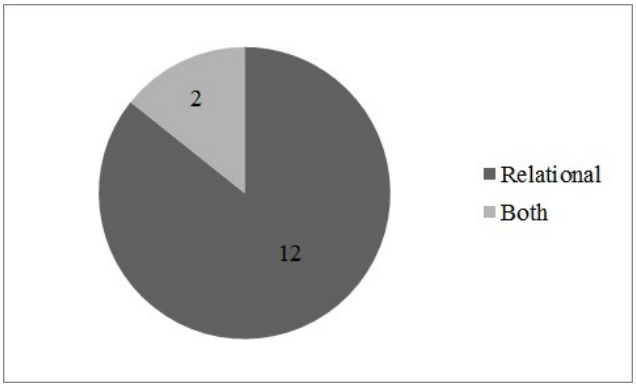


Figure 6.3: Distribution of discourse-marking list buoys according to the scale of relationality in C2

From the 12 relational list buoys, there are two that have at least one digit with a double function (one relational and one non-relational, i.e. B meaning 'both') or a different function. One of these two list buoys is made up of six digits as illustrated in Table 6.3.[9] The signer is explaining different aspects of kitesurfing, each of them introduced by a digit. The fourth and the fifth digits have a double function: enumeration (ENU, i.e. indicating the sequential ordering of discourse segments) and planning (PLAN, i.e. holding the floor in order to plan upcoming speech).[10] The signer not only uses the digits to enumerate but also to think about what comes next. Both digits belong to the sequential domain (SEQ), but the function of enumeration

[9] See the annotation conventions of list buoy digits on p.51.

[10] As mentioned in 6.2.1.3, these two functions together with those of alternative and emphasis are described in detail in 6.3.3.3.

is fulfilled by relational DMs (REL), whereas the function of planning is fulfilled by non-relational DMs.

	Digit	**Type of DM**	**Dom. 1**	**Funct. 1**	**Dom. 2**	**Funct. 2**
List buoy	LBUOY(6):FIRST	REL	SEQ	ENU		
	LBUOY(6):FIRST	REL	SEQ	ENU		
	LBUOY(6):ONE	REL	SEQ	ENU		
	LBUOY(7):SECOND	B	SEQ	ENU	SEQ	PLAN
	LBUOY(7):SECOND	B	SEQ	ENU	SEQ	PLAN
	LBUOY(3):THIRD	REL	SEQ	ENU		

Table 6.3: Relational list buoy with two digits having double functions

The other relational list buoy is made up of six digits as well, all of them enumerative except the last one which is used for planning (see Table 6.4). The signer is listing the situations in which she feels that her signing changes with the first five digits. The sixth digit does not introduce another element, but is used to plan upcoming speech.

	Digit	**Type of DM**	**Dom. 1**	**Funct. 1**
List buoy	LBUOY(4):THIRD	REL	SEQ	ENU
	LBUOY(3):THIRD	REL	SEQ	ENU
	LBUOY(4):THIRD	REL	SEQ	ENU
	LBUOY(7):FIRST-SECOND	REL	SEQ	ENU
	LBUOY(8):THIRD	REL	SEQ	ENU
	LBUOY(4):THIRD	NREL	SEQ	PLAN

Table 6.4: Relational list buoy with one digit having a different function

From the two relational and non-relational list buoys (i.e. 'both'), there is one that contains two digits. The first time the digit appears, it is used to express alternative and emphasis. The signer is explaining the modalities of kiteboarding (kitesurf and powerkite) and uses the digit to introduce powerkite. Afterwards, the list buoy drops and it is articulated again to plan upcoming discourse; i.e. the signer produces it in order to hold the floor and add more things about powerkite. The function of alternative (ALT, i.e. expressing that two arguments are alternative situations) is relational and belongs to the ideational domain (IDE) and that of emphasis (EMP, i.e. reinforcing the value of a neighbouring pragmatic function) is non-relational and belongs to the rhetorical domain (RHE), so the tag 'both' applies. The function of planning is non-relational but since the digit was first used with a relational purpose as well, the tag 'both' is kept for this list buoy.

	Digit	Type of DM	Dom. 1	Funct. 1	Dom. 2	Funct. 2
List buoy	LBUOY(2):TWO	B	IDE	ALT	RHE	EMP
	LBUOY(2):TWO	NREL	SEQ	PLAN		

Table 6.5: Relational and non-relational list buoy with two digits having different functions

In order to illustrate these three exceptions belonging to the same signer, Figure 6.4 shows the distribution of digits according to their scale of relationality.

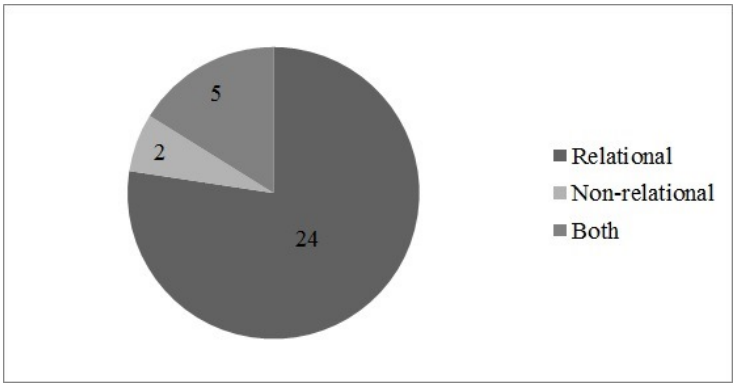


Figure 6.4: Scale of relationality for each digit in C2

As could be expected, the proportions are similar: digits used in C2 by the six signers are mostly relational (24), they are rarely non-relational (2) and occasionally both (5). This finding provides new evidence about the function and use of list buoys. On the one hand, list buoys have always been said to order entities in a structured way in the studies on DMs where they have been mentioned (Villameriel, 2008; Jarque, 2014). The data presented here reveal that their use in spontaneous and semi-spontaneous natural data can combine different functions within the same list buoy in addition to that of ordering. On the other hand, this function of ordering has never been considered from a wider point of view (that of the type of DM) because of the lack of studies in SLs that combine relational and non-relational DMs. This is the first time that list buoys have been categorised as mostly relational devices, although evidence is given for non-relational (less common) uses as well.

6.3.3.2 Domain

Figures 6.5 and 6.6 show the distribution of list buoys and their digits according to their domain. Most discourse-marking list buoys belong to the sequential domain (11 cases), whereas a minority belong to the ideational domain (three cases). The distribution of digits presents the same proportions: the sequential domain is by far the most widespread (28 digits) with the functions of enumeration and planning. There is one digit that constitutes a whole list buoy. It belongs to the ideational

domain and expresses alternative. The other two digits belong to the ideational and the rhetorical domain at the same time, and they express alternative and emphasis. One of these two digits makes up a list buoy. The other (illustrated above in Table 6.5) is the first digit (out of two) that integrates the list buoy: it expresses the double function of alternative and emphasis, and the second digit expresses the function of planning.

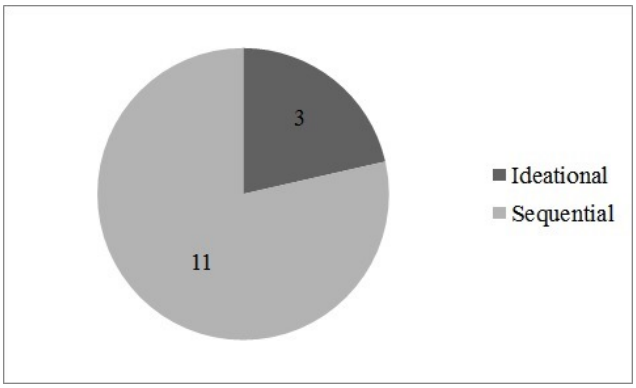


Figure 6.5: Distribution of discourse-marking list buoys in C2 according to their domain

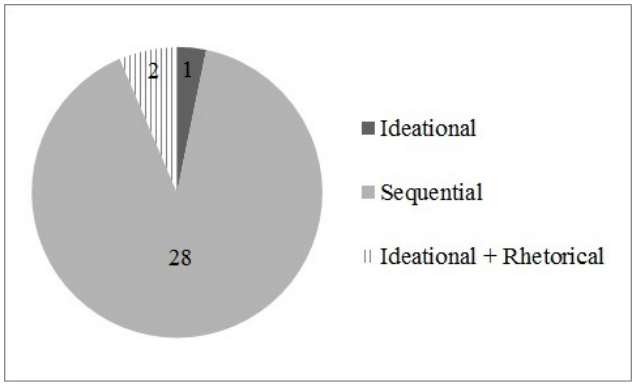


Figure 6.6: Domain of each digit in C2

In a nutshell, this categorisation into domains allows us to get an overview of the macro-functions that list buoys and their digits may have in LSFB. This perspective that bundles DM features in a more general category is unprecedented in SL literature, and it is still recent in SpL studies. However, it reflects that although list buoys may have different functions (which will be further detailed below), the predominating macro-function is sequential (which structures discourse segments and manages pauses).

6.3.3.3 Function

List buoys mainly have the function of enumeration (nine cases), although they can also have the function of alternative (three cases) and the function of addition (two cases) as shown in Figure 6.7. The three list buoys used as markers of alternative as well as those used as markers of addition are articulated by the same signer. Therefore, a larger sample would be needed to check whether the functions of alternative and addition are idiosyncratic or if they are shared by other signers.

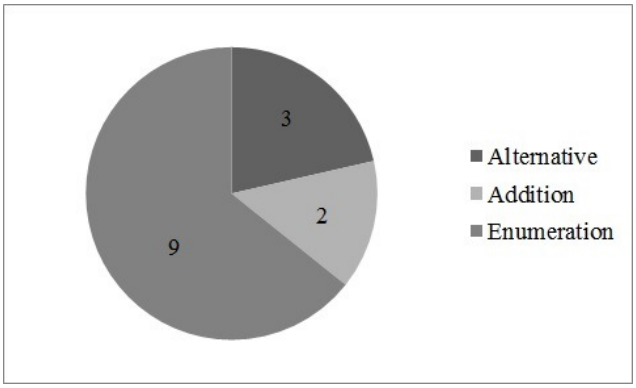


Figure 6.7: Distribution of discourse-marking list buoys according to their function in C2

As mentioned earlier, there are three list buoys whose global function combines with the function of planning. Planning upcoming discourse is not a general function of the list buoy but of one of the digits, and there is no other function alone in the digits that combines with the general function of a list buoy. The function(s) per digit can be observed in Figure 6.8.

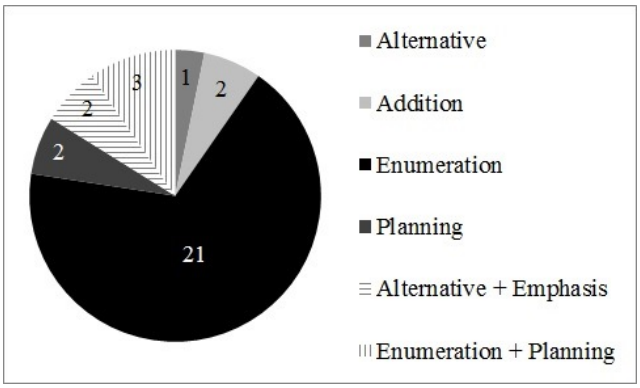


Figure 6.8: Function of each digit in C2

The most frequent function is enumeration (21 digits out of 31), whereas the others are represented by one or two digits. In what follows, each function will be explained in detail and exemplified. The tokens will be closely inspected in order to see whether a particular function goes with a particular form and what kind of linguistic material

is contained within the scope of list buoys and their digits. Finally, I will also give an account of the non-manual marking that goes with each function in order to see whether patterns exist.

Alternative (+ emphasis) The function of alternative expresses that two segments of discourse are alternatives, whether they are exclusive or not (Crible, 2014). This function is independent from emphasis; but since emphasis never occurs alone in any list buoy, it is included here. The function of emphasis "reinforces the propositional value of the utterance or of a neighbouring pragmatic function" and "mostly corresponds to cases of co-occurrences with another, semantically richer DM, or when it stresses another element" (ibid., p.23). In C2, there are two examples of alternative + emphasis. In one of them, the list buoy is preceded by the DM OR, and in the other, the list buoy is preceded by BUT.B HAVE SAME (see Figure 6.9).

(LSFB Corpus, session 27, task 15, signer S055, 03:17 - 03:22)

RH	IF	KITE	GSIGN	IT-IS
LH		KITE	GSIGN	IT-IS

RH	ON	WATER	GSIGN	BUT.B
LH	ON		GSIGN	BUT.B

RH	HAVE	SAME	PT:LBUOY-SECOND	POWERKITE
LH		SAME	**LBUOY(2):TWO** - - - - - - - - - - - - -	

'When it is on the water, it is called kitesurfing. But, on the other hand, there is also the powerkite.'

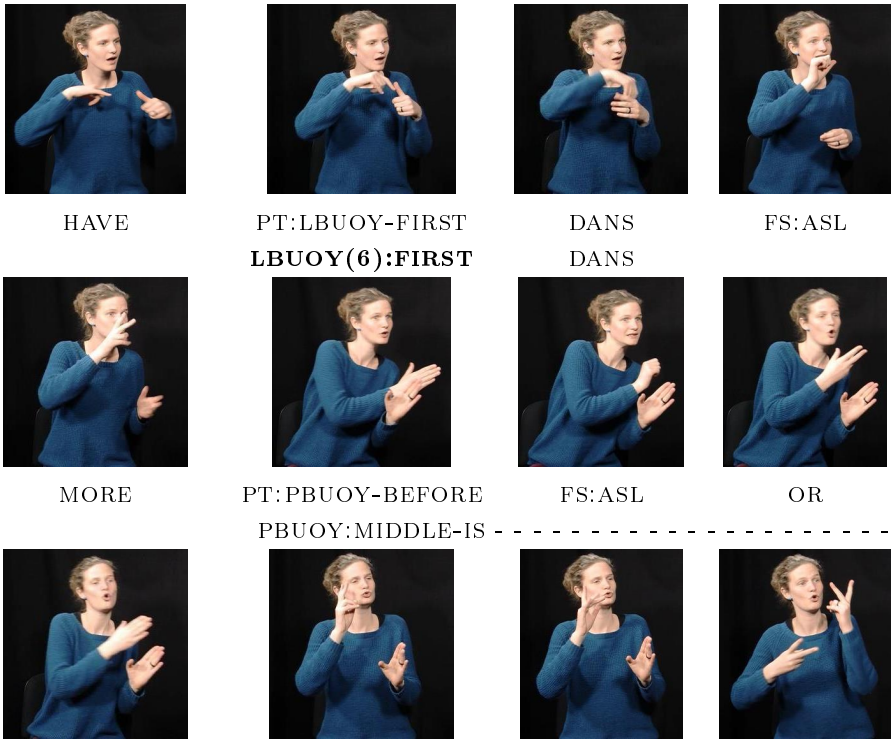
Figure 6.9: Example of a list buoy expressing alternative and emphasis

The signer explains the two modalities of kiteboarding; i.e. kitesurfing and the powerkite. To express these two alternatives (which are not exclusive), the signer uses LBUOY(2):TWO. That is, she only uses the second digit of a static list buoy (the digits

of the list buoy are extended from the beginning) and the first digit (which would correspond to the previous segment of discourse concerning kitesurfing) is not used at all. In addition, this list buoy reinforces the value of BUT.B which would express an epistemic pragmatic contrast (i.e. function of opposition from the rhetorical domain).

Of the three cases of list buoys expressing alternative, there are two in which the list buoy only contains one digit (figures 6.9 and 6.10) and one in which the list buoy contains two digits (the same digit drops and appears again, see Table 6.5 above). In Figure 6.9 and in Table 6.5, the form of the list buoy is a static 2 handshape (i.e. not sequentially built) as in the third picture of the third row of Figure 6.9. In contrast, the form of the list buoy in Figure 6.10 is a 6 handshape relating to the first alternative (see second picture in the first row). The signer is telling the addressee that International Signs can either be more ASL-like or contain more visual elements. The list buoy only introduces the part related to ASL without being further developed and the second alternative is introduced by the DM OR.

(LSFB Corpus, session 27, task 14, signer S055, 03:04 - 03:08)



'(International Sign) can be, on the one hand, more ASL-likely or it can be more visual.'

Figure 6.10: Example of a list buoy expressing alternative

Because of the small number of examples illustrating alternative, only a partial hypothesis can be made. On the one hand, the most common form for expressing

alternative is a 2 handshape. This form was previously reported in ASL by Davidson (2012). On the other hand, there is another sign showing some kind of contrast (pragmatic or not) such as OR or BUT.B when list buoys are used to introduce an alternative. The data reveal that when the list buoy has a 2 handshape, OR or BUT.B appear next or close to it so that their meaning is reinforced. Conversely, when the list buoy has a 6 handshape (referring to the first element), the other alternative is introduced by another contrastive marker.

Davidson (2012) claims that list buoys are coordinators which can be interpreted as either disjunction or as conjunction depending on non-manual marking. This seems to be the case in LSFB as well: the two list buoys with a 2 handshape are accompanied by a gaze directed at the addressee and a head tilt which is not found in the other functions. Hence, non-manual marking seems to follow particular patterns for the expression of alternative that, together with the context, may help disambiguate the function of list buoys.

The scope of list buoys expressing alternative varies from one token to another. In this dissertation, the scope is understood as the extension of the whole list buoy over discourse and it includes the segments of discourse before and after the marker that are related by the digits (e.g. Figure 6.9 illustrates the scope of a list buoy which is extended before and after the marker). The minimum of clauses that were found in the scope of list buoys was four and the maximum was 32. Each digit could bear from one to 31 clauses combined with other DMs, although the signer who produced these list buoys (S055) usually utters on average from two to 10 clauses per digit. Another interesting datum is that the digit is usually found at the beginning of the scope of the list buoy (there is usually one clause before but never more than three).

Addition This function "corresponds to a basic operation of addition within a topic or sequence, without any rhetorical or other value of specification or conclusion" (Crible, 2014, p.24). In Figure 6.11, S055 is telling S056 about the importance of eye contact when hearing parents communicate with their deaf children. The list buoy is used to add that the gaze can also express violence.

The two list buoys used to add information show the same patterns concerning the handshape, co-occurring DMs and non-manual marking. First, the handshape is a static 2 (see third row of Figure 6.11) and the first digit is not used for the preceding segment of discourse. Hence, the form seems to be the same as list buoys expressing alternative. Second, list buoys with the function of addition appear next to the fully-lexical sign SAME. However, they do not reinforce the pragmatic function of SAME as SAME itself already does so for another DM. For instance, SAME in Figure 6.11 reinforces PLUS, which is another DM adding information. SAME co-occurs with raised brows, which emphasises the pragmatic value. Third, the common point between the two list buoys with the function of addition is a gaze directed at the addressee. This finding supports the salience of non-manual marking in combination with the context in order to assign DM functions: although both list buoys share the

(LSFB Corpus, session 27, task 4, signer S055, 02:15 - 02:20)

RH	HAVE-NOT	IF-2H	HAVE-NOT	SEE
LH	HAVE-NOT	IF-2H	HAVE-NOT	SEE

RH	PALM-UP	LINK	PLUS	SAME
LH	PALM-UP	LINK	PLUS	SAME

RH	PT:LBUOY-SECOND	GSIGN	VIOLENCE	SEE
LH	**LBUOY(2):TWO** -			

'If there is not visual contact, then the link is broken. And there is also violence in the gaze.'

Figure 6.11: Example of a list buoy expressing addition

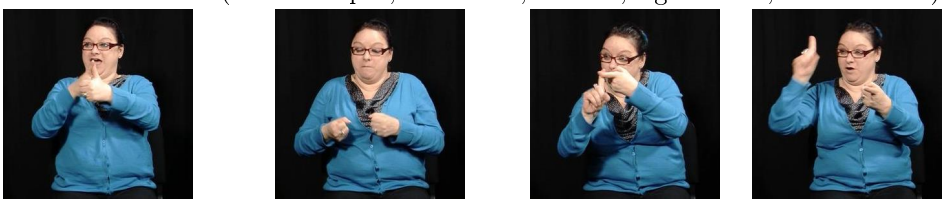
same forms when they express alternative and addition, the head tilt distinguishes between the two.

Similarly to list buoys expressing alternative, the scope of list buoys expressing addition is quite different if the two occurrences are compared. There is one list buoy that bears three clauses (illustrated in Figure 6.11), whereas the other bears a total of 20 clauses. In addition, there are other DMs such as PALM-UP that can be found within their scope as well as pause fillers (i.e. GSIGN for the cases of wiggling fingers). As for the number of clauses that the scope of each digit can contain, the digit in Figure 6.11 contained two clauses whilst the digit of the other list buoy contained 16 clauses. Once again, the digit is usually found at the beginning of the scope of list buoys (there is one clause before the digit in Figure 6.11 and four clauses in the other case).

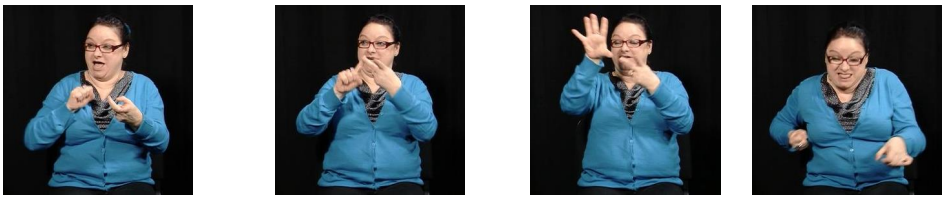
Enumeration This function "indicates a sequential ordering of discourse events, typically a list, structured by conventional items such as firstly" (Crible, 2014, p.24). It is by far the most common when a list buoy has a discourse-marking status and it

is not idiosyncratic (different signers use it). Figure 6.12 contains one example. The signer is listing the materials that are needed to make a door.

(LSFB Corpus, session 21, task 15, signer S045, 01:42 - 01:48)



RH	**LBUOY(6):FIRST**	WOOD	NAIL	MUST
LH	PT:LBUOY-FIRST	WOOD	NAIL	MUST



RH	TAKE	**LBUOY(2):SECOND**	TAKE	SAW
LH	TAKE	PT:LBUOY-SECOND - - - - - - - - - -		SAW

'First, you need to take a nail and a piece of wood. Second, you take a saw.'

Figure 6.12: Example of a list buoy expressing an enumeration

In contrast to list buoys expressing alternative or addition (which usually had a static 2 handshape), list buoys expressing an enumeration may start using a 6 handshape (see first picture of the first row in Figure 6.12) with the digits extended sequentially (from the nine cases, only one is a static list buoy; see Table 6.6). A reason that may explain the choice of sequentially built list buoys is the similarity between sequentially built list buoys and ordinals, and between static list buoys and cardinals. In both SpLs and SLs, ordinal numbers are used to express the position in a series, whereas cardinals are used for simple counting and to show quantity. The main difference in the articulation of ordinals and cardinals in LSFB is that the wrist is twisted for the first group of numbers and not for the second group.[11] The twist of the wrist is also present in sequentially built list buoys. This movement produced when articulating a number is semantically related to order and, thus, favours the use of sequentially build list buoys in enumerations instead of static list buoys.

The form of list buoys expressing enumeration presents more variants than list buoys expressing alternative or addition regarding the extension of digits, counting and pointing at the digits. To begin with, sequentially built list buoys do not need to be constructed following the handshape of the first item. That is, when list buoys start with a 6 handshape as in the example of Figure 6.12, one would expect the second digit to be articulated with a 7 handshape, the third with an 8 handshape, the fourth

[11] In LSFB, the numbers (from one to nine) are articulated with as many fingers extended as the number indicates, the palm facing the signer's body and fingers upwards. See the *Dictionnaire de LSFB en ligne* (`http://dicto.lsfb.be/`) for further details about the articulation of numbers.

with a 9 handshape and the fifth with a 5 handshape.[12] Likewise, when a list buoy starts with a 1 handshape, one would expect the following digits to articulate a 2, 3, 4 and 5 handshape. Surprisingly, the example in Figure 6.12 shows that in natural discourse both forms of building a list buoy can combine.

Second, the construction of list buoys frequently starts at the second digit of the list. Of the nine list buoys that express an enumeration in C2, only three start using the first digit of the list (see example in Figure 6.12). The other six start at the second or even the third digit because the previous segments of discourse have been enumerated using other DMs such as SAME or their introduction has been left to pragmatic inference as in the example of Figure 6.13. The signer is listing the features that help her identify the school that a deaf signing person attended. The first segment of discourse is not introduced by any marker, whereas the second is introduced by LBUOY(7):SECOND.[13] This articulation of list buoys beginning in the second digit must not be mistaken for the cases in which digits are articulated at the end of the segment of discourse they related to (see Table 6.6 below).

Third, even if signers can extend up to five digits of the hand in a static or a sequentially built list buoy, they only count up to three elements (rarely up to four, i.e. only one digit in C2). If there are more than three elements, the signers repeat the pointing to one of the other digits previously mentioned and thus break the logical ordering of elements (see Table 6.6 and Figure 6.14). The degree of preparedness and the dialogical setting may be the reason why this phenomenon happens. Although the discourse-marking status and functions of list buoys were not studied in the corpus of monologues of one signer (C1 was used to create the overview of buoys presented in chapter 5), it can be observed that the signer points up to the fifth digit of list buoys in prepared and semi-prepared productions. Furthermore, in LSFB, if the signer has more than five elements to mention, s/he can use the other hand (see the examples in the videos of the DVD *Grammaire de LSFB* by Sonnemans (2014)).

Fourth, data reveal that digits are not always pointed at in order. That is, when digits are extended, the signer can start enumerating in the third element, continue in the second and then the third again (see Figure 6.14 below for an example) or s/he can omit one of the fingers and jump to the next one. This is also related to the degree of preparedness. C2 only contains spontaneous or semi-prepared productions. In contrast, C1 includes prepared productions, and in two of them (one argumentative and one metalinguistic), the signer points to the digits from the first to the fifth. There are no changes in order or omissions, but each digit is pointed in chronological order to introduce a segment of discourse.

Fifth, the digit that is pointed at does not need to refer to the upcoming segment of discourse, but it can refer to a previous one as in the example illustrated in Table

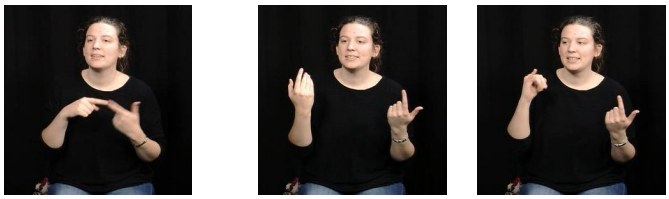
[12] See the annotation convention of list buoys in chapter 3, p.51.

[13] Although S056 is interrupted by S055, the function of the list buoy is enumeration because of the piece of discourse that comes next. Once S056 has answered the question of S055, S056 continues her explanation by giving the features that help her identify people who attended the school in Woluwe (a municipality of the Brussels-Capital Region).

(LSFB Corpus, session 27, task 14, signer S056, 06:14 - 06:17)

RH	CLOSE-MOUTH	SL	PT:POSS	SCHOOL
LH	CLOSE-MOUTH	SL		

RH	NS:BERCHEM	PT:POSS	PALM-UP	NOTICE
LH			PALM-UP	



RH	PT:LBUOY-SECOND	PALM-UP	IF
LH	**LBUOY(7):SECOND**	PALM-UP	

'Deaf people who do not use mouthings when they sign have gone to the school in Berchem. I've noticed that, yeah. Secondly, I don't know, if...'

Figure 6.13: Example of a list buoy starting in the second digit

6.6.[14] The signer is explaining what he likes to do in his free time. The segments of discourse in the first, second, fourth and fifth rows contain the four things he likes to do: to practice sports, to do some gardening, to do woodwork and to cut trees. The segment of discourse in the third row is the reason why the signer likes to practice sports and do some gardening. Interestingly, the first two digits of the list buoy occur after the segment of discourse they relate to, whereas the other two digits relate to the segment of discourse that occurs after the digit. Although the list buoy enumerates four activities, the signer repeats the pointings to the same digits as mentioned above.

In contrast to list buoys expressing alternative or addition (which always occurred next to a particular DM), list buoys expressing enumeration do not always occur after a particular DM. They are sometimes next to PALM-UP expressing punctuation or planning (see sub-section 6.4.3 for a more detailed account of these functions), which also belong to the sequential domain and help the signer structure his/her discourse. As for non-manual marking, no clear pattern can be observed. It seems

[14]LSFB Corpus, session 2, task 15, signer S004, 01:00-01:31.

Digit	Segment of discourse	Digit
	I like to practice sports	LBUOY(7):TWO
	I like erm to be active, to do some gardening	LBUOY(7):TWO
	I like to go out. I can't stay at home, it's like a prison	
LBUOY(5):THREE	I used to do woodwork, but nowadays I do it less	
LBUOY(5):THREE	I liked to cut trees, big trunk trees, for heating when I was in Arlon. But I came to Namur and I can't do it anymore	

Table 6.6: Example of a list buoy with digits unordered and repeated

that a movement of the head excluding tilts (i.e. a head nod, a turn, a movement forward or backwards) is frequently layered with list buoys expressing enumeration. The gaze can be either directed to the addressee or not, the mouth open or closed, and mouthings are rare. This lack of patterns in adjacent DMs and non-manual marking reflects signer variation as the function of enumeration is the only one used by different signers.

The scope of list buoys expressing enumeration is even more variable than in the previous functions. List buoys can contain from two to 148 clauses together with other DMs such as PALM-UP and SAME or fillers such as GSIGN. This difference in numbers is due to the different discourse levels at which list buoys can work and which can be well illustrated using The Question Under Discussion (QUD). The QUD (Büring, 2003) conceives of the discourse as a tree with implicit questions and assertions (which are chunks of discourse). As mentioned in chapter 5, sub-section 5.2.3, list buoys can facilitate the switch from one move (one branch of the tree) to another or can connect assertions. When list buoys connect assertions, their scope tends to contain few clauses but when list buoys participate in the QUD, their scope contains many clauses because they are found at a higher level of the discourse tree.

As for the number of clauses that the scope of each digit can contain, the minimum in the data was one and the maximum 75. However, the average is that signers (particularly, S004, S045 and S056) produce from one to four clauses. S055 is above average (from two to 10 clauses per digit) and the only signer who on occasions produces a higher number. Once again, it depends on whether the digit participates in the switch from one move to another or connects assertions. That said, the first digit of a list buoy expressing enumeration frequently occurs near the beginning of their scope similar to the functions of alternative and addition. As a matter of fact, there are digits which are the first sign of the scope whereas in other cases there are up to five clauses before.

Planning This function is extracted from the multimodal typology of DMs created by Bolly and Crible (2015). Interestingly, they separate the function of punctuation from the function of planning, whereas Crible (2014) puts the two under the function of punctuation which is assigned to "[items that signal] the intention to hold the floor while planning the upcoming speech, or for any other reason not mentioned by the other sequential functions" (p.24). Bolly and Crible (2015) define the function of punctuation as separating, articulating and/or stressing the beginning or end of discourse units, whilst the function of planning is related to holding the floor in order to plan upcoming speech. The analysis of DMs in C2 better fits the two categories established by Bolly and Crible (2015) rather than the only category established by Crible (2014).

There is no list buoy with the general function of planning, although three list buoys (two expressing enumeration and one expressing alternative) have some digits with the function of planning. In fact, these digits may have two functions (enumeration + planning) or only the function of planning (in one list buoy expressing alternative and in another expressing enumeration). Figure 6.14 illustrates one list buoy which, in general, expresses an enumeration. However, there is one digit that has the function of enumeration + planning (first picture of the third row) and another that has the function of planning alone (first picture of the fourth row). The signer is listing the situations in which she feels that her signing changes.

Digits expressing planning do not have a particular handshape. When this function is assigned to a digit, the signer holds the pointing that touches the list buoy or s/he repeats the pointing several times. Another particularity of the digits with this function regarding non-manual marking is that the gaze is never directed to the addressee and the chin is frequently down. Although the function of planning was only used by one signer (thus a larger sample would be needed to test whether it is idiosyncratic or not), non-manual marking is the same as was found for PALM-UP and SAME used to plan upcoming speech. Since planning is never the function of a list buoy, nothing can be said about the form and the scope as a whole. Concerning the scope of each digit, it is variable and comprises from five to 29 clauses together with other DMs and pause fillers.

(LSFB Corpus, session 27, task 14, signer S055, 00:12 - 01:14)

RH	PT:LBUOY-THIRD	WITH	WEBCAM	WHEN	(...)
LH	**LBUOY(3):THIRD**	WITH	WEBCAM	WHEN	

RH	PT:LBUOY-SECOND	GSIGN	SAME	HERE	(...)
LH	**LBUOY(7):SECOND**	- - - - - - - - - - -	SAME(7)	HERE	

RH	PT:LBUOY-THIRD	SAY	PALM-UP	SORRY	(...)
LH	**LBUOY(8):THIRD**	- - - - - - - - - - -	PALM-UP	SORRY	

RH	PT:LBUOY-THIRD	PROFESSIONAL	PALM-UP	IF	(...)
LH	**LBUOY(4):THIRD**	PROFESSIONAL	PALM-UP	IF	

RH	PT:LBUOY-THIRD	JOIN	PRESENT	NS:FFSB-JEUNES	(...)
LH	**LBUOY(4):THIRD**	JOIN	PRESENT	NS:FFSB-JEUNES	

'Third, when there is a camera, I feel that my signing changes. It is more standard, that's it. When I'm with other people, I copy their signs and we have codes. Second, erm... here I also feel that my signing changes because there are cameras. I feel that I adopt a correct position and not a cool one. Second... so at the end I'll tell the moderator "sorry this session was a fail". Just joking! Third, signing also changes in the professional domain. For instance, if I'm in a meeting at the FFSB-Jeunes, my signing is more organised. Third... if I have to present to the FFSB-Jeunes my signing is more accurate. When I'm with friends, it's completely different. It's more relaxed.'

Figure 6.14: Example of a list buoy with digits expressing enumeration and planning

6.3.4 Position

To the best of my knowledge, the position of list buoy digits in discourse has never yet been investigated in any SL. The three graphs of this section illustrate the distribution of list buoy digits according to their position in the clause (Figure 6.15), in the basic discourse unit (Figure 6.16) and in the turn (Figure 6.17). As could be expected from at least the most common function (i.e. enumeration), digits are usually found in the left periphery of clauses totalling 24 occurrences. It derives from this that the most frequent position is the syntactic left periphery of the basic discourse unit (BDU) with 16 cases. The medial position is also common (nine cases) as it not only includes items inserted into the dependency structure of a clause, but also items that are neither the first nor the last of the BDU. In other words, a digit can be found in the left periphery of the clause but in the medial position of the BDU because there is a clause before the digit that is found within the same BDU. This is the case for five digits. Of the four digits left, two are in the medial position of both the clause and the BDU and one is in the final position of the clause and the medial position of the BDU.

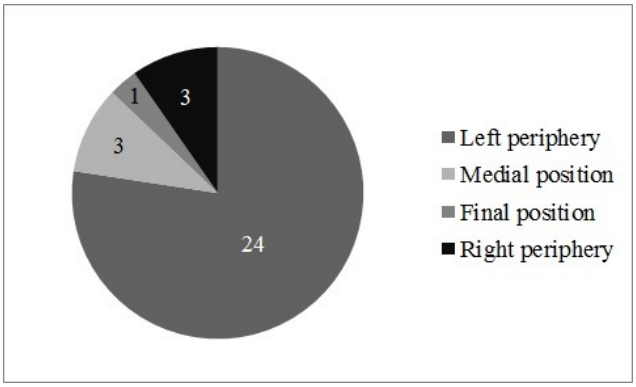


Figure 6.15: Position of each digit in the clause in C2

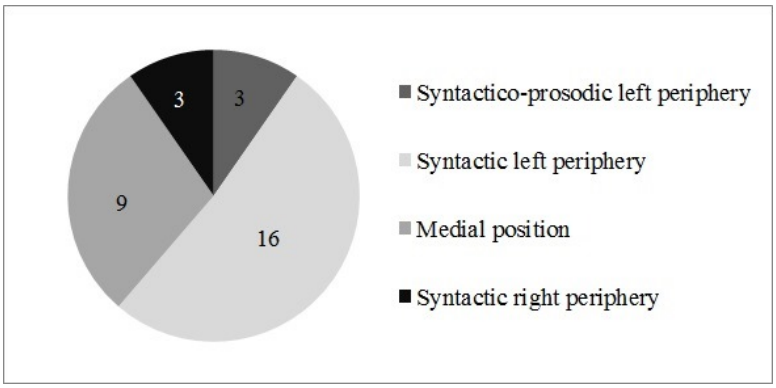


Figure 6.16: Position of each digit in the basic discourse unit in C2

Concerning the turn, there is only one case in which a list buoy digit is found in the turn-initial position. This digit is very close to the end of the same signer's

turn (there are only 450 ms in between). This case appears in task 15 of session 21 (01:38 - 01:53), in which signer S045 tells S044 that he has forgotten to mention the materials he uses at work, S044 asks which materials and then S045 begins another turn with the enumeration of materials.

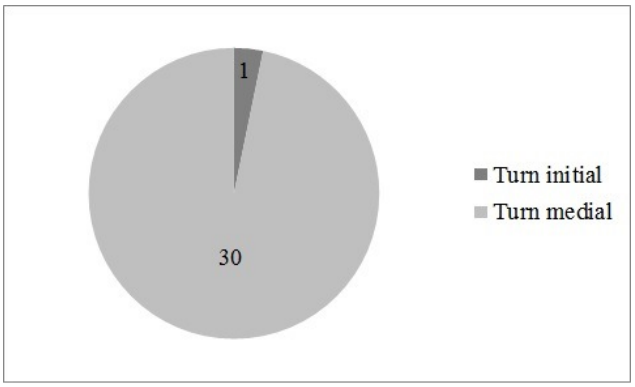


Figure 6.17: Position of each digit in the turn in C2

These results about the position of list buoy digits in the turn were somewhat predictable because list buoys do not have any function from the interpersonal domain (which deals with the management of exchange between signers) and the functions from the sequential domain (addition, enumeration and planning) are not related to turn-taking either. Therefore, the position in the turn does not tell us much about the function of list buoys and their digits, although more fine-grained results are expected from more polysemous DMs such as PALM-UP and SAME.

6.3.5 The function-position paradigm

In this sub-section, the function of DMs and their position in the clause, the BDU and the turn are analysed. The function-position paradigm that some authors (Briz Gómez and Pons Bordería, 2010; Degand, 2014; Estellés and Pons Bordería, 2014; Uygur-Distexhe and Degand, 2015; among others) found for DMs in SpLs also applies to LSFB, i.e. the function of DMs is considered to be related to a certain position in a certain type of unit. This finding implies that this paradigm holds true for DMs regardless of the modality.

Digits expressing addition (two cases) are found in the left periphery of the clause, in the syntactic left periphery of the BDU and in the middle of the turn. Conversely, the three digits expressing alternative (+ emphasis) are found in the medial position of the clause, of the BDU and of the turn. The same results apply to digits expressing planning (two cases), although they can also be found in the left periphery of the clause.

The most represented function of the digits was enumeration with 21 cases and there were three cases of enumeration + planning. The higher number of cases means that the positions are more variable, although a trend can be observed as well. There are

20 digits that occur in the left periphery of the clause, three in the right periphery and only one in the final position. The digits in the right periphery of the clause are found in the syntactic right periphery of the BDU, whereas the digit in the final position is found in the medial position of the BDU. The digits in the left periphery of the clause frequently occur in the syntactic left periphery of the BDU (13 cases), sometimes in the medial position (four cases) and in the syntactico-prosodic left periphery of the BDU (three cases). All digits occur in the middle of the turn with one one exception that occurs in the initial position. The positions and the numbers are summarised in Table 6.7.

<table>
<tr><th rowspan="2">Function</th><th colspan="3">Position in the...</th></tr>
<tr><th>Clause</th><th>BDU</th><th>Turn</th></tr>
<tr><td rowspan="5">Enumeration (24)</td><td rowspan="3">Left periphery (20)</td><td>Syntactic left periphery (13)</td><td rowspan="3">Medial (19) / initial (1)</td></tr>
<tr><td>Syntactico-prosodic left periphery (3)</td></tr>
<tr><td>Medial (4)</td></tr>
<tr><td>Right periphery (3)</td><td>Syntactic right periphery (3)</td><td>Medial (3)</td></tr>
<tr><td>Final position (1)</td><td>Medial (1)</td><td>Medial (1)</td></tr>
</table>

Table 6.7: Summary of positions of list buoy digits expressing enumeration in C2

Interestingly, most digits occurring in the syntactic left periphery and the three digits occurring in the syntactico-prosodic left periphery are found before, after or surrounded by other DMs such as PALM-UP (punctuating or planning), SAME or PLUS (both expressing addition). For instance, digit LBUOY(7):SECOND (syntactico-prosodic left periphery) in the second row of Figure 6.14 is followed by GSIGN, which is a pause filler here, and by SAME, which is a DM expressing addition. No conclusions can be drawn about collocations of DMs, because the digits analysed in the current section mostly belong to the same signer (see sub-section 6.3.2). Hence, it may well be that these collocations are idiosyncratic.

The function-position paradigm of discourse-marking list buoy digits is recapitulated in Table 6.8. For digits expressing enumeration, presenting more variability, only the most frequent position in the BDU (i.e. syntactic left periphery) has been retained as it represents 65% of the cases. For planning, there are two possible positions in the clause and both are mentioned because none is predominant. The total number of digits expressing a particular function and the number of digits in predominant positions are given in the table as well for the reader's convenience.

It is not just the functions that correlate with a particular function but also the domain: DMs belonging to the sequential domain appear in the left periphery of the clause, in the syntactic left periphery of the BDU and in the turn-medial position, whereas the ideational domain (represented by the function of alternative) is found in the medial position of the clause, the BDU and the turn. Conversely, the position

in the turn does not correlate with a particular function or domain as digits always (with only one exception) occur in the medial position. This indicates that list buoy digits as markers are not turn-taking devices, but still they participate somehow in the management of turn exchange when they have the function of planning which is used to hold the floor.

Domain	**Function**	**Position in the...**		
		Clause	**BDU**	**Turn**
Sequential	Addition (2)	Left periphery (2)	Syntactic left periphery (2)	Medial (2)
	Enumeration (24)	Left periphery (20)	Syntactic left periphery (13)	Medial (19)
	Planning (2)	Left periphery (1) / Medial (1)	Medial (2)	Medial (2)
Ideational	Alternative (+ emphasis) (3)	Medial (2)	Medial (2)	Medial (3)

Table 6.8: Summary of the function-position correlation of list buoy digits in C2

6.3.6 Interim summary of main findings

This section was devoted to the quantitative and qualitative analysis of discourse-marking list buoys in C2, i.e. a sample of the LSFB Corpus containing six signers and four genres (see chapter 3, sub-section 3.2, for a more detailed description of the data). List buoys are numeral signs held, so different digits make up the whole list buoy depending on the number of items that the signer refers to (which is a different type of semantic-pragmatic factor than the choice of using list buoys at all). Therefore, list buoys (all digits, from one to five, that build a unique entity) were considered to count the total of DM tokens and to compare frequencies between genres and signers. Digits were only used to talk about their position in discourse and about the function-position paradigm. As for the functions, both list buoys and their digits were taken into account because there was one signer who occasionally used one digit of the list buoy with a different function from the other digits.

The genre that attracts the highest number of list buoys is the expository (7) in contrast with three in the metalinguistic, two in the argumentative and two in the narrative. The degree of preparedness seems to favour the use of list buoys as claimed in previous works (Gabarró-López and Meurant, 2014a; Hansen and Heßmann, 2015): dialogues in the expository genre are semi-prepared productions in which signers were given some time and a sheet of paper to prepare them, whereas the other dialogues are spontaneous. A striking difference was found in terms of use across the six signers: one is prone to using list buoys, three use them rarely and two do not use them at all as DMs. This datum confirms, in line with Hansen and Heßmann (2015), that the use of list buoys depends on the signer's style.

The study of the functions was divided into the type of DM, the domain (or macro-function) and the functions. Both list buoys and their digits are mostly relational DMs (they connect two segments of discourse), belong to the sequential domain (it groups structuring discourse functions) and express enumeration and occasionally addition. These two functions are quite close to the function of ordering reported in other works (Villameriel, 2008; Jarque, 2014). However, list buoys and their digits can also express alternative, which belongs to the ideational domain (it groups discourse functions that signal a relation between two objects that exist in the real world). Alternative is similar to the function of disjunction mentioned by Davidson (2012). To the best of my knowledge, the only function that some list buoy digits may have combined with enumeration is planning, i.e. list buoys may also be used to prepare upcoming discourse. Planning, as well as addition and alternative, are only used by one signer, so a larger sample would be needed to test whether these usages are idiosyncratic.

The analysis of the functions also revealed that list buoys in natural discourse are not articulated in the canonical way presented by Liddell (2003). List buoys expressing addition and alternative are static (i.e. the digits are extended from the beginning), have a 2 handshape and the first digit is not introduced, the signer directly points to the second. The main difference between the two functions, in addition to the context, is conveyed by non-manual marking: list buoy digits expressing alternative are layered with a head tilt that does not appear with the function of addition. List buoys expressing enumeration are sequentially built (i.e. the digits are extended as they come to the signer's mind), but their articulation usually starts at the second digit of the list (the first is rarely introduced). Other features include that digits are not always mentioned in order, signers do not go beyond the third digit of the list (if there are more items, they repeat the pointing to the same digit) and a digit can refer to the previous segment of discourse and not to the following. No pattern regarding non-manual marking could be observed about digits expressing enumeration, whereas digits expressing planning are always layered with a floating gaze (i.e. not directed at the addresse).

The three most common functions of list buoy digits (alternative, addition and enumeration) are frequently next to other DMs (OR and BUT.B for alternative, SAME and PLUS for addition and sometimes PALM-UP for enumeration). Concerning scope, list buoys and list buoy digits expressing enumeration have a wider scope than those expressing alternative and addition. The reason behind this difference can be explained within the framework of the Question Under Discussion (QUD). The QUD (Büring, 2003) conceives of discourse as a tree that has moves (i.e. branches) with an implicit question each. Inside these implicit questions, there are assertions (real chunks of discourse). Digits expressing enumeration can be found at either the level of moves introducing implicit questions or at the level of assertions. If digits introduce implicit questions, they are found in an upper level of the discourse tree and thus contain a higher number of utterances than when they connect assertions (which are at a lower level of the discourse tree).

The description of discourse-marking list buoys also included an account of the position of the digits. The position in the clause (Blanche-Benveniste et al., 1990), the basic discourse unit (BDU) (Degand and Simon, 2005, 2009a,b) and the turn was described. From a quantitative point of view, results showed that the most frequent positions are clausal left periphery, syntactic left periphery in the BDU, and the turn-medial position. From a qualitative point of view, the analysis of positions was combined with the function in order to investigate the function-position paradigm that exists in SpLs (Briz Gómez and Pons Bordería, 2010; Degand, 2014; Estellés and Pons Bordería, 2014; Uygur-Distexhe and Degand, 2015; among others). Function-position correlations were indeed observed: addition and enumeration appear in the left peripheral clause position, the syntactic left peripheral BDU position and the turn-medial position. That is, DMs belonging to the sequential domain tend to correlate with the left periphery. Conversely, alternative is found in the medial position of the clause, the BDU and the turn; so the ideational domain would prefer the medial position. Since all digits appear in the turn-medial position, it can be claimed that list buoy digits are not turn-taking devices although they participate as turn-holding devices when they have the function of planning.

6.4 The PALM-UP particle

In this dissertation, PALM-UP is defined as a gesture. It is produced in neutral space or below with one or two hands open to some extent, and it does not seem to have a lexical movement (i.e. the hand or hands get to this position following different paths). The form is empty of meaning, which is conveyed by co-occurring non-manual marking, the context and the position (see chapter 5, sub-section 5.3.2.1 for further details). As mentioned earlier in the introduction (6.1), from the three DM candidates under study, PALM-UP is the one with more tokens (347 discourse-marking PALM-UP vs. 110 discourse-marking SAME and 14 discourse-marking list buoys). Therefore, it is likely to be the DM presenting more diversified functions as we will see below in sub-section 6.4.3. Before that, its frequency of occurrence per genre and per signer will be presented.

6.4.1 Frequency per genre

To the best of my knowledge, the distribution of PALM-UP across genres has never been investigated before. Previous studies have mainly combined narrative data with dialogues and sometimes elicitation tasks (see sub-section 5.3.1 in chapter 5 for a more detailed account), but no difference has been made from one type of production to another. Hence, this is the first time that genres have been taken into account for the description of PALM-UP. The number of tokens and the genres appear in Figure 6.18.

The distribution of PALM-UP across genres is more balanced than that of list buoys, which showed a preference for the expository genre (see sub-section 6.3.1). The metalinguistic genre (dialogues in which signers have to talk about LSFB variations such as differences between the signing of old/young deaf people, interpreters or people

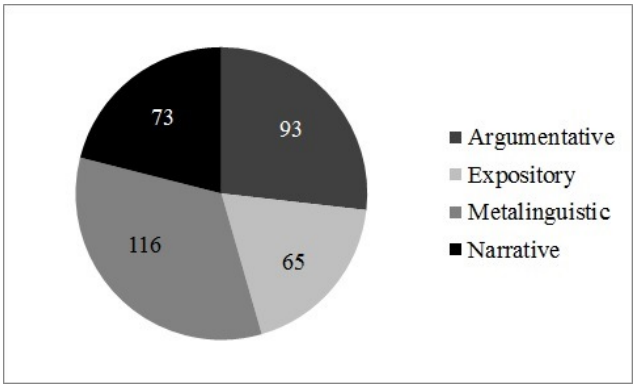


Figure 6.18: Distribution of discourse-marking palm-ups per genre in C2

from other regions) attracts the highest number of palm-ups (116 tokens). The argumentative genre (discussion about hearing and deaf culture) comes next (93 tokens) followed by the narrative genre (explaining a past memory) with 73 tokens and the expository genre (explaining their hobby, their job or their passion) with 65 tokens.

In contrast to list buoys, the degree of preparedness does not seem to influence the choice of PALM-UP. PALM-UP has not been studied in monologues in this research, but it could be hypothesised that dialogues favour the high number of tokens because PALM-UP is frequently used in the interpersonal domain for the functions of agreeing and monitoring (see sub-section 6.4.3). It is also common in the sequential domain for the functions of opening and ending a turn. In future work, it would be interesting to compare the use of PALM-UP in the two settings.

6.4.2 Frequency per signer

Some researchers working in different SLs have claimed that the use of PALM-UP is age sensitive in terms of frequency and function (Mc Kee and Wallingford, 2011; van Loon, 2012; Jarque et al., 2013; Mesch, 2016; see sub-section 5.3.1 in chapter 5). Figure 6.19 illustrates the distribution of PALM-UP across signers when it has a discourse-marking function in LSFB, although the functions that are more likely to be found in a particular age group will be presented in sub-section 6.4.3.

S003 and S004 are the oldest signers: they are both men and S003 was 82 and S004 was 73 at the time of the recordings. S044 and S045 are the middle-aged couple: S044 is a man aged 48 and S045 is a woman aged 46. S055 and S056 are the youngest signers: they are two women, S055 is 23 and S056 is 22. The graph shows a striking difference in the use of PALM-UP by S004 (115 tokens), who doubles the number of tokens produced by the other signers regardless of their profile. S003 (who participates in the same recording session) produces 47 palm-ups, which is quite close to the other signers: S044 and S055 articulate 52 palm-ups each, and S056 articulates 58. S045 is the signer who produced the lowest number of palm-ups: 23 in total.

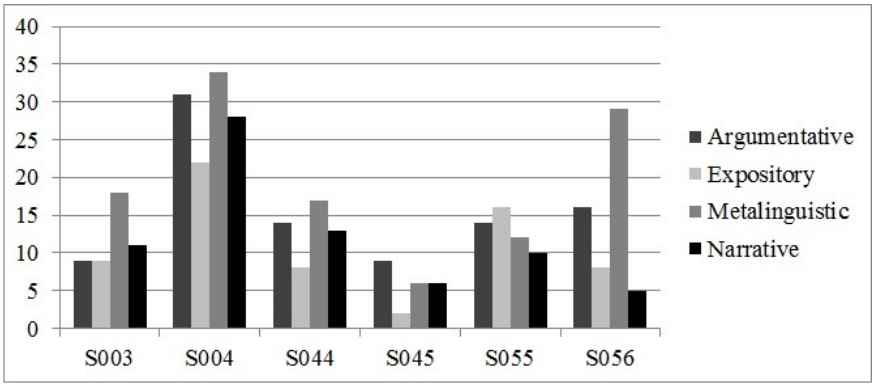


Figure 6.19: Distribution of discourse-marking palm-ups per signer in C2

Counting the total number of palm-ups without considering the total number of signs that each signer produced in C2 offers a biased picture of the distribution per informant. A signer may have articulated a lower number of palm-ups than his/her partner in the same recording session, but the time each one's turn lasted and the speed of signing are certainly different. For instance, S004 and S055 produced almost double the number of signs their partners did in the recording session, whilst the difference between S044 and S045 is smaller. In Table 6.9, the average number of palm-ups per signer is calculated by dividing the total number of palm-ups by the total number of signs.[15]

Signer	Number of palm-ups	Number of signs	Average
S003	47	1217	4/100
S004	115	2237	5/100
S044	52	1761	3/100
S045	23	1141	2/100
S055	52	2542	2/100
S056	58	1168	5/100

Table 6.9: Number of PALM-UP tokens per signer in C2

These results indicate that PALM-UP as a DM is frequent in older signers: S003 produces an average of four palm-ups per 100 signs, whereas the average for S004 is five palm-ups per 100 signs. The middle-aged signers and one of the young signers show a similar average: from two to three palm-ups per 100 signs. Surprisingly, the youngest signer in C2 also produced a high number of palm-ups, i.e. 5/100. Hence, the use of PALM-UP as a DM does not seem to be age stratified in LSFB.[16]

[15]Counting the total number of signs in an SL production is not a trivial task because of the existence of two articulators. Signers can articulate a one-handed or a two-handed sign at once, they can produce two one-handed signs at the same time or use buoys. Although it is an oversimplification, the total number of signs per signer will be established according to his/her dominant hand in line with Bank (2014).

[16]Note that, with the exception of Jarque et al. (2013), previous studies have taken into account all PALM-UP tokens (without differentiating their discourse-marking status) to say that this gesture

6.4.3 Type of DM, domains and functions

6.4.3.1 Type of DM

Figure 6.20 illustrates the distribution of discourse-marking palm-ups according to the type of DM (see definitions in 6.2.1.1). In a scale of relationality, discourse-marking palm-ups are mainly non-relational (298 out of 347, i.e. 86%), relational palm-ups are scarce (38, i.e. 11%) and both types rarely combine (11, i.e. 3%). This distribution is similar to what has been reported in different SLs so far. Although the type of DM has not been explicitly addressed before, most functions are non-relational (e.g. pause filler, providing/eliciting backchannel and opening/ending a turn) and only the function of connective is relational (see tables 5.4 and 5.5 on pp.174-175). PALM-UP hardly ever receives two functions, although this possibility is mentioned in McKee and Wallingford (2011) and van Loon (2012).

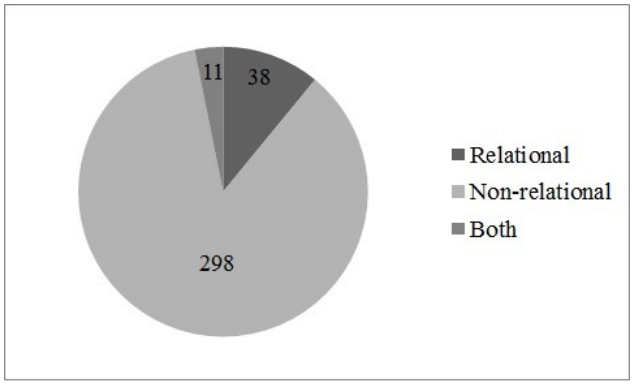


Figure 6.20: Distribution of discourse-marking palm-ups in C2 according to the scale of relationality

6.4.3.2 Domain

The main functions of PALM-UP are related to the structuring of discourse segments (208 tokens in the sequential domain) and to the management of exchange between signers (74 tokens in the interpersonal domain) as shown in Figure 6.21. The least frequent domain is the rhetorical with only nine cases. The ideational domain and double domain (i.e. palm-ups that have been given a double domain in order to avoid arbitrary choices between two possible domains) have similar numbers: 29 and 27 respectively. In Figure 6.22, the different combinations of domains found in C2 are presented.

The sequential domain can combine with any of the other three domains. The rhetorical and the interpersonal domain can also be assigned to the same PALM-UP. Interestingly, a pattern can be observed when the functions and the type of DM are inspected. The most common functions of the sequential domain fulfilled by PALM-UP are non-relational (i.e. punctuation, planning and end a turn; see below), and

is age sensitive. This research focuses on discourse-marking palm-ups, so the claims about their age-stratified use are restricted to this sub-group and cannot be generalised for the whole category.

they combine with both relational functions (e.g. planning + opposition or punctuation + consequence) and non-relational functions (e.g. planning + monitoring or punctuation + emphasis) of the other domains, but two relational functions never combine.

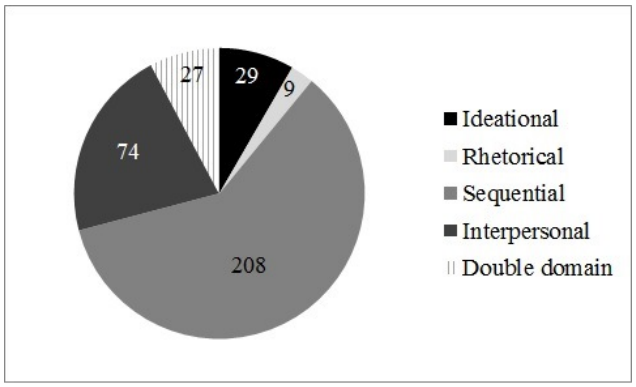


Figure 6.21: Distribution of discourse-marking palm-ups in C2 according to their domain

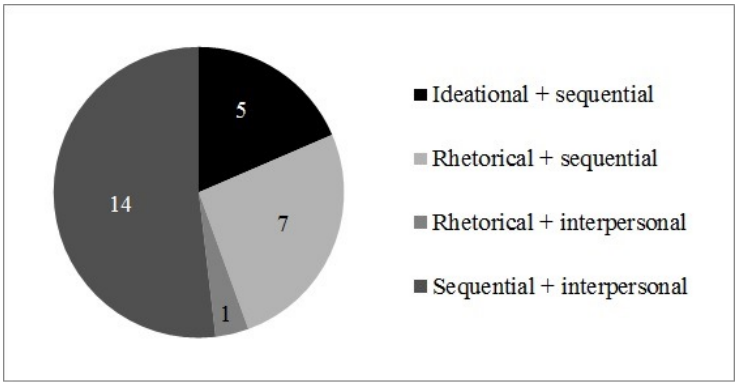


Figure 6.22: Distribution of the 27 discourse-marking palm-ups with two domains in C2

6.4.3.3 Function

PALM-UP is the DM with the most discourse-marking functions in this dissertation (see Figure 6.23). Of the 31 possible functions listed in 6.2.1.3, 19 are fulfilled by PALM-UP. The most frequent functions of this gesture in C2 have already been mentioned in the literature, although most of them have received different names. Punctuation (89 cases) and planning (36 cases) are similar to the function of pause filler, and agreeing (40 cases) and monitoring (32 cases) are close to the functions of providing and eliciting backchannel. Closing (i.e. ending a turn) is also a widespread function in LSFB (73 cases). Most of the other less common functions (e.g. concession, consequence, etc.) have been called 'connectives' in general.

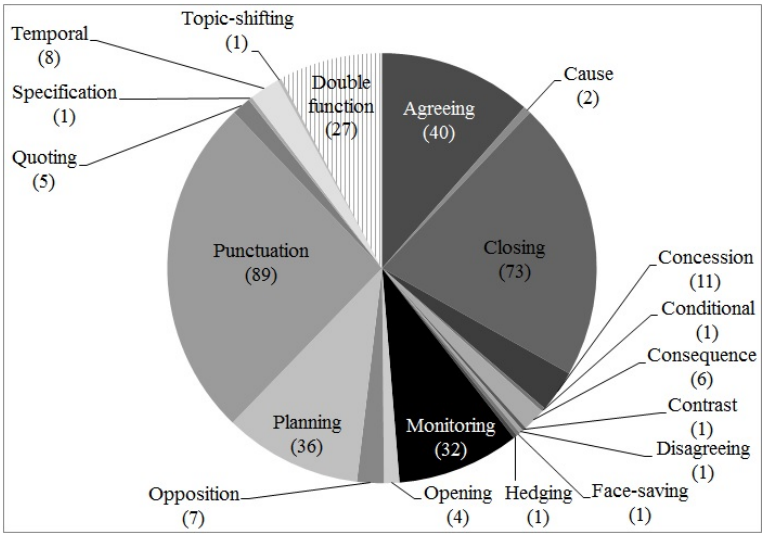


Figure 6.23: Distribution of discourse-marking palm-ups according to their function in C2

In 6.4.2, the distribution of PALM-UP per signer was addressed. If we focus on the functions, some of them seem to be preferred by a particular age group (see Table 6.10 with the functions that are represented by at least six PALM-UP tokens). The most common function in young signers is planning and monitoring, whereas the most common in middle-aged signers is temporal marking. Older signers mainly use PALM-UP for punctuation, closing and agreeing. Relational functions such as concession and opposition, which are conveyed by the co-ocurring mouthing 'mais' ('but' in English), are also typically produced by older signers. This usage may be the result of education: signing was prohibited when older signers were at school, which is why their vocabulary resources are poorer and they are more inclined to bimodal code-mixing by using PALM-UP and mouthings at the same time (McKee and Wallingford, 2011).

Function	**Age groups**			**Total**
	18-29	**30-49**	**50-85**	
Punctuation	25	20	44	89
Closing	11	23	39	73
Agreeing	5	7	28	40
Planning	19	6	13	36
Monitoring	22	7	3	32
Concession	1	1	9	11
Temporal	1	4	3	8
Opposition	0	2	5	7
Consequence	2	1	3	6

Table 6.10: Functions of PALM-UP per age group in C2

As mentioned earlier, PALM-UP can have two functions as sometimes "no one function is necessarily predominant in a particular context" (Brinton, 1996, p.35). The 27 cases are illustrated in Figure 6.24. All signers combine two different functions at least once. Most combinations only appear in one or two palm-ups, but monitoring + punctuation are used by three signers (S044 and S055, S056) in a total of eight cases, and opposition + planning are used by two signers (S004 and S055) in a total of three cases. Hence, these two combinations seem to be neither idiosyncratic nor age dependent in contrast to the others.

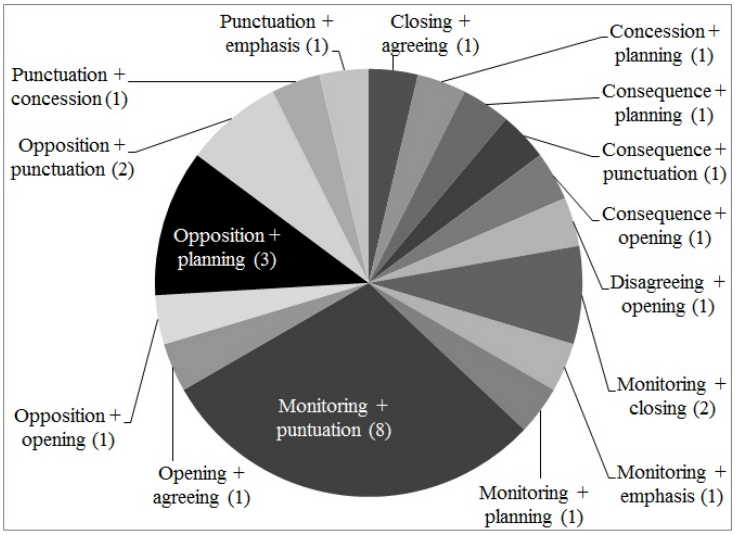


Figure 6.24: Distribution of the 27 discourse-marking palm-ups with two functions in C2

Although no correlations have been found between the form of PALM-UP and its function in other SLs, it has been claimed that the function is conveyed by non-manual marking together with the context (McKee and Wallingford, 2011; van Loon, 2012). In what follows, each discourse-marking PALM-UP function will be closely inspected taking into account its form and non-manual marking.[17]

Punctuation This function is fulfilled by items that separate, articulate and/or stress the beginning or end of discourse units (Bolly and Crible, 2015). In example (126), the signer is explaining a past memory and uses PALM-UP as a punctuator between the two clauses he utters.

[17] In contrast to list buoys, the analysis of the functions of PALM-UP will not include a description of their scope. The specificity of list buoys as DMs is that they are made up of different digits. Thus, their scope can be analysed objectively, i.e. from the appearance of the first digit until the appearance of the second. Conversely, palm-ups are not made up of different parts that allow this analysis of scope.

(126) [PT:PRO1(B) PARTY CHRISTMAS GOOD.PAPER] <**PALM-UP**> [ONE HAPPY IT-IS SAINT.ENOUGH SAINT-NICHOLAS BECAUSE RECEIVE-2H A-LOT GAME DIFFERENT]
'My Christmas time was very nice, indeed. I was very happy on Saint Nicholas Day because I used to receive a lot of different games.'

(Corpus LSFB, session 2, task 3, signer S003, 01:17 - 01:24)

Of the 89 punctuating palm-ups that were found in C2, 69 are two-handed forms and 20 are one-handed. Therefore, there is a preference for two-handed forms when PALM-UP expresses punctuation, although one-handed forms are possible as well. Both variants are produced by all signers. There are also six cases of two-handed palm-ups in which one of the two hands spreads over the following signs because they are one-handed.

As for non-manual marking, the function of punctuation frequently goes with a directed gaze. There are also cases of non-directed gaze, but they belong to one signer who does not always face the other informant when signing (sometimes he looks at the moderator or between the other informant and the moderator). There is also a movement of the head (including a tilt, a turn or a nod) or a body movement (to the side, backwards or forwards) if the head movement is absent. Not surprisingly, eye blinks can also be found (not in a consistent way) because the function of punctuation separates discourse units and eye blinks may have the same prosodic function (see 4.3.2.3 in chapter 4). No clear pattern was found in mouth actions and mouthings.

Closing This function applies to items that "[indicate] the intention to close a list, a thematic unit or a turn" and are found "in final or autonomous position" (Crible, 2014, p.23). The position is established with respect to the unit, and the type of unit depends on the segmentation methodology. Crible delimits syntactic units according to Dependency Grammar (Tesnière, 1959) and I delimit syntactic and discourse units according to the Basic Discourse Units Model (Degand and Simon, 2005, 2009a,b) (see chapter 4 for the full model). The positions she establishes and the positions I establish (see sub-section 6.2.2) are somewhat similar. This "final or autonomous position" will be interpreted as a syntactic right periphery, a syntactico-prosodic right periphery or an independent element.

In example (127), the signer is saying that he has always been very active and that he cannot stand staying stuck at home. The excerpt finishes with a palm-up that closes the turn. Once S044 has articulated PALM-UP, S045 takes the floor. Here PALM-UP is at the right periphery of the last clause.

(127) [STAY CLASSROOM.ROOM NEVER] [PT:PRO1 LEAVE.PLACE+++] <**PALM-UP**>
'I cannot be stuck in a room. I need to go out, yes.'

(Corpus LSFB, session 21, task 4, signer S044, 03:06 - 03:09)

Similarly to palm-ups expressing punctuation, palm-ups that end a turn are mostly articulated using two-handed forms (50 two-handed vs. 23 one-handed). Because of their position (in the syntactic right periphery, in the syntactico-prosodic right periphery or independent), this function is probably the only one that does not allow PALM-UP to spread over other signs.

Non-manual marking in palm-ups that close a turn is not very different from palm-ups expressing punctuation. All signers articulate them with a gaze directed at the addressee except the two older signers. The different direction of the gaze does not seem to be linked to the age group but rather to the fact that sometimes the two old signers either look at the moderator or establish a conversation between the three, which does not happen with the other two pairs. The function of closing is accompanied by a movement of the head (including tilt, turn or nod) and if such movement is absent, there is a body movement (backwards or forwards). Occasionally, there are also eye blinks that layer with this function. Again, this is due to the prosodic function of some blinks to mark boundaries. No clear pattern was found in mouth actions and mouthings.

If the function of punctuation and the function of closing are compared, non-manual marking does not help to tease apart one from the other because the gaze and head behaviour is almost the same. The difference between the two functions is clearly made via the context and the position in the turn. If PALM-UP is not in the turn-final position (or in the turn-medial position if a long pause comes next) and another unit comes next, the signer is using PALM-UP as a punctuator.

Agreeing This function "expresses understanding" and not necessarily the response to a question (Crible, 2014, p.25). Example (128) contains an excerpt of a dialogue about LSFB variations. S044 uses PALM-UP to express agreement with S045's statement.

(128)
S045: [SL DIFFERENT++++]
S044: [A-LITTLE] <**PALM-UP**>
S045: 'There are a lot of differences in signing.'
S044: 'A little bit, yeah.'

(Corpus LSFB, session 21, task 14, 01:43 - 01:46)

In contrast to PALM-UP expressing punctuation or closing a turn, it seems that there is a slight preference for one-handed forms (22 one-handed vs. 17 two-handed). Only one case of spreading was found in a two-handed form. In addition, agreeing is the function in which reduced palm-ups are more frequent because the signer uses a lower location "in order to not to direct attention away from the primary signer" (Mesch, 2016, p.32).

The function of agreeing is perhaps the one that shows the clearest pattern in non-manual marking. Palm-ups go with a gaze directed at the addressee and a head nod. Sometimes, eye blinks are found with this function and the mouth is frequently

closed. When the mouth is not closed, the mouthing 'voilà' in French, meaning 'that's it', is likely to be used.

Planning This function is the only one that PALM-UP and list buoys share (see definition on p.223). In example (129), the signer is telling the other a past memory about the time she went scout camping. The excerpt starts with a piece of constructed dialogue that contains what she said to the other scouts when they saw her crying. Afterwards, she uses PALM-UP to plan the following utterance.

(129) [WANT SEE MOTHER PARENTS] <**PALM-UP**> [ANNOY(BENT5)]
'"I want to see my parents", I don't know, I felt uneasy.'

(Corpus LSFB, session 27, task 3, signer S056, 00:57 - 00:59)

Of the 36 PALM-UP tokens expressing planning, two-handed forms prevail over one-handed (25 vs. nine). Similarly to the function of punctuation and agreeing, spreading of one hand in two-handed forms over other (one-handed) signs is possible but not frequent (two cases only). Non-manual marking accompanying the function of planning consists of a floating gaze (i.e. not directed at the addressee) and a head movement (head turn or chin down in order to help deviate the gaze). Both the floating gaze and the chin down coincide with non-manual marking in list buoys expressing planning.

No consistent mouth action was found across signers. Mouthings do rarely occur with the function of planning, although in three cases two signers (S004 and S056) uttered 'euh' (an equivalent of 'erm' in English). If the function is given to PALM-UP on the basis of the mouthing as mentioned before, 'euh' in spoken French is considered a filler and is thus excluded from the DM category (see chapter 5, sub-section 5.3.2). However, since the number of cases in which planning appears with 'euh' is not representative, priority is given to the position of PALM-UP in the clause in order to assign the function.

Monitoring This function "checks for understanding and attention, in the form of an explicit address to the interlocutor" (Crible, 2014, p.25). Figure 6.25 illustrates an example in which the signer says that it is impossible to go kitesurfing in winter in Belgium. After the clause, she uses a palm-up to check for understanding.

This function is a tricky one as it can be mistaken for pointings whose form is an open hand facing upwards, fingers together or loosely extended, and a movement towards the interlocutor. This type of pointing is illustrated in the last picture of Figure 6.26. Both the palm-up in Figure 6.25 and the pointing in 6.26 appear at the end of the utterance, but note that S055 is trying to get feedback on what she said and S003 is pointing towards his interlocutor to offer him the floor.

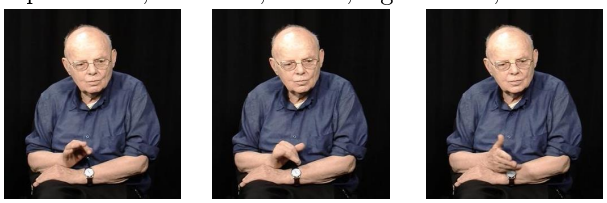
(Corpus LSFB, session 27, task 15, signer S055, 09:06 - 09:09)

RH	BEFORE	WINTER	IMPOSSIBLE	**PALM-UP**
LH		WINTER		

'In winter, it's impossible, you see?'

Figure 6.25: Example of PALM-UP expressing monitoring

(Corpus LSFB, session 2, task 4, signer S003, 00:01 - 00:02)



YES	WHAT	**PT:PRO2(BA)**

'Yes, what do you think?'

Figure 6.26: Example of a pointing that offers the floor

PALM-UP expressing monitoring can be articulated either one handed (13 tokens) or two handed (19 cases). It seems that the two-handed form is preferred, although the one-handed form is highly frequent as well. Of the 19 two-handed forms, there are two cases in which one of the hands spreads over the following one-handed signs. Not surprisingly, non-manual marking consists of the gaze directed at the addressee in order to elicit backchannel. There is also a head movement, usually a nod or a movement forward, and even a tilt or turn. There is neither a common mouth action nor a particular mouthing layered with this function.

Concession This function applies to items that "deny one or several clearly identified expectations explicitly related to the concessive segment" and includes "both events and assumptions as long as the expectation derived from [the second segment] is logical and verbally expressed" (Crible, 2014, p.20). In example (130), the signer is recounting a past memory in which he remembers how he spent his Christmas time. Since it was the time of the Second World War and they had to stay in shelters, the expectation would be that it was a sad period. However, he denies this expectation by saying that it was nice to be with his family.

(130) [DATE IT-S WAR NS:GERMANY.TEN COME NS:AMERICA.CLEAN-FACE] [A-LITTLE SAME TIDY-UP++] <**PALM-UP**> [GOOD.PAPER PLEASANT FAMILY]
'That was the period of the war. The Germans and the Americans came and we had to hide in shelters, but it was pleasant to be with the family anyway.'

(Corpus LSFB, session 2, task 3, signer S003, 02:20 - 02:26)

From the 11 cases in which PALM-UP expresses concession, there are two one-handed forms and nine two-handed forms. That is, two-handed forms prevail over one-handed ones. There are three cases of two-handed forms in which one hand spreads over the following one-handed signs. In contrast to the previous functions in which

(Corpus LSFB, session 2, task 15, signer S004, 04:48 - 04:58)

'When I was in Luxembourg, it was a little different. Although there were no deaf people, I was... yeah... happy. But... Luxembourg was a little bit different.'

Figure 6.27: Example of PALM-UP spreading over other signs

PALM-UP spread without any apparent motivation other than the following signs were one-handed and it was comfortable for the signer to keep the hand in this position, PALM-UP expressing concession can spread in order to be reused later[18] as shown in Figure 6.27. There are four palm-ups: the first expresses the discourse-marking function of concession (second picture, second row), the second expresses the non-discourse-marking function of modality (second picture, third row), the third (fourth picture, third row) expresses concession and the fourth (first picture, fourth row) expresses concession again together with planning as the signer takes more time while articulating PALM-UP in order to plan what he will say next.

Non-manual marking co-occurring with concessive PALM-UP includes a floating gaze, a head turn or tilt and the French mouthing 'mais' ('but' in English). On the one hand, it seems that head tilts convey the meaning of contrast or opposition to DMs regardless of whether the DM is a partly-lexical sign or a gesture. Further research would be needed to test if this applies to fully-lexical signs as well. On the other hand, the mouthing 'mais' is consistent in the expression of both pragmatic and non-pragmatic opposition. Therefore, the mouthing is used to identify the coherence relation, but the context is necessary to decide whether the relation is pragmatic (i.e. subjective, as in the function of opposition) or not (i.e. objective, as in the function of concession).

Temporal This function relates discourse segments chronologically, either ordered or overlapping (Crible, 2014). Example (131) is an excerpt of a past memory. The signer is not happy about the separation of Flemish and Walloon deaf pupils that came after the federalisation process in Belgium because football matches at school became less frequent. Here PALM-UP expresses temporal ordering.

(131) [BECAUSE PT:PRO1 TEAM NS:FLEMISH NS:WALLOON PREFER PT:PRO1 PLAY FOOTBALL+ MEET++] <**PALM-UP**> [DS:SEPARTE-TWO-ENTITIES PT:PRO1 LESS]
'I preferred when the Flemish and the Walloon teams met to play football. Then, we were separated and matches became less frequent.'

(Corpus LSFB, session 21, task 3, signer S044, 08:40 - 08:46)

There is no preference regarding the form of the eight cases in which PALM-UP is a temporal marker, i.e. four are one-handed and four two-handed. There is also one case of a two-handed form with spreading in one hand. As for non-manual marking, there are no clear patterns: some palm-ups go with a gaze directed at the addressee, whereas others go with a floating gaze (i.e. not directed at the interlocutor). Head movement and blinking may co-occur as well but not consistently. The mouth is usually closed and no mouthing is produced.

[18] This does not exclude that the same phenomenon can happen in other functions, but it was only found in the function of concession in this research.

Opposition This function "corresponds to a pragmatic (epistemic or speech-act) contrast or concession, and includes counter-expectation as well" (Crible, 2014, p.21). In example (132), the signer is explaining his experience with the bank when he built his house. PALM-UP expresses a pragmatic opposition because receiving money from the bank and the fact that it was difficult is not an objective opposition. It is the signer who subjectively establishes this relation.

(132) [DIVERSE WORK FINISH-NOT BEFORE LIVE(A) MONEY RECEIVE] <**PALM-UP**> [BANK DIFFICULT MONEY RECEIVE+]
'Our house was not finished yet when we moved in. Then, we received the money from the bank. But it was so hard to get the money from the bank at that time.'

(Corpus LSFB, session 2, task 4, signer S004, 06:39 - 06:46)

Two-handed forms prevail over one-handed forms when PALM-UP expresses opposition (five vs. two); and there is one case of a two-handed form with one hand spreading over the following one-handed signs. As mentioned earlier, non-manual marking is similar to the function of concession (ideational domain): the gaze is floating, there is a head movement (a tilt or a turn) and the mouthing 'mais'.

Consequence This function applies to markers that are found between two segments of discourse. The segment that follows the marker is the logical effect brought by the segment that precedes the marker (ibid.). In example (133), S045 is telling S044 about her relationship with hearing people. She says that she always felt alone as a consequence of being born into a hearing family.

(133) [FAMILY HEARING] <**PALM-UP**> [PT:PRO1 ALONE(1)++]
'All members of my family were hearing, so I always felt alone.'

(Corpus LSFB, session 21, task 4, signer S045, 01:33 - 01:37)

In C2, palm-ups expressing consequence (six cases) always have a two-handed form, and in two cases, one hand spreads over the following one-handed signs. As for non-manual marking, it seems that this function goes with a gaze directed at the addressee except for the oldest signers who frequently talk to the moderator. The head does different movements during this function. The mouth is likely to be closed except in two cases in which a mouthing in French is produced: either 'alors' ('then') or 'après' ('afterwards').

Quoting This function "indicates the start of a reported speech segment" and "it must immediately precede other-attributed speech or a change in footing" (Crible, 2014, p.24). In example (134), the signer is explaining what her parents used to do when she refused to eat. She uses PALM-UP to introduce quoted material.

(134) [PARENTS DE:EMOTION-FROWN-BROWS] <**PALM-UP**> [MUST EAT PT:PRO2] [IF NOTHING EAT THEN GSIGN]
'My parents were upset: "if you don't eat, you stay there."'

(Corpus LSFB, session 27, task 4, signer S055, 02:48 - 02:52)

In C2, there are only five cases in which PALM-UP is used for this purpose. These tokens are two-handed and one hand spreads over the following one-handed signs in two cases. Non-manual marking includes a spatial gaze that introduces constructed dialogue (Meurant, 2008c) by installing a locus and a head movement forward. No common pattern can be observed in mouth actions and mouthings.

Opening This function applies to any marker that "opens a new turn, in which case it indicates floor-taking, or a new sequence, within the same topic, namely an introduction to an enumeration or a narrative sequence, or possible others. Apart from turn-taking, it corresponds to any form of opening or engaging which is not covered by topic shift or any other sequential function" (Crible, 2014, p.23). In example (135), the moderator (M023) is giving the informants some ideas about what they can explain as a past memory. Signer S055 takes the floor by using PALM-UP.

(135)
M023: [COGITATE HARD] [POSSIBLE APPEAR] <EXAMPLE> [HOW PT:POSS2 BIRTHDAY] [HOW FAMILY TOGETHER PARTY] <OR> <PALM-UP>
S055: <**PALM-UP**> [YES] [FOR PT:PRO1 BIRTHDAY] [YES] <GSIGN> [REMEMBER BEFORE GO] <GSIGN>
M023: 'I know it's hard to think about something, but for instance you can explain how your birthday was, how family parties were or... I don't know...'
S055: 'Oh, yes, for my birthday erm I remember that we used to go to... erm...'

(Corpus LSFB, session 27, task 3, 03:11 - 03:18)

There are four cases in which PALM-UP is used to open a turn with a one-handed form and in one case this one-handed form spreads over the following one-handed signs. Interestingly, the form of discourse opening palm-ups is different from their opposite counterpart; i.e. discourse closing palm-ups, which are mostly articulated using a two-handed form and do not allow spreading. Non-manual marking accompanying this function includes a gaze directed at the addressee in order to let him/her know that the other signer wants to start a turn or that s/he is bidding for the floor. Neither the head nor the body are likely to move. The mouth is frequently closed and there is no mouthing.

Cause This function is given to markers that causally relate two segments of discourse containing real-world events. Future or hypothetical facts fall within this

definition, whereas conditional relations (see below) are excluded (Crible, 2014). In example (136), the signer is saying that the reason why there was no notary when he bought his house is that the land belonged to the state. There are four palm-ups, the first three are discourse-marking and the last one expresses stance. The first palm-up introduces a condition, the second a consequence and the third a cause.

(136) [<**PALM-UP**> LAND IT-IS MINISTER(1) <**PALM-UP**> NOTARY IMPOSSIBLE <**PALM-UP**> IT-IS MINISTER(1)] <PALM-UP>
'If the land belongs to the state, then there cannot be a notary because it belongs to the state.'

(Corpus LSFB, session 2, task 4, signer S004, 05:59 - 06:05)

There is only one signer who uses PALM-UP twice to signal cause. The form is different in both cases: there is a one-handed palm-up and a two-handed palm-up. As for non-manual marking, the gaze is floating, shoulders shrug and the mouth is closed. Although the number of tokens is too low to claim that these nonmanuals go with the function of cause, it is interesting to note that they make the difference with the function of condition represented by the first palm-up in the example. This last function, only used by this signer, is accompanied by other nonmanuals.

Condition This function applies when a marker relates two segments of discourse, one being the condition and the other the consequence (Crible, 2014). The first palm-up in example (136) is the only case that was found in C2. It is a two-handed form that goes with a body movement backwards, a gaze directed at the addressee, raised eyebrows and closed mouth. Raised eyebrows seems to be the most prominent nonmanual to express this function as it has been found in other SLs such as ASL, DGS, Italian SL (LIS) and SL of the Netherlands (NGT) for the same purpose (Baker et al., 2016).

Contrast This function relates two discourse segments that share a predicate or a property. The values assigned to this predicate or property are contrasted "either as an opposite [...] or as a scalar difference" (Crible, 2014, p.20). Example (137) is an excerpt of a conversation about LSFB variations. The two signers are explaining how they sign when they are in a formal situation. S056 talks about the position that you need to adopt. The position is the property shared by the two clauses and the two possibilities (i.e. very upright or correct) are the values that are contrasted.

(137) [DS:HOLD-UPRIGHT NO.N] <**PALM-UP**> [GOOD.PAPER PRESENT HUMAN]
'You do not have to hold a very upright position but you have to be in a correct position.'

(Corpus LSFB, session 27, task 14, signer S056, 02:10 - 02:14)

There is only this example in C2 expressing contrast. It is a two-handed form that goes with a gaze directed at the addressee and a head movement forward.

Disagreeing This function "expresses a disagreeing response [and] differs from opposition because disagreement needs to be in response to another speaker's turn" (Crible, 2014, p.25). Example (138) contains an excerpt of a dialogue in which S045 has explained how to make a cake. She says that proportion of each of the four ingredients (eggs, flour, butter and sugar) must weigh the same. S044 intervenes and says that if the eggs are weighed with the shell, their real weight will be less when the shell is removed and, therefore, the balance in the proportions will be broken. S045 first uses PALM-UP in order to start her turn and to disagree,[19] and afterwards she produces a second palm-up to disagree.

(138)
S044: [NORMAL DS:BREAK-EGG DS:SHAPE-HALF-EGG IT-IS GRAM REMOVE] [PT:DET LEAVE §LIGHT EQUAL.BALANCE-LESS] [JUST.F MUST EQUAL.BALANCE-HIGH] [MUST EQUAL.BALANCE-HIGH JUST.F EQUAL]
S045: §<**PALM-UP**> [ALREADY] <**PALM-UP**> [LIKE-THIS] [NO] [LIKE-THIS]
S044: 'If you remove the eggs' shell, then you're §removing some grams. So they weigh less. The weigh must be the same, you must keep the balance.'
S045: '§No, I already... No, it's like this.'

(Corpus LSFB, session 21, task 15, 05:50 - 05:59)

Both palm-ups (the only two expressing this function in C2) are articulated using a two-handed form. Non-manual marking includes a gaze directed at the addressee (as in the other functions of the interpersonal domain that are used to elicit or provide backchannel), a head shake (which is used in many SLs and SpLs as a marker of negation) and closed mouth.

Hedging This function is defined by Crible (2014, p.22) as "a deliberate lack of precision, mitigating the speaker's assertion" and "excludes hedging due to face-threatening contexts" (see this last function below). Example (139) is an excerpt of a dialogue in which S003 tells S004 that he built his own house with the help of other deaf friends. S004 answers that in Belgium you cannot do this because it counts as the black economy. S003 is surprised about this answer and S004 uses PALM-UP mitigate S003's assertion.

(139) [BUILD BLACK FORBID(Y)] [MUST MUST <**PALM-UP**> BUILD MUST SILENCE TIDY-UP]
'Building and not declaring is forbidden. You must sort of build in silence, hidden.'

(Corpus LSFB, session 2, task 4, signer S004, 08:16 - 08:23)

This palm-up is the only example expressing hedging and it is articulated using a two-handed form. Non-manual marking includes a floating gaze, a head tilt, a blinking and the mouth is open with teeth in contact. Interestingly, these nonmanuals

[19] The glosses that are underlined and preceded by § mean that the signers overlap.

are similar to the nonmanuals used in ASL when PALM-UP is a mitigator. The open mouth with teeth in contact (polite grimace) is used to mitigate significant threats and the side-to-side head or body movement (body teeter) intensifies the meaning of the other nonmanuals (Hoza, 2011). In contrast to other discourse-marking functions, it seems that mitigating functions are the only ones in which the actions of the mouth convey an important meaning at the same level as the head movement.

Face-saving This function "expresses deference, politeness and prevents face - threats" (Crible, 2014, p.25). It is used for mitigation as the function of hedging (see above), but it is focused on the signers' exchange. The excerpt in example (140) is the continuation of the dialogue about the house that S003 build himself with some friends. S003 disagrees with what S004 is saying, which is why when S004 answers he uses PALM-UP to prevent a face-threat because the topic is delicate.

(140) [YES+] [HELP COME WORK.ACTIVE FINISH GIVE-MONEY-HIDE FORBID(Y)] [MUST] <**PALM-UP**> [MUST SILENCE] <PALM-UP>
'Yes, yes... But it is forbidden that people come to work and that you pay without declaring it, you know, you cannot tell anybody then.'

(Corpus LSFB, session 2, task 4, signer S004, 08:36 - 08:45)

This palm-up is the only example expressing face-saving and is produced by the same signer who articulated the palm-up for hedging. Similarly to the previous function, this palm-up is a two-handed form. Nonmanuals are also akin: there is a floating gaze, a head tilt and a blinking. The mouth is closed (tight lips), which is used to mitigate moderate threats according to Hoza (2011). In addition to these nonmanuals, there is also a shoulder shrug which is a non-manual marker of modality when it appears with PALM-UP (McKee and Wallingford, 2011; van Loon, 2012). Here a shoulder shrug seems to intensify the face-saving function conveyed by the other nonmanuals and by the context.

Non-manual marking is highly consistent across mitigating functions (i.e. hedging and face-saving), so reference to the context is necessary in order to decide which function applies. This finding supports the claim made earlier for the functions of concession and opposition: non-manual marking conveys a general meaning (contrast, mitigation and possibly others), but the context remains necessary to decide which function in particular applies to a DM token.

Specification This function applies when the discourse segment introduced by the marker describes in more detail and instantiates with an example the preceding discourse segment. The content of the discourse segment introduced by the marker must fall within the informational scope of the previous discourse segment (Crible, 2014, p.22). Example (141) contains an excerpt of a dialogue about deaf and hearing culture. S055 says that she only feels deaf in situations in which there are communication barriers such as when there are no subtitles or when the train information is only announced over a loudspeaker. These two examples are introduced by PALM-UP.

(141) [WHEN HAVE FEELING <GSIGN> OBSTACLE++ DE:PAF++ <**PALM-UP**> POSSIBLE A-LITTLE SIMPLE HAVE-NOT SUBTITLES DS:SIZE-SUBTITLES UNDERSTAND NOTHING <OR> TRAIN <PT:PRO2(B) KNOW> TRAIN] <GSIGN> [FEELING JUST.F DEAF] [PT:PRO1 ANNOY]
'If I find erm obstacles, for instance when subtitles are too small or non-existent or in the train, you know, then I feel deaf and it makes me angry.'

(Corpus LSFB, session 2, task 4, signer S055, 00:46 - 00:57)

There is only one palm-up expressing specification. It is a two-handed form with a gaze directed at the addressee and closed mouth.

Topic-shifting This function "signals a change of topic within or between turns. A distant connection to previous context can still remain, with a shift in focus" (Crible, 2014, p.23). The new topic can be a subtopic of the previous, but no formal reference can be made to previous context. Example (142) is an excerpt of the answer that S004 gives to the moderator when she asks the informants to explain what their childhoods were like. S004 begins by saying that he does not remember a lot of things from the moment he was born to the age of five, which was the time of the Second World War. He goes on talking about his family and then uses PALM-UP (the first in the example) to start a discourse segment about games. This discourse segment is a sub-topic of the general topic, i.e. his childhood memories.

(142) <**PALM-UP**> <PALM-UP> [GAME PT:PRO1 NS:KERMESSE.NAPKIN GAME PT:LOC NONE VILLAGE PT:PRO1]
'And, so... There were no games or fairs in my village.'

(Corpus LSFB, session 2, task 3, signer S004, 00:36 - 00:43)

This palm-up is the only one expressing the function of topic-shifting and is articulated one-handed. It is followed by another palm-up which plans upcoming speech. Non-manual marking includes a body lean to the side, a head tilt and the mouth is open. The gaze is first addressed towards the interlocutor and afterwards directed away from him. This change in gaze is due to the following function of planning that goes with a floating gaze.

6.4.4 Position

The position of PALM-UP has scarcely been investigated in SLs. Previous studies (Engberg-Pedersen, 2002; van der Kooij et al., 2006; Amundsen and Halvorsen, 2011; McKee and Wallingford, 2011) talk about its position in the sentence, but none describe how data are segmented, which is an essential point when the location of this gesture is analysed. Only van Loon (2012) establishes a segmentation methodology into clauses using the STAP procedure (van den Dungen and Verbeek, 1999) (see 5.3.1 in chapter 5).

The methodology adopted in this dissertation is an adaptation of the Basic Discourse Units Model (Degand and Simon, 2005, 2009a,b) to the signed modality (see 4.3 in chapter 4). This model provides a well-grounded framework for the analysis of the position of PALM-UP as a DM at the level of the clause and the basic discourse unit (BDU). The segmentation into BDUs helps assign a position to a DM that is found between two clauses and provides more enlightening results when the function-position paradigm is tackled (see sub-section 6.4.5). In addition to these two layers of analysis, the position of PALM-UP in the turn is taken into account as well.

Figures 6.28 and 6.29 illustrate the position of PALM-UP in the clause and the BDU respectively. The most frequent positions in the clause are the right periphery (188) and the left periphery (124). Tokens in the clausal right periphery are usually found in the syntactic right periphery (147) or in the syntactico-prosodic right periphery (37) of the BDU, whereas tokens in the clausal left periphery are likely to be in the syntactic left periphery (53) or in the syntactico-prosodic left periphery (20) of the BDU. A high number of palm-ups are in the middle of the BDU (64), i.e. palm-ups are either inserted in the dependency structure of a clause (7) or they are neither the first nor the last element of the BDU (57). The independent position in both the clause and the BDU is also common with 21 cases.

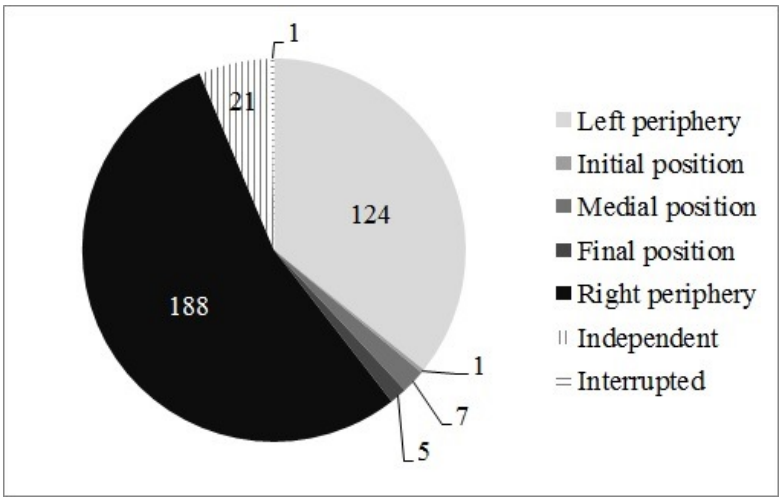


Figure 6.28: Position of PALM-UP in the clause in C2

The distribution of the positions of PALM-UP in the turn is shown in Figure 6.30. The most frequent position is turn-medial (228), although there are also a lot of palm-ups found in the turn-final position (86), which roughly corresponds to palm-ups expressing the functions of closing and monitoring. Only 18 palm-ups are in the turn-initial position, which means that turn-final palm-ups are five times more common than turn-initial palm-ups. Hence, it seems that PALM-UP is a widely used device to end turns in LSFB, but it is rarely used to begin them. The number of palm-ups that constitute a whole turn is low too, i.e. 15 tokens.

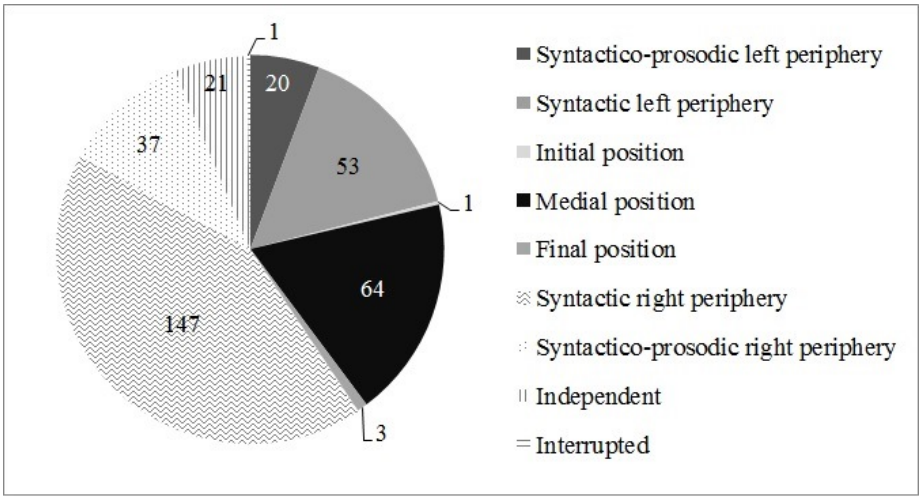


Figure 6.29: Position of PALM-UP in the basic discourse unit in C2

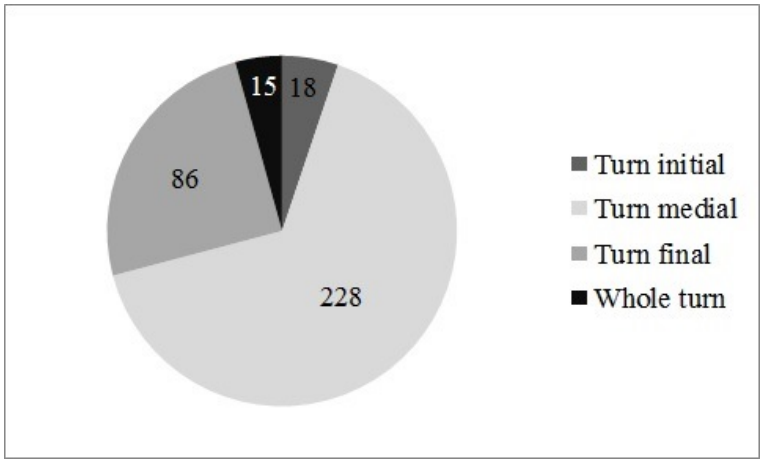


Figure 6.30: Position of PALM-UP in the turn in C2

This variety of positions, which was not found in list buoy digits, is related to the number of interpersonal functions (especially agreement and monitoring) and sequential functions (especially starting and closing the turn) that PALM-UP can fulfil and that do not typically appear in the turn-medial position (see next sub-section for further details).

6.4.5 The function-position paradigm

Unlike the discourse-marking list buoy digits in sub-section 6.3.5, there is not always a clear correlation between the function of PALM-UP and its position. The position of the less represented functions (cause, condition, contrast, disagreeing, face-saving, hedging, specification and topic-shifting) cannot be said to be a representative correlation because there is only one example of each (see tables 6.11 and 6.12). Cause

is represented by two palm-ups and each has a different position in the clause and the BDU.

The other functions are fulfilled by at least four PALM-UP tokens. Some of these functions appear in a particular position in the clause, the BDU and the turn; but others have more than just one possible position in the BDU, in the clause and the BDU, or (rarely) in the clause, the BDU and the turn. This variation in location is constrained by the function: opening and closing will obviously be found at the start or at the end of the turn, whereas other functions used to hold the turn (e.g. punctuation or planning) do not have a 'fixed' position by definition.

On the one hand, the functions presenting a clear correlation with the position are the following:

- **Closing** (sequential domain): it is used to end the turn, which is why palm-ups are found in the right periphery of the clause, in the syntactic right periphery of the BDU and in the turn-final position.
- **Opening** (sequential domain): it is the counterpart of the previous function as it is used to begin the turn. Therefore, the positions are the opposite; i.e. the left periphery of the clause, the syntactic left periphery of the BDU and the turn-initial position.
- **Quoting** (sequential domain): it is used to introduce constructed dialogue, so it is found in the left periphery of the clause that contains quoted material, in the middle of the BDU and in the turn-medial position.
- **Monitoring** (interpersonal domain): it is used to check for understanding. Since something needs to be said before this function appears, monitoring palm-ups are found in the right periphery of the clause, in the syntactic right periphery of the BDU and in the turn-medial position.
- **Consequence** (ideational domain): it is used to introduce a discourse segment that is the result of a previous discourse segment, which is why palm-ups expressing this function are in the left periphery of the clause that contains the consequence, in the middle of the BDU and of the turn.
- **Opposition** (rhetorical domain): it introduces a discourse segment that presents a pragmatic (subjective) contrast or concession. Consequently, palm-ups are also at the left periphery of the clause that contains the opposition and in the turn-medial position as the previous function, but in the syntactic left periphery of the BDU.

On the other hand, the functions presenting more variability in their positions are the following:

- **Punctuation** (sequential domain): it separates, articulates and/or stresses the beginning or end of discourse units. From this definition, it can be derived that different positions are possible; i.e. either the left or the right periphery of the clause. The right periphery is the most frequent (54 vs. 27 in the

left periphery).[20] As regards the BDU, the right peripheries are more likely to attract punctuating palm-ups (44 are in the right periphery and 12 in the syntactico-prosodic right periphery), but the syntactic left periphery and medial position (10 and 19 palm-ups respectively) are possible too. Despite this variability with respect to both the clause and the BDU, punctuating palm-ups are found in the turn-medial position.

- **Planning** (sequential domain): it is used to hold the floor in order to plan upcoming speech. Palm-ups are in the left periphery of the clause and the syntactic left periphery of the BDU (i.e. before new upcoming speech), but the medial position in the BDU is possible as well because the signer is holding the floor. Because of the two defining features of this function, this type of PALM-UP is always in the turn-medial position.

- **Agreeing** (interpersonal domain): it expresses understanding, not necessarily in response to a question. It is the function presenting more variability concerning the three different positions as the definition scarcely constrains the position. Agreeing palm-ups can be found in the left or right periphery of the clause (10 and 12 palm-ups respectively), or even in an independent position (18 palm-ups), in which case they are backchanneling signals. Six positions are possible in the BDU (four palm-ups in the syntactic left periphery, five in the syntactico-prosodic left periphery, eight in the syntactic right periphery, one in the medial position, four in the syntactico-prosodic right periphery and 18 in an independent position), so this is the PALM-UP function with the most possible positions in the BDU. In addition, agreeing is also the only function that presents different positions in the turn: there are nine turn-initial palm-ups, 10 turn-medial, seven turn-final and 14 that constitute a whole turn.

- **Concession** (ideational domain): it is used to deny the expectations explicitly related to the concessive discourse segment. These palm-ups are found in the left periphery of clauses that deny the expectations given in previous context. Their position in the BDU is divided between the syntactic left periphery, the syntactico-prosodic left periphery and the medial position. As for the turn, their position is medial.

- **Temporal** (ideational domain): it relates events temporally by ordering them or expressing overlapping. Palm-ups used as temporal markers are frequently found in the left periphery (six cases), although the right periphery is also possible (two cases). As regards the BDU, three palm-ups are in the syntactic left periphery, three in the syntactico-prosodic left periphery and two in the syntactic right periphery. This difference in terms of left or right periphery is not caused by the nature of the temporal relation (i.e. ordering or overlapping), but because the two palm-ups found in the right periphery are followed by a prosodic break that puts them together with the previous clause to form a BDU. Turn-medial is the only possible position for temporal palm-ups.

[20] These two numbers do not make 89 (the total number of palm-ups expressing this function) as there are other positions for the remaining seven punctuating palm-ups such as medial and final. When numbers are so small in comparison to the others, they are considered not to be representative and therefore not commented as a general trend.

Tables 6.11 and 6.12 summarise the possible positions of PALM-UP (when it has a discourse-marking function) in the clause, the BDU and the turn. Those functions for which different positions are possible may contain all possible positions unless a particular position is more representative than the others. If the frequency of a particular position gets to 50% or more, only one function will appear in the table.

Despite the heterogeneity in terms of position for some functions, studying the function-position paradigm provides some enlightening results. First, the position is what makes the difference between two functions that share some common features. For example, the function of punctuation can be used to articulate or stress the end of a discourse segment; which is similar to the function of closing that marks the end

Domain	**Function**	**Position in the...**		
		Clause	**BDU**	**Turn**
Sequential	Punctuation (89)	Right periphery (54)	Syntactic right periphery (44)	Medial (84)
	Planning (36)	Left periphery (27)	Medial (10) / syntactic left periphery (14)	Medial (35)
	Opening (4)	Left periphery (4)	Syntactic left periphery (4)	Initial (4)
	Closing (73)	Right periphery (73)	Syntactic right periphery (58)	Final (65)
	Quoting (5)	Left periphery (5)	Medial (5)	Medial (5)
	Topic-shifting (1)	Left periphery (1)	Syntactico-prosodic left periphery (1)	Medial (1)
Interpersonal	Agreeing (40)	Left periphery (10) / right periphery (12) / independent (18)	Syntactic left periphery (4) / syntactico-prosodic left periphery (5) / syntactic right periphery (8) / syntactico-prosodic right periphery (4) / independent (18)	Initial (9) / medial (10) / final (7) / whole turn (14)
	Disagreeing (1)	Right periphery (1)	Syntactic right periphery (1)	Medial (1)
	Monitoring (32)	Right periphery (24)	Syntactic right periphery (20)	Medial (27)
	Face-saving (1)	Right periphery (1)	Syntactic right periphery (1)	Medial (1)

Table 6.11: Summary of the function-position correlation of PALM-UP in C2 (first part)

Ideational	Concession (11)	Left periphery (9)	Syntactic left periphery (4) / syntactico-prosodic left periphery (3)	Medial (10)
	Temporal (8)	Left periphery (6)	Syntactic left periphery (3) / syntactico-prosodic left periphery (3)	Medial (8)
	Consequence (6)	Left periphery (3)	Medial (5)	Medial (6)
	Cause (2)	Left periphery (1) / right periphery (1)	Syntactic left periphery (1) / syntactic right periphery (1)	Medial (2)
	Condition (1)	Left periphery (1)	Syntactic left periphery (1)	Medial (1)
	Contrast (1)	Left periphery (1)	Syntactic left periphery (1)	Medial (1)
Rhetorical	Opposition (7)	Left periphery (6)	Syntactic left periphery (4)	Medial (6)
	Hedging (1)	Medial (1)	Medial (1)	Medial (1)
	Specification (1)	Medial (1)	Medial (1)	Medial (1)

Table 6.12: Summary of the function-position correlation of PALM-UP in C2 (second part)

of a turn (and therefore of a discourse segment as well). Non-manual marking is also similar (directed gaze, head or body movement, and sometimes blinking). Consequently, the difference between these two functions is made via the position: if PALM-UP is at the end of the turn, it will have the function of closing; whereas if it is in the middle, it will have the function of punctuation. These common points indicate that the two functions are almost the same, but closing palm-ups have a more conclusive force than punctuating palm-ups. The position in the clause and the BDU will also be more flexible in punctuating palm-ups, whilst it will be fixed to the right periphery of the clause and to the syntactic (or even syntactico-prosodic) right periphery of the BDU in closing palm-ups.

Second, the hypothesis formulated by Degand (2014), Degand et al. (2014), Martin et al. (2014) and Uygur-Distexhe and Degand (2015) following Traugott (2012) about subjective meanings attracted by the left periphery and intersubjective meanings attracted by the right periphery seems to be confirmed with some clarifications. Indeed, the functions found in the right periphery of clauses and BDUs are mostly from the interpersonal domain and they express intersubjective meanings (i.e. meanings related to the addressee): monitoring checks for understanding and face-saving

is used for deference. Nevertheless, the other two functions from this domain (i.e. agreeing and disagreeing) are found in the right periphery and they express subjective meanings, which would provide evidence against the hypothesis. This digression is usually due to the methodological decision taken with regard to the position. When there is a prosodic break after a discourse-marking PALM-UP (and not before), PALM-UP goes with the previous clause to form a BDU. Thus, PALM-UP is found in the right periphery of this clause and in the syntactic right periphery of the BDU. Even if this methodological decision could be reviewed in future research, it has to be underlined that the function of disagreeing only has one example (which could perfectly be an exception) and the function of agreeing presents such a variability in terms of position that conclusions can hardly be drawn.

Intersubjective meanings are not limited to functions of the interpersonal domain. For instance, the function of closing (from the sequential domain) is also found in the right periphery: it is used to end a turn so that the addressee can answer. The function of punctuation is also in the right periphery, but recall the high frequency of appearance in the left periphery which makes it difficult to draw conclusions regarding the function-position paradigm. Subjective meanings, in turn, are found in the left periphery and include the sequential functions left (opening, planning, quoting and topic-shifting), ideational functions (cause, concession, condition, contrast, consequence and temporal marking) and one rhetorical function (opposition).[21] Sequential functions are directly connected to the signer who wants to make clear that s/he is starting a turn, is holding it or that s/he is introducing new material either as a quote or as a continuation. Ideational and rhetorical functions also relate to the signer who establishes objective or subjective connections between clauses.

Finally, the study of the position of PALM-UP in the turn reveals that this particle participates in the turn-exchange system as a turn-taking, turn-holding and turn-yielding DM in the same way that DMs do in SpL conversations (Fischer, 2000). Signers show preference for this gesture to end their turns, but not to begin them. Since the approach in this dissertation is semasiological (i.e. only three specific markers are annotated), only a hypothesis can be formulated to explain this difference. PALM-UP tokens are found at the beginning of the turn when signers overlap, which would mean that this particle is specifically used to bid for the floor (van Loon, 2012) but not to start a turn after a pause.

6.4.6 Interim summary of main findings

Amundsen and Halvorsen (2011) and McKee and Wallingford (2011) underline the need to carry out systematic research into PALM-UP from the point of view of DMs. This section fills this gap by providing a quantitative and a qualitative study of discourse-marking palm-ups. It includes a description of the frequency of appearance

[21] The other two rhetorical functions (hedging and specification) are in the medial position, i.e. embedded within the clause and before the verb. The hypothesis concerning the left and right periphery of the clause could be restricted to the left or right periphery of the governor of the clause. Since there is only one example of each function, such a claim is daring and the question is left open for future research.

of this gesture per genre and per signer, its different discourse-marking functions, its position (in the clause, the BDU and the turn) and an account of the function-position paradigm. A sample of the LSFB Corpus containing six signers and four genres (C2) was analysed for this purpose (see chapter 3, section 3.2, for a more detailed description of the data).

To the best of my knowledge, previous studies on PALM-UP do not take into account the variable of genre. This work found that PALM-UP is very frequent in all genres studied (argumentative, expository, metalinguistic and narrative), but the genres with more tokens are the metalinguistic and the argumentative. In contrast to discourse-marking list buoys, there does not seem to be any relationship between the degree of preparedness and use of PALM-UP. On the other hand, PALM-UP could be more frequent in dialogues than in monologues: PALM-UP has a high number of interpersonal functions such as agreeing and monitoring that are not likely to appear in monologues. This hypothesis is left for further research.

Also, previous studies claim that PALM-UP is age sensitive, i.e. some age groups are more likely to use it than others (McKee and Wallingford, 2011; van Loon, 2012; Jarque et al., 2013; Mesch, 2016). No clear tendency derived from C2 in this respect: the two older signers and one young signer produced a higher number of palm-ups than the other young signer and the two middle-aged signers. Hence, the use of PALM-UP does not seem to be age-bound in this research on LSFB, but it should be noted that it is restricted to discourse-marking PALM-UP tokens and thus cannot be extended to the whole category as in existing literature.

The description of PALM-UP is divided into the type of DM, the domain (or macro-function) and the functions. The functions of palm-ups are mostly non-relational (i.e. they are used as word processing or turn-taking devices), and mostly belong to the sequential domain (discourse structuring) and the interpersonal domain (management of exchange between signers). PALM-UP functions can also be relational (i.e. they connect two segments of discourse), and belong to the ideational domain (objective coherence relations between two entities that exist in the real world) and the rhetorical domain (subjective or pragmatic coherence relations between two discourse entities). A final option is that PALM-UP tokens put together relational and non-relational functions, and combine different domains (especially the sequential with another).

PALM-UP fulfils 19 different functions in C2; in other words, it is the DM candidate in LSFB with the most discourse-marking functions in this dissertation. The most frequent functions (with more than thirty examples) are punctuation, closing, agreeing, planning and monitoring. The proportion of palm-ups with a double function is high as well (almost thirty cases). Other less frequent functions (no more than fifteen examples but no less than three) are concession, temporal marker, consequence, opposition, quoting and opening. Finally, the other functions left (cause, condition, contrast, disagreeing, face-saving, hedging, specification and topic-shifting) are only represented by one or two tokens.

McKee and Wallingford (2011) and van Loon (2012) say that the meaning of PALM-UP is conveyed by non-manual marking and by linguistic context. The results extracted from C2 seem to confirm this, although the position is equally important to decide, on occasions, which function applies. There are some combinations of nonmanuals that clearly co-occur with particular functions; for instance, the function of agreeing goes with a gaze directed at the addressee and a head nod. However, there are other functions such as punctuation and closing that share the same combination of nonmanuals. In these cases, the context and the position in which PALM-UP is found make the difference between the two functions. The position has not been given such an important role in the study of PALM-UP before and therefore it is one of the contributions of this section.

When investigating the position, three different levels of analysis were established: the clause (Blanche-Benveniste et al., 1990), the BDU (Degand and Simon, 2005, 2009a,b) and the turn. PALM-UP is more frequent in the right periphery of the clause, although the left periphery is possible too. There are few palm-ups in an independent position, and examples in medial and final positions are scarce. As regards the BDU, the most frequent position is the syntactic right periphery. The number of palm-ups in the syntactic left periphery, the syntactico-prosodic left and right periphery, and in the medial and independent position is lower but still significant (more than 20 examples each). Eventually, PALM-UP is predominantly located in the middle of the turn. There are also many cases in the turn-final position, but many fewer in the turn-initial position or constituting a whole turn.

The main interest of studying the position was to see whether the function-position paradigm described in SpLs (Briz Gómez and Pons Bordería (2010), Estellés and Pons Bordería (2014), among others) applies to DMs in SLs, and particularly to PALM-UP. There are some functions of PALM-UP (closing, opening, quoting, monitoring, consequence and opposition) that clearly show a correlation with a particular position in the clause, the BDU and the turn; whilst others (punctuation, planning, agreeing, concession and temporal marker) present different positions in the BDU; in the clause and the BDU; or in the clause, the BDU and the turn. For these last cases, there is always a predominant position except for the function of agreeing, which is the most variable function in terms of position.

Going further into the analysis of the function-position paradigm, other authors claim that the left periphery is likely to attract subjective meanings and the right periphery is likely to attract intersubjective meanings (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). The PALM-UP functions of closing, monitoring and face-saving express intersubjective meanings (i.e. meanings related to the addressee) and they are found in the right periphery. Conversely, the other PALM-UP functions from the sequential domain (opening, planning, quoting and topic shift), the ideational domain (cause, concession, condition, contrast, consequence and temporal marker) and the rhetorical domain (opposition) express subjective meanings. In other words, these functions are related to the signer's turn or to the coherence relations s/he wants to establish, and they are found in the left

periphery. Hence, PALM-UP participates in this dichotomy concerning the peripheries and their meanings.

In conclusion, PALM-UP is the most frequent DM under study in this dissertation and the most polysemous. Although it appears in the productions of all signers, some use it more than others and some functions are produced by a single signer. In order to cast light on the issues of preference and idiosyncrasy, the sample should be enlarged in future research with more signers and an onomasiological approach should be adopted. The annotation of discourse/coherence relations similar to PALM-UP would allow us to see which devices are preferred to begin the turn (PALM-UP is very frequent at the end of turn but not at the beginning) and which implicit or explicit discourse relations are used by those signers who articulated a lower number of palm-ups.

6.5 The sign SAME

SAME is a fully-lexical sign that has not been investigated as a DM so far. Its canonical form consists of the indexes of both hands extended and coming into contact (generally once or twice) with an inward movement, but it may also present phonological variations; i.e. it may be assimilated with the previous or the following sign and it may even be articulated one-handed using contact with the body or without contact in neutral space (see chapter 5, section 5.4, for further details). Regardless of its form, its core meaning in LSFB is resemblance or similarity and it is very productive in discourse. After PALM-UP, SAME is the second most frequent DM under study in this dissertation with a total of 110 discourse-marking tokens in C2 (see section 6.1).

6.5.1 Frequency per genre

In Figure 6.31, it can be observed that the distribution of SAME is balanced across three genres: the argumentative (26), the expository (38) and the metalinguistic (34). The narrative genre only has 12 discourse-marking tokens of the sign (11% of the total). This difference between one genre and the others was not found in list buoys or in PALM-UP (see sub-sections 6.3.1 and 6.4.1).

In contrast to list buoys and similar to PALM-UP, the use of SAME as a DM does not seem to be influenced by the degree of preparedness. The expository genre (explaining a hobby, job or passion) is the only semi-prepared dialogue in C2 (i.e. the signers have some time to think about their answer and even to take some notes), whereas the dialogues in the other genres are spontaneous. Even though the number of discourse-marking SAME is slightly higher in the expository genre, it is not very different from the number in the argumentative and metalinguistic genres.

The difference between the frequency of use of SAME in narratives and the other genres studied in C2 may be due to the functions fulfilled by this sign as a DM (see

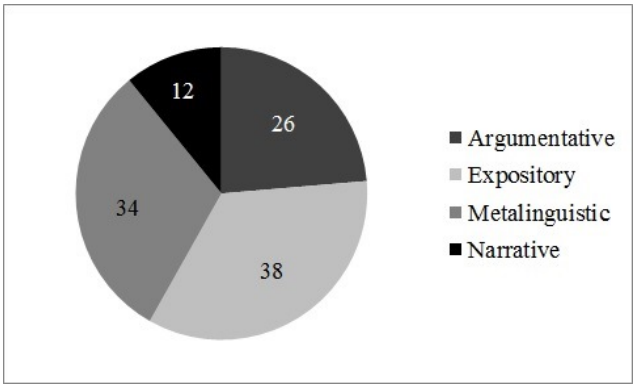


Figure 6.31: Distribution of discourse-marking tokens of SAME per genre in C2

sub-section 6.5.3). The most frequent functions include addition (40), reformulation (16) and specification (12).[22] Addition is a fairly common function of SAME that is used in all genres. On the contrary, reformulation and specification are frequently used in all genres except in the narrative (there are only two examples of reformulation using SAME and none of specification). This finding about reformulation agrees with Meurant and Sinte (2016), who found that fully-lexical signs are used less frequently to introduce a reformulation in narratives than in other genres. In narratives, the use of partly-lexical signs is preferred for this purpose.

6.5.2 Frequency per signer

Figure 6.32 contains the number of tokens of SAME per signer and per genre. The same conclusion which was drawn for PALM-UP applies to SAME, i.e. the use of this sign as a DM does not seem to be age stratified. S055 is a 23-year-old woman who produced the highest number of tokens of SAME (45), whereas the other informant in the same recording session (another woman aged 22) produced a considerably lower

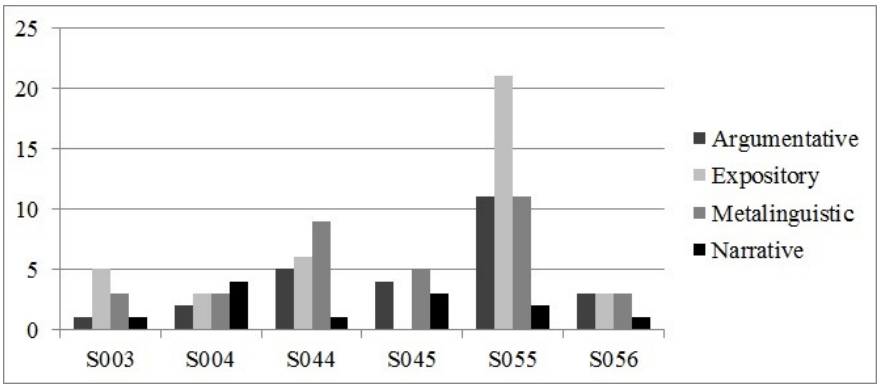


Figure 6.32: Distribution of discourse-marking tokens of SAME per signer in C2

[22]The numbers for addition and specification are the result of counting both single and double functions (see figures 6.36 and 6.37).

number (10). In fact, the total number of tokens of SAME articulated by this last signer looks very similar to the numbers of the oldest informants (S003 and S004) and one of the middle-aged signers (S045). S003 is a man aged 82 who produced 10 tokens of SAME, S004 is another man aged 73 who produced 12, and S045 is a woman aged 46 who produced 12 as well. On the other hand, S044 (a 48-year-old man) produced a higher number of signs SAME than S045 (21), but it remains lower than the number of S055.

In order to get the real frequency of use of this sign per signer in C2, the total number of tokens of SAME per signer was divided by the total number of signs produced by the signer's dominant hand (see Table 6.13). S003, S044, S045 and S056 have the same average: one sign SAME for every 100 signs. S004 does not get to this average as he produced one sign SAME for every 200 signs. S055 is above average with two signs SAME for every 100 signs. These results reveal that, similarly to list buoys, the use of SAME depends on the signer's style. That said, SAME is more frequently used than list buoys and does not seem to be idiosyncratic. The relationship between the function and the age group will be detailed below in 6.5.3.3.

Signer	**Number of tokens of SAME**	**Number of signs**	**Average**
S003	10	1217	1/100
S004	12	2237	0.5/100
S044	21	1761	1/100
S045	12	1141	1/100
S055	45	2542	2/100
S056	10	1168	1/100

Table 6.13: Number of tokens of SAME per signer in C2

6.5.3 Type of DM, domains and functions

6.5.3.1 Type of DM

As a DM, SAME is mainly relational (69 out of 110, so more than 50%). It can also be non-relational (25 out of 110, i.e. almost a quarter) and less frequently it can have a relational and a non-relational function (16 out of 110). This distribution presented in Figure 6.33 is the opposite to Figure 6.20 on PALM-UP. This gesture was predominantly non-relational and its percentages of relational and both relational and non-relational functions were almost marginal. Figure 6.33 looks closer to that of list buoys (Figure 6.3) in the sense that the number of relational functions overtakes the number of non-relational and both. However, the percentage of non-relational functions and of both relational and non-relational functions is higher than in list buoys. Hence, the distribution of SAME according to the scale of relationality is the most balanced of the three DMs under study.

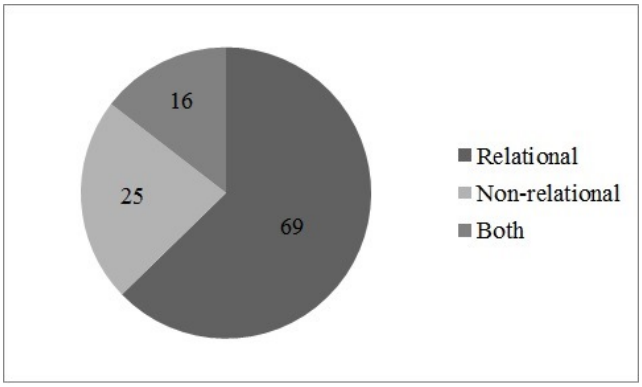


Figure 6.33: Distribution of discourse-marking tokens of SAME according to the scale of relationality in C2

6.5.3.2 Domain

SAME as a DM can belong to any domain as shown in Figure 6.34. The sequential domain is the most represented with 48 discourse-marking tokens and it is followed by the rhetorical domain with 38 tokens. The ideational and interpersonal domains are scarcely present with six and one tokens respectively. This distribution has two points in common with list buoys and PALM-UP: (i) the sequential domain is the most frequent, and (ii) the ideational domain, despite being represented, is quite infrequent. The main difference between SAME and the two other DMs under study regarding the domain is that SAME has a high percentage of functions belonging to the rhetorical domain, so it could be hypothesised that metadiscursive chunks of discourse in LSFB are preferably introduced by fully-lexical signs.

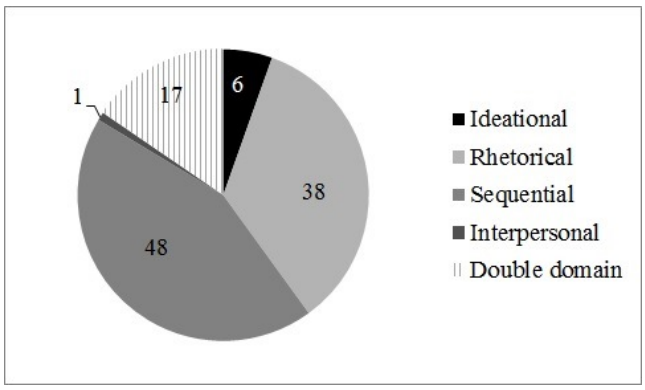


Figure 6.34: Distribution of discourse-marking tokens of SAME according to their domain in C2

There are 17 tokens of SAME with a double domain (see Figure 6.35). The two domains that usually appear together are the sequential and the rhetorical, which are the most frequent in this DM. The sequential domain can also combine with the interpersonal, but there is only one example. These combinations (also found in PALM-UP tokens) involve a relational and a non-relational function (e.g. addition

+ emphasis), and occasionally two non-relational functions (e.g. open + disagreement); so the combination of two relational functions never occurs.

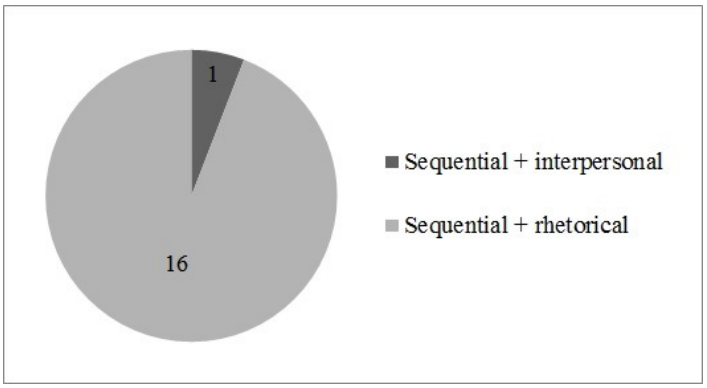


Figure 6.35: Distribution of discourse-marking tokens of SAME with two domains in C2

6.5.3.3 Function

SAME is the second most polysemous DM under inspection in this dissertation after PALM-UP. SAME fulfils 15 different functions from the 31 possible functions. Only one function is shared with list buoys (i.e. addition), 10 are shared with PALM-UP (i.e. cause, concession, consequence, face-saving, hedging, opening, planning, specification and topic-shifting) and four are not found in the previously mentioned DMs (i.e. conclusion, comment, reformulation and resuming).

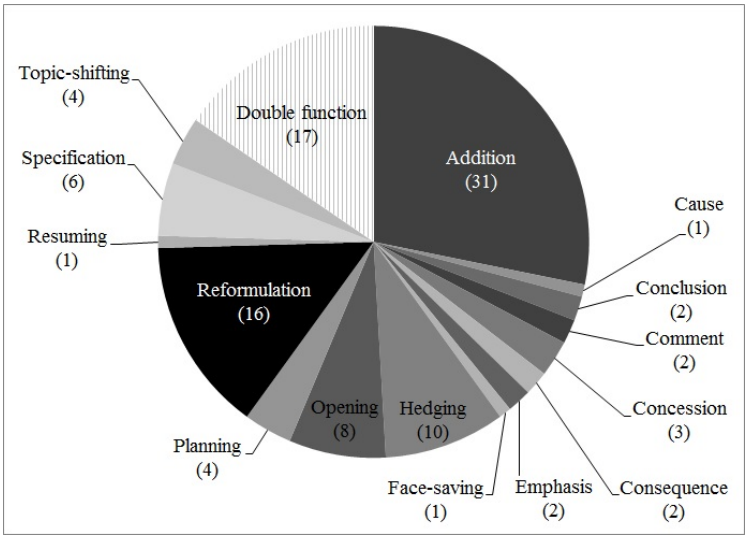


Figure 6.36: Distribution of discourse-marking tokens of SAME according to their function in C2

The only existing description of the functions of SAME is that of the *Auslan SignBank* (see sub-section 5.4.1 in chapter 5). Some of the functions as modifier in

Australian SL (Auslan) resemble the discourse-marking functions of addition and resuming. These two functions were also found in the LSFB sample (C2), although their frequency of use is very different (addition is the most frequent and resuming one of the least frequent). After addition, the most widespread functions of SAME are reformulation and hedging. The other functions with two or more tokens are used by at least two different signers, whereas those with one token seem to be idiosyncratic usages of the sign (see Figure 6.36).

Earlier in sub-section 6.5.2, it was said that SAME is used by all signers as a DM regardless of their age group. Table 6.14 contains a detailed account of the most frequent functions (at least four cases per function) produced by each age group.

Function	**Age groups**			**Total**
	18-29	**30-49**	**50-85**	
Addition	13	5	13	31
Reformulation	4	9	3	16
Hedging	7	2	1	10
Opening	6	2	0	8
Specification	3	1	2	6
Planning	3	0	1	4
Topic-shifting	1	1	2	4

Table 6.14: Functions of SAME per age group in C2

At least, three functions prevail in the young pair of informants: hedging, opening and planning. Although the function of addition is represented by the same number of tokens in young and old signers, it needs further clarification. If the nine tokens of addition + emphasis (see Figure 6.37), which were produced by one young signer, are added to the 13 tokens of addition, the function of addition is more frequent in young signers. However, it is always the same young signer (S055, the one who was above average in the use of SAME) who uses this function in contrast to the other functions shared between the two young signers. Hence, it is difficult to decide so far whether addition is more frequent in young or old signers.

The predominant functions used by older signers are topic-shifting and specification. For this last function, the table contains a higher number in the young signers' cell. Nevertheless, if the three cases in which an old signer produced a double function (two specification + open and one specification + planning) are added, specification is more frequent in old signers. The most usual function in the middle-aged pair is reformulation. All in all, the numbers do not present great variation from one age group to another as it could be observed for PALM-UP.

Figure 6.37 reflects the 17 cases in which SAME has a double discourse-marking function. The functions that frequently combine with others are addition, specification and emphasis. The function of emphasis rarely appears in isolation, it usually combines with another function. All signers (except S056) combined two functions in

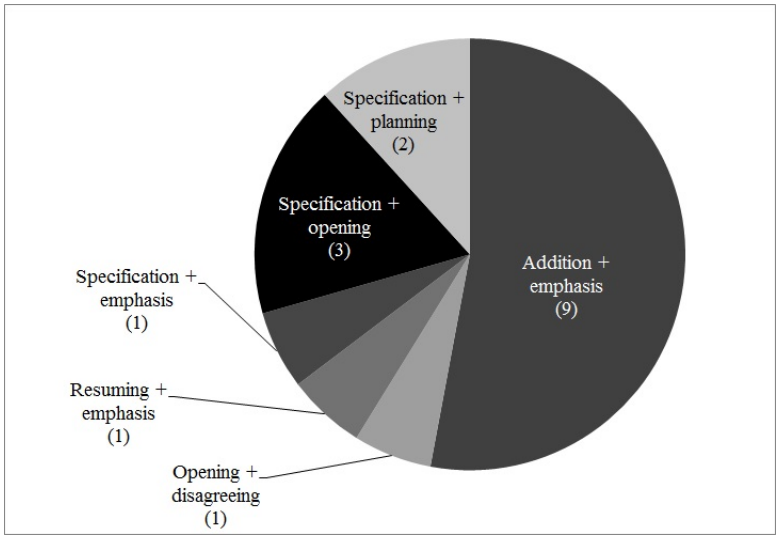


Figure 6.37: Distribution of discourse-marking tokens of SAME with two functions in C2

at least one of the tokens of SAME. Nonetheless, S055 produced the most tokens of SAME with a double function (12 in total): nine addition + emphasis, one resuming + emphasis, one specification + emphasis (out of two) and one specification + planning (out of two). These results reveal that the use of discourse-marking SAME is not only a mannerism of S055, but also that the combinations she produced may be idiosyncratic. In what follows, each discourse-marking function of SAME will be defined and exemplified.[23] Non-manual marking will be also described as it partly conveys the meaning of SAME together with linguistic context and the position.

Addition This function is shared with list buoys and was defined on p.218. The following example was previously presented in chapter 5 and is repeated here as (143). The signers are talking about LSFB variations. S004 says that he does not know people who use the signing varieties of Brussels and S003 answers that there are people who came to Namur who use these varieties.

(143) [HAVE SEVERAL NS:BERCHEM COME NS:NAMUR] <**SAME**> [PT:LOC NS:CHARETTE HAVE SEVERAL]
'There are several people from Berchem who have come to Namur. And there are several people from La Charette.'

(LSFB Corpus, session 2, task 11, signer S003, 04:09 - 04:14)

[23] The description of the different functions of SAME is shorter than that of list buoys and PALM-UP. List buoys included a description of their scope, which could be analysed objectively, i.e. from the appearance of the first digit until the appearance of the second. SAME is not made up of different parts that allow this analysis of scope. PALM-UP is by definition a one-handed or a two-handed gesture, i.e. phonology is a part of its description. Conversely, the phonological variations of SAME presented in chapter 5 do not participate in the definition of the sign, which is why they will not be taken into account in the description of the functions.

Example (143) contains two clauses related to the topic of 'signing varieties'. Once the first clause is uttered, SAME is used to add the second clause. As a marker of addition, SAME frequently appears with a gaze directed at the addressee and a head movement (nod, tilt or turn). These nonmanuals are similar to the nonmanuals co-occurring with list buoys that had the function of addition. Signers also mouth a French word ('aussi' meaning 'also' or 'même' meaning 'same') almost every time the sign is produced.

Reformulation This function signals "an equivalence between two simple units with a change in phrasing" (Crible, 2014, p.22) and includes simple paraphrase (144) and actual reformulation (145).

(144) [WIND TAKE TITLE] <**SAME**> [DS:KITE-UP] [PT:PRO1 DS:KITESURFER-UP]
'The wind sort of takes you, I mean, the kite goes up in the air and you can stand up.'

(LSFB Corpus, session 27, task 15, signer S055, 07:09 - 07:13)

(145) [ALREADY START SEVEN AGE UNTIL-NOW] [HABIT PT:PRO1 LEARN] <**SAME**> [HEARING LEARN]
'I started driving a tractor when I was seven. I'm used to learning from people, I mean, from hearing.'

(LSFB Corpus, session 21, task 4, signer S044, 01:50 - 01:55)

In example (144), S055 uses a paraphrase in order to explain with other signs the idea that 'the wind takes the kitesurfer'. Conversely, in example (145), S044 reformulates in the sense of marking that 'hearing' is more appropriate than 'people' in general. Similarly to the function of addition, reformulation goes with a gaze directed at the addressee. The mouthings 'même' ('same') and 'comme' ('like' or 'as') are used very often with the sign, whereas the use of the mouthing 'aussi' ('also') is marginal in this function.

Hedging This function is also fulfilled by PALM-UP and was defined on p.247. In example (146), S055 says that hearing parents do not know how to act with their deaf child. S056 agrees with that and gives a couple of examples.

(146) [CHILD DEAF.2 FEELING PT:DET COMMUNICATION-NOT PARENTS <PALM-UP> <PLUS> <GSIGN> AGGRESSIVE WHAT] <**SAME**> <GSIGN> [ADAPT-NOT] [YES]
'That's what a deaf child feels when he experiences communication problems with his parents or when they tell him off and he does not understand why. The situation is sort of not adapted to him, yeah.'

(LSFB Corpus, session 27, task 4, signer S056, 02:22 - 02:30)

SAME expresses a lack of precision in order to mitigate the content of her message. As mentioned on p.191, non-manual marking includes a floating gaze (i.e. the gaze is not directed at the addressee). The gaze may also be directed at the addressee, in which case there are other signs or gestures surrounding SAME that express approximation (in this example, S056 uses a gesture similar to the sign FEELING in which the fingertip of the thumb rubs the fingertips of the other fingers). In addition, this function frequently appears with a head turn or tilt and the mouthing 'comme' ('as' or 'like'). Blinking may also be present and the mouth is closed if there is no mouthing.

When PALM-UP and SAME express hedging, they both have a floating gaze and a head tilt. However, the activity of the mouth is different. SAME is not articulated with the polite grimace (i.e. open mouth with teeth in contact), but the French word 'comme' is frequently uttered. The use of a mouthing instead of a mouth action may be motivated by the difference between a fully-lexical sign such as SAME, which carries a meaning of likeness, and a gesture such as PALM-UP, which is empty of meaning.

Opening This function can also be fulfilled by PALM-UP (see definition on p.245). Example (147) is an excerpt of the dialogue between two signers (S055 and S056) about LSFB variations. S056 explains how she identifies a particular signing variety and S055 bids for the floor using SAME in order to ask for a clarification.

(147) <**SAME**> [PT:POSS SL FS:D NS:BERCHEM KNOW PT:PRO2(7)]
'So you know the signs that people from Berchem use?'

(LSFB Corpus, session 27, task 14, signer S055, 06:17 - 06:20)

Non-manual marking co-occurring with this function includes a gaze directed at the addressee and the mouthing 'aussi' ('also') or 'même' ('same'). Occasionally, signers may turn their head during the articulation of this sign. The only non-manual marker shared with discourse opening PALM-UP is the gaze directed at the addressee in order to let him/her know that the other signer wants to start a turn or that s/he is bidding for the floor. Similarly to the function of hedging, when PALM-UP and SAME open the turn, the activity of the mouth is different: for PALM-UP the mouth is closed, whereas for SAME a mouthing is produced. As argued before, this difference may be due to the fact that SAME carries a meaning and PALM-UP not.

Specification This function is shared with PALM-UP and was defined on p.248. Example (148) contains an excerpt in which signers discuss the difficulties of being deaf in a hearing society. S055 says that when there are other deaf people who sign, she forgets that she is deaf. SAME is used to introduce an example which falls within the informational scope of the previous discourse segment.

(148) [IF WITH DEAF DS:PEOPLE-GOING-AROUND SL <PALM-UP> DE:FORGET PERSON.ME DEAF NO.N SAME <PALM-UP> LIFE ADVANCE] <**SAME**> [NOW PT:PRO1(B) FEELING DEAF NO.N]
'If I'm with other deaf people who sign, I don't feel deaf as everything is natural. For instance, now I don't feel deaf.'

(LSFB Corpus, session 27, task 4, signer S055, 00:39 - 00:46)

SAME expressing specification either goes with a directed or a non-directed gaze at the addressee. The mouthings that accompany the sign include 'aussi' ('also'), 'même' ('same') and 'comme' ('as' or 'like'). Hence, non-manual marking does not seem to follow a clear pattern in this function. When PALM-UP is used for specification, the gaze is directed at the addressee and the mouth is closed; so once again the main difference between PALM-UP and SAME expressing the same function concerns the activity of the mouth as in the two previous functions (hedging and opening).

Planning This function is the only one that can be found in the three DMs under study in this dissertation (see definition on p.223). Example (149) is an excerpt of the dialogue in which each signer has to talk about a hobby or passion. S055 chooses kitesurfing. While she is giving details about different issues and things involved, she gets lost and uses SAME to hold the floor and plan what she is going to say afterwards.

(149) <PLUS> <**SAME**> [WAIT.STOP] [WIND LEAVE]
'And also... Wait, I finished with the wind.'

(LSFB Corpus, session 27, task 15, signer S055, 05:58 - 06:01)

Non-manual marking includes a floating gaze and sometimes the chin is down. This non-manual behaviour coincides with list buoys and PALM-UP that express the same function as avoiding eye contact allows the signer to not be interrupted by the other. In contrast to list buoys and PALM-UP, the three mouthings ('aussi', 'comme' and 'même') that occur with other functions of SAME are also repeated here.

Topic-shifting This function was previously described on p.249 as it is common to PALM-UP. In example (150), the signer explains two past memories. He says that his mother obliged him to go to mass and that he used to be bored in his village because there he had no contact with other deaf people. Although the topic of discourse does not change, SAME shifts the focus from one past event to the other.

(150) [PT:PRO1 CHRISTMAS.SALAD PASS.AFTER NEW YEAR SUNDAY+ AND AFTER AFTERNOON CHRISTMAS.SALAD MASS PASS.AFTER] <**SAME**> [HAVE(G) A-LITTLE BORED VILLAGE] <PALM-UP> [DEAF MEET NOBODY]
'I had to go to mass for Christmas, New Year's Eve and every Sunday. And I was a bit bored because there were no other deaf people in my village.'

(LSFB Corpus, session 2, task 3, signer S004, 02:47 - 02:57)

Non-manual marking accompanying SAME with the function of topic-shifting includes a floating gaze and a head movement (turn, tilt or chin down); i.e. the same non-manuals that occur with PALM-UP tokens that express this function. There are no clear patterns regarding the behaviour of the mouth: it stays closed in two cases and it articulates 'même' in the other two.

Concession This function was defined above in the sub-section devoted to the discourse-marking functions of PALM-UP (p.241). Example (151) is an excerpt of a dialogue about subtitles. S004 says that he prefers them instead of having an interpreter. Since S004 previously says that there are difficult words in subtitles, the expectation would be that it is hard to understand them. However, he denies this expectation by saying that he generally understands their meaning in the clause that follows SAME.

(151) [WORD DIFFICULT.CRAWL READ] <**SAME**> [UNDERSTAND]
'Sometimes there are difficult words, but I still understand.'

(LSFB Corpus, session 2, task 3, signer S004, 06:47 - 06:50)

Non-manual marking includes a floating gaze, a small head nod and the mouthing 'quand même' (which means 'even though' when it expresses contrast, and 'really' when it is used to insist on something). SAME expressing concession only coincides with PALM-UP in the floating gaze. The head movement differs from one DM to another: PALM-UP is articulated with a head tilt (as other contrastive functions), whereas SAME co-occurs with an almost imperceptible head nod. The reason behind this difference in head movement may be related to the mouthing. When SAME is a marker of concession in C2, it combines the two meanings of 'quand même': the gaze may be connected to the contrastive meaning because its behaviour is the same as in concessive PALM-UP, whereas the small head nod may express insistence. Interestingly, the mouthing 'quand même' is only articulated with this particular discourse-marking function (and with one example of conclusion, see below). Hence, this mouthing seems to be necessary to convey this meaning since it appears in the three examples of concession, whereas the other functions could go with different mouthings or even with different mouthings and mouth actions.

Comment This function is defined by Crible (2014) as "a remark that is not directly related to the speech but is considered relevant for full understanding, in other words a digression or parenthesis" (p.22). In example (152), S056 is explaining a past memory concerning her participation in the scouts. She uses SAME in order to introduce a parenthesis.

(152) [FOR <PLUS> PT:DET DATE SCOUT <**SAME**> INSIDE SCOUT HEARING MIX]
'Also when I went with the scouts, because I joined the scouts, I was with the hearing.'

(LSFB Corpus, session 27, task 3, signer S056, 00:10 - 00:13)

SAME is the only DM under study in this dissertation that fulfils this function. The two examples go with a gaze directed at the addressee and the mouthing 'aussi'.

Conclusion This function "corresponds to a pragmatic result, an epistemic or speech-act consequence" in which there is an evaluation or a generalisation (Crible, 2014, p.21). Example (153) is an excerpt of a conversation in which S003 explains how the meaning of two 'official signs' was established.[24]

(153) [DS:ROOF HOSPITAL FOR BORN CHILD SIGN MOTHER.ANKLE FS:MATERNAL] <**SAME**> <GSIGN> [NOTHING LOSE] [BETTER MOTHER FS:MUM]
'The sign MOTHER articulated in the ankle refers to maternity wards, so the meaning of the two signs was separated and none was lost. It's better to articulate MOTHER with the letter m for mum.'

(LSFB Corpus, session 2, task 11, signer S003, 05:37 - 05:47)

Non-manual marking includes a gaze directed at the addressee and a head nod. The two examples of this function go with a different mouthing, either 'même' ('same') or 'quand même' ('even though' or 'really'). As mentioned above, 'quand même' is only consistently articulated when SAME is used to express concession; so this case seems to be an exception.

Consequence This function was previously described on p.244 as it is also fulfilled by PALM-UP. In example (154), S056 is saying that when she was a kid, there were no subtitles at the cinema. As a result, she did not want to go there because she would only see images. This consequence is introduced by SAME.

(154) [PT:PRO1 NOTHING WANT GO(1)] [SMALL(B) UNDERSTAND NOTHING IMAGE] <**SAME**> [LEAVE]
'When I was a kid, I didn't want to go to the cinema. I'd understand nothing, only the image, so it was not interesting for me.'

(LSFB Corpus, session 27, task 4, signer S056, 03:59 - 04:01)

Non-manual marking co-occurring with SAME as a marker of consequence includes a gaze directed at the addressee and the mouthings 'même' ('same') or 'comme' ('like' or 'as'). When PALM-UP has this function, it also goes with a directed gaze. However, the activity of the mouth is different: the mouthings 'alors' ('then') or 'après' ('afterwards') are uttered, and if there is no mouthing, the mouth is closed. This difference in the behaviour of the mouth was found before in other functions such as hedging, opening or specification and is related to the difference between a fully-lexical sign and a gesture. The first has a core meaning that somehow restricts the mouthing that can be uttered, whilst the second is empty of meaning.

[24]Official signs are the result of an attempt to create a standardised variety in LSFB. Official signs do not take into account iconicity, but they copy some features from French such as letters or structures (see chapter 1, sub-section 1.3.1, for further details).

Emphasis This function (defined on p.216) can also be expressed by list buoys and PALM-UP, but it never appeared as a single function. It was always combined with another function such as alternative, monitoring or punctuation. In example (155), SAME (translated as 'also') is emphatic of the propositional value of the clause.

(155) <LBUOY(7):SECOND> <GSIGN> <**SAME(7)**> [HERE FEELING SAME A-LITTLE YES BECAUSE KNOW WEBCAM THERE]
'Second, erm... here I also feel that my signing changes because there are cameras.'

(LSFB Corpus, session 27, task 14, signer S055, 00:33 - 00:37)

When SAME is used as a marker of emphasis, it usually appears after a list buoy or after the sign PLUS. However, this co-occurrence of DMs cannot be generalised as only one signer (S055) uses these collocations, so this may be an idiosyncratic usage of the sign. As regards non-manual marking, this function goes with a floating gaze, a head turn and a body movement. The body movement seems to be the most salient nonmanual for conveying emphasis. Similarly to previous functions of SAME, emphasis goes with the mouthing 'aussi'.

Cause This function can also be found in PALM-UP tokens (see definition on p.245). In example (156), the signer is talking about a real-world event, i.e. signing variation, which (among other causes) is related to generational differences.

(156) [PT:PRO1 BEFORE SAME] [PT:PRO1 DOG] [DIFFERENT] [EXCHANGE] <**SAME**> [TALL-SMALL]
'I didn't use this sign before, I would sign DOG articulated in the chin. We use different signs because there is a generational difference.'

(LSFB Corpus, session 21, task 14, signer S044, 00:04 - 00:09)

This is the only example of SAME expressing cause. It goes with a floating gaze, a movement of the head forward and the mouth is open. Only the floating gaze coincides with causal PALM-UP, but it is hard to draw any conclusions as the number of examples is too low.

Face-saving This function is also fulfilled by PALM-UP (see p.248). Example (157) is taken from a discussion about positive and negative attitudes within the Deaf Community. S044 is convinced that there are no negative attitudes as everybody is free to behave as s/he wants to. However, S045 thinks the opposite and gives an example of what a negative attitude is for her. She says that there are some deaf people who are not involved in the Deaf Community because they are narrow-minded and that nothing can be done for them. Since the topic is delicate, she uses SAME to prevent face-threats.

(157) [NOTHING PROGRESS] [LEAVE] [FXD:STUPID] <**SAME**> [PT:DET ENOUGH-NOT]
'They won't progress, so leave them. You know, they do not have enough capacity to understand.'

(LSFB Corpus, session 21, task 4, signer S045, 05:56 - 06:00)

This is the only example of SAME in which it is used as a face-saving marker. Non-manual marking includes a head tilt and closed mouth (nothing can be said about the gaze direction because the signer's eyes are closed during the articulation of the sign). The lips are tight as when PALM-UP expresses this function. Therefore, tight lips are not only used to mitigate moderate threats during the articulation of PALM-UP (Hoza, 2011), but also during the articulation of SAME. Possibly, the use of this nonmanual as a mitigator may be quite generalised at least in LSFB.

As mentioned before, it is worth underlining the importance of context in order to tease apart discourse-marking functions that are closely related. Since non-manual marking co-occurring with the two mitigating functions (i.e. hedging and face-saving) is very similar, the difference between mitigation as a rhetorical device (i.e. hedging) or as an interpersonal device (i.e. face-saving) needs to be made via the context and via the position as will be shown in sub-section 6.5.5 (SAME used for hedging appears in the medial position, whereas SAME used for face-saving appears in the right periphery).

Resuming This function "signals the intention to link the upcoming segment to previous topic, to come back to the topic after a digression, a hesitation or a non-relevant passage" (Crible, 2014, p.23). In example (158), the signers are talking about wood. Before this excerpt, S004 says that he loves cutting trees and that he used to do it frequently when he lived in the region of Luxembourg. S003 intervenes saying that nowadays wood is used less than it was years ago and gives some examples. S004 uses SAME in order to come back to the topic of cutting trees.

(158)
S003: [PANE+ PT:DET DS:SQUARE-SHAPE WOOD DIVERSE] §[NOW NEW PLASTIC.EGG] [NOW PLASTIC.EGG]
S004: §[TRY] [PT:PRO1 <**SAME**> PT:PRO1 APPROXIMATELY PT:PRO1 BEAUTIFUL DS:SHAPE-TRUNK CUT-DOWN CUT-DOWN]
S003: 'Panes had their frames made of wood and many other things. New ones are made of plastic. Now plastic...'
S004: 'I've tried them. So when I see a beautiful tree, I cut the trunk near the roots and near the branches.'

(LSFB Corpus, session 2, task 15, 05:38 - 06:00)

SAME can be used alone to express this function or with other signs as in example (159), in which the excerpt glossed in (141) is repeated with more context. The signers are discussing the differences between deaf and hearing culture and S056 says that integration with the hearing was difficult. The conversation continues and S055 talks about the situations in which she feels deaf. However, she goes back to what S056 said using SAME PT:PRO2 SAY.

(159) [WHEN HAVE FEELING GSIGN OBSTACLE++ DE:PAF++ <PALM-UP> POSSIBLE A-LITTLE SIMPLE HAVE-NOT SUBTITLES DS:SIZE-SUBTITLES UNDERSTAND NOTHING <OR> TRAIN <PT:PRO2(B) KNOW> TRAIN] <GSIGN> [FEELING JUST.F DEAF] [PT:PRO1 ANNOY] <SAME> <LBUOY(2):TWO> <**SAME PT:PRO2 SAY**> [INTEGRATION WITH HEARING DIFFICULT]
'If I find erm obstacles, for instance when subtitles are too small or non-existent or in the train, you know, then I feel deaf and it makes me angry. In addition, as you said, integration with the hearing is difficult.'

(LSFB Corpus, session 27, task 4, signer S055, 00:46 - 01:00)

Regardless of whether SAME is articulated alone to express this function as in (158) or with other signs as in (159), non-manual marking includes a gaze directed at the addressee and the mouthing 'aussi' ('also') or 'même' ('same').

6.5.4 Position

Earlier in this chapter (sub-section 6.2.2), the importance of studying the position of DMs as one of their defining features and as a new approach to their polysemy was presented. In order to investigate this relationship between function and position (which is unprecedented in the literature on DMs in SLs), the possible positions of SAME at the level of the clause, the basic discourse unit (BDU) and the turn need to be set out.

Figures 6.38 and 6.39 illustrate the position of SAME in the clause and in the BDU. Similarly to list buoys and unlike PALM-UP, the most frequent position in the clause is the left periphery (94). These tokens can be found in three different positions in the BDU: syntactico-prosodic left periphery (17), syntactic left periphery (47) or medial (39). The other positions in both the clause and the BDU are under-represented.

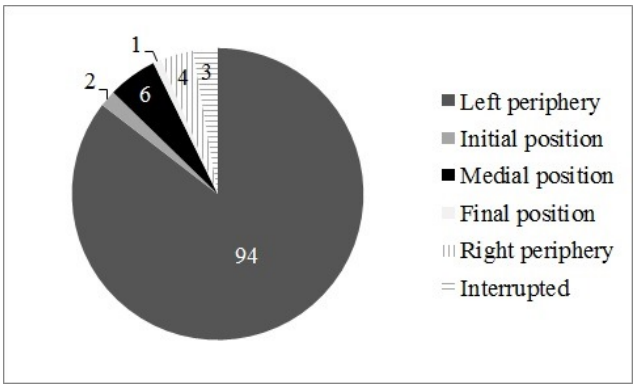


Figure 6.38: Position of discourse-marking tokens of SAME in the clause in C2

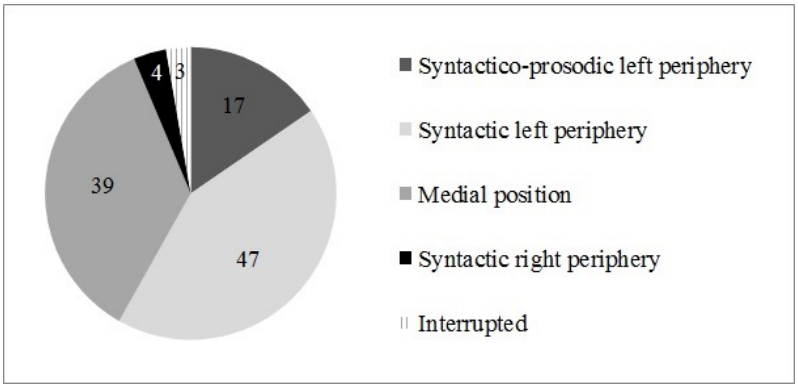


Figure 6.39: Position of discourse-marking tokens of SAME in the basic discourse unit in C2

Figure 6.40 shows the distribution of SAME according to its position in the turn. Like the other two DMs under study, the most frequent position in which SAME is found in conversations is turn-medial (98 cases). The number of tokens in the turn-final position or as a whole turn is marginal. The number of turn-initial tokens remains low as well, but the percentage it represents (i.e. 9%) is higher than the percentage of list buoys and PALM-UP that could be found in this position: only one list buoy digit (out of 31, i.e. 3%) and 18 palm-ups (out of 347, i.e. 5%). Thus, SAME is the most frequently used DM in this dissertation to open the turn.

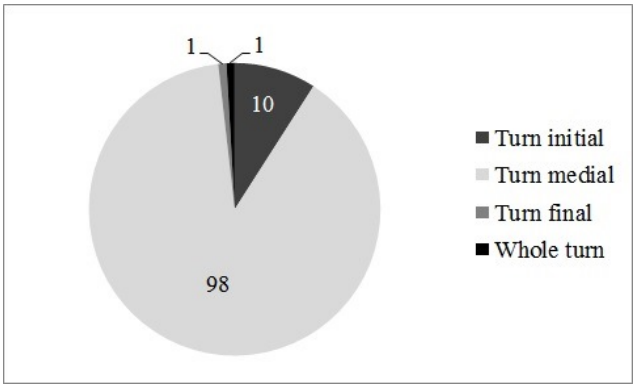


Figure 6.40: Position of discourse-marking tokens of SAME in the turn in C2

In sub-section 6.4.4, it was claimed that PALM-UP also participates in the turn taking system of LSFB: it is often used to end the turn and occasionally to open it. Although these findings about PALM-UP and SAME are preliminary, they constitute a first step towards understanding how turn exchange takes place in LSFB. In order to expand this knowledge, further research from an onomasiological point of view (i.e. identifying all discourse-marking devices found at the beginning and at the end of the turn) would be needed.

6.5.5 The function-position paradigm

Similarly to PALM-UP, function-position correlations are not always as clear as the correlations that were found in discourse-marking list buoy digits (see sub-section 6.3.5). There are seven functions (cause, comment, conclusion, consequence, emphasis, face-saving and resuming) with only one or two tokens, so their correlation with position cannot be said to be representative. The other functions left appear at least three times in the data. Although different positions are possible on occasions, a particular function tends to correlate with a particular position in the clause, the BDU and the turn as explained below.

- **Addition** (sequential domain): it is used to add information to the same topic, so SAME is found in the left periphery of the clause that contains this new information. When SAME is in this clausal position, it can be found in different positions of the BDU: the syntactico-prosodic left periphery, the syntactic left periphery or the medial position. However, the most common position of the three is the syntactic left periphery. As regards the turn, SAME as a marker of addition is in the turn-medial position.

- **Opening** (sequential domain): it is used to begin the turn, which is why in this case SAME is found in the left periphery of the clause, in the syntactic left periphery of the BDU and in the turn-initial position.

- **Planning** (sequential domain): it is used to hold the floor in order to plan upcoming speech. In contrast to PALM-UP, which did not show a clear function-position correlation, SAME appears in the left periphery of the clause, in the syntactico-prosodic left periphery of the BDU and in the turn-medial position.

- **Topic-shifting** (sequential domain): it is used to change the topic, so it is found in the left periphery of the clauses related to the new topic. The other preferred positions are the syntactico-prosodic left periphery (even if the syntactic left periphery and medial position are possible as well) in the BDU and medial position in the turn.

- **Reformulation** (rhetorical domain): it is used to paraphrase what has previously been said, which is why SAME appears in the left periphery of the clause containing the paraphrase. Although SAME can appear in the syntactic left periphery of the BDU, the preferred position is medial, which indicates that the clause(s) previous to SAME and the clause(s) containing the paraphrase that follow form a whole. It derives from this explanation that SAME will be found in the turn-medial position.

- **Hedging** (rhetorical domain): it is used to express a lack of precision. In contrast to other functions, hedging can be found embedded in the clause which is why the most common position is clause-medial. Consequently, the most frequent position in the BDU and the turn will be medial as well.

- **Specification** (rhetorical domain): it is used to introduce an example, so SAME always appears in the left periphery of the clause(s) containing this example. Similarly to the function of reformulation, the preferred position in the BDU is

medial; so the example makes a whole with what has been said before. Hence, the position in the turn is also medial.

- **Concession** (ideational domain): it is used to deny the expectations explicitly related to the concessive discourse segment. SAME appears in the left periphery of clauses that introduce the counter-expectation. Similarly to PALM-UP, different positions in the BDU are possible (namely, the syntactic left periphery and medial position) but the one preferred is the syntactic left periphery. The position in the turn is medial.

Table 6.15 summarises the possible positions of SAME (when it has a discourse-marking function) in the clause, the BDU and the turn. The different possible positions in which a particular function can be found are included here, unless there is a particular position more representative than the others (at least 50%), in which case this is the only position listed. The numbers for each function and position are also added in parenthesis for the reader's convenience.

From the synthesis of the function-position correlation presented in Table 6.15, some conclusions can be drawn. First, the position in the turn helps to differentiate between the function of addition and the function of opening. Both functions go with a directed gaze, a similar head movement and the same mouthing. Therefore, even if linguistic context helps to disambiguate, distinguishing between the two is hard. When SAME is situated in the turn-initial position, it begins the turn instead of adding information.

Second, the position in the clause is not very informative if the difference between one function and another is to be made. Only the functions of hedging and face-saving (and sometimes comment and conclusion) are found in other positions different from the left periphery. The position in the BDU does not further specify the functions, but it gives some hints as to the difference between domains. The most represented functions in the rhetorical domain (reformulation, hedging and specification) seem to have a preference for the medial position in the BDU. Even under-represented functions of the same domain (comment, conclusion and emphasis) can be found in this position. Although rhetorical functions are found in the left periphery of the clause as well as sequential functions, sequential functions are situated either in the syntactic or in the syntactico-prosodic left periphery of the BDU.

Third, the hypothesis that relates the left periphery to subjective meanings and the right periphery to intersubjective meanings (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015) is confirmed again. The function of face-saving, which is clearly oriented towards the addressee, is the only one that appears in the right periphery of the clause and the syntactic right periphery of the BDU. All other functions are mainly found in the left periphery of the clause because they are connected to the signer who makes explicit the sequencing of clauses or the coherence relations that s/he wants to be inferred.

Domain	Function	Position in the...		
		Clause	BDU	Turn
Sequential	Addition (31)	Left periphery (19)	Syntactic left periphery (18)	Medial (27)
	Opening (8)	Left periphery (6)	Syntactic left periphery (6)	Initial (8)
	Planning (4)	Left periphery (3)	Syntactico-prosodic left periphery (3)	Medial (4)
	Topic-shifting (4)	Left periphery (4)	Syntactico-prosodic left periphery (2)	Medial (4)
	Resuming (1)	Left periphery (1)	Syntactico-prosodic left periphery (1)	Medial (1)
Rhetorical	Reformulation (16)	Left periphery (16)	Medial (9)	Medial (16)
	Hedging (10)	Medial (5)	Medial (10)	Medial (10)
	Specification (6)	Left periphery (6)	Medial (3)	Medial (6)
	Comment (2)	Left periphery (1) / medial (1)	Syntactic left periphery (1) / medial (1)	Medial (2)
	Conclusion (2)	Left periphery (1) / medial (1)	Syntactic left periphery (1) / medial (1)	Medial (2)
	Emphasis (2)	Left periphery (2)	Syntactic left periphery (2)	Medial (2)
Ideational	Concession (3)	Left periphery (2)	Syntactic left periphery (2)	Medial (3)
	Cause (1)	Left periphery (1)	Medial (1)	Medial (1)
	Consequence (2)	Left periphery (2)	Syntactic left periphery (1) / medial (1)	Medial (2)
Interpersonal	Face-saving (1)	Right periphery (1)	Syntactic right periphery (1)	Medial (1)

Table 6.15: Summary of the function-position correlation of SAME in C2

6.5.6 Interim summary of main findings

SAME has not received the attention of scholars so far. This section is the first attempt to describe this fully-lexical sign from the perspective of DMs. To do so, different points were presented: the frequency of appearance of this sign per genre and per signer, its different discourse-marking functions, its position (in the clause, the BDU and the turn) and the function-position paradigm. The sample of the LSFB Corpus which was used for this purpose (C2) is the same that was analysed for list buoys and PALM-UP: the productions of six signers (three men and three women) from different age groups that include different genres (see chapter 3, section 3.2, for a more detailed description of the sample).

The study of the distribution of SAME per genre revealed that the sign is used with a similar frequency in the argumentative, expository and metalinguistic genres. Its use is less frequent in narratives because some of the most recurrent functions of the sign (reformulation and specification) are not used in this genre. Other mechanisms to introduce paraphrases and examples may be preferred; for instance, reformulation in narratives is usually expressed with partly-lexical signs (Meurant and Sinte, 2016). Another finding was that SAME does not seem to be influenced by the degree of preparedness of the productions in which it appears.

The use of SAME as a DM does not seem to be age stratified. All signers articulated the same average of tokens (1/100), except one young signer who was above (2/100) and one older signer who was below (0.5/100). Interestingly, the young signer who produced more tokens of SAME was also the one who used more list buoys. The overuse of these two DMs compared to other signers seems to be a mannerism and suggests that, similarly to list buoys, the use of SAME depends on the signer's preferences.

The description of SAME included the type of DM, the domain (or macro-function) and the functions. SAME is frequently a relational DM, although it can also have non-relational and both relational and non-relational functions at the same time. The distribution of this sign according to this scale of relationality is more balanced than the distribution of list buoys and PALM-UP. The functions of SAME mostly belong to the sequential domain (like the other two DMs under study), but it also has an important number of functions belonging to the rhetorical domain. These two domains combine on occasions. SAME has 15 different functions in C2, so it is the second DM candidate in LSFB with more discourse-marking functions in this dissertation. The most common functions fulfilled by SAME (with 10 or more tokens) are addition, reformulation and hedging. Other frequent functions are opening, specification, planning, topic-shifting and concession (with three or more tokens). The other functions left (i.e. cause, comment, conclusion, consequence, emphasis, face-saving and resuming) seem to be idiosyncratic as there are only one or two examples of each one.

The study of non-manual marking indicates that mouthings are always used with SAME. A tentative explanation could be that signers utter a semantically corresponding mouthing when the sign has a fixed meaning. Each function of SAME is layered in a fairly consistent way with similar non-manual marking, which is often the same in list buoys or PALM-UP when functions are shared. For instance, SAME expressing addition is usually found with a gaze directed at the addressee, a head movement and the mouthing 'même' ('same') or 'aussi' ('also'). When list buoys are used for this particular function, the behaviour of the gaze and the head is the same. However, the set of nonmanuals that go with addition is similar to other functions such as opening or topic-shifting. That is, signers tend to use nonmanuals consistently with each function, but non-manual marking does not tease apart one function from another. Linguistic context and the position need to be taken into account when a function has to be assigned, specially when closely related functions have to be distinguished (e.g. mitigating functions such as hedging and face-saving).

The position of SAME was investigated at the level of the clause (Blanche-Benveniste et al., 1990), the BDU (Degand and Simon, 2005, 2009a,b) and the turn. Generally speaking, the preferred positions of SAME when it is a DMs are the left periphery of the clause, the syntactic left periphery or the medial position of the BDU, and the turn-medial position. These positions correlate with a particular domain and function. On the one hand, SAME is found in the syntactic and syntactico-prosodic left peripheries when it belongs to the sequential domain, whereas it is found in the medial position when it belongs to the rhetorical domain. On the other hand, face-saving is the only discourse-marking function that appears in the right periphery of the clause and in the syntactic right periphery of the BDU. This function is oriented towards the addressee and supports the assertion that the right periphery is likely to attract intersubjective meanings (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). All other functions are found in the left periphery, which attracts subjective meanings, because the signer makes explicit the sequencing of clauses or the coherence relations that s/he wants to be inferred. Therefore, the function-position paradigm also works for a language of the signed modality, i.e. LSFB, and provides further evidence about the shared properties between SpLs and SLs as natural languages.

6.6 Summary and conclusions

This chapter focused on the description of list buoys, PALM-UP and SAME from the perspective of DMs in French Belgian Sign Language (LSFB). For this purpose, a sample from the LSFB Corpus (C2) containing four genres (argumentative, expository, metalinguistic and narrative) and six signers (three men and three women) from different age groups was selected. In this sample, there were 38 list buoys, 583 PALM-UP and 236 SAME, which make a total of 857 tokens. From this total, 471 tokens had a discourse-marking status: 14 list buoys, 347 PALM-UP and 110 SAME. Five different aspects were studied about these discourse-marking tokens, namely: (i) the frequency of appearance per genre, (ii) the frequency of use per signer, (iii) the functions (type of DM, macro and micro-functions), (iv) the position in the clause, the basic discourse unit (BDU) and the turn, and (v) the function-position paradigm.

List buoys, PALM-UP and SAME were found in the four genres with different distributions. The expository genre attracted the highest proportion of list buoys and tokens of SAME, whereas the metalinguistic and argumentative genres presented more PALM-UP particles. In the narrative genre, there is the lowest representation of the three DMs. This finding indicates that discourse is marked in a different way in narratives in LSFB and supports the claim that narratives are a genre with distinctive features in comparison to other genres as other studies point out (Sinte, 2015; Meurant and Sinte, 2016). The degree of preparedness only seems to influence the use of list buoys, which are more frequent in semi-prepared conversations (i.e. expository genre) than in spontaneous conversations. Hence, the more a discourse is prepared, the more it is likely to contain list buoys (Gabarró-López and Meurant, 2014a; Hansen and Heßmann, 2015). The other two DMs are not affected by this variable: their frequency in semi-prepared conversations is the same as in spontaneous conversations.

As regards the distribution per signer, the use of a particular DM sometimes depends on the signer's style. This is the case for list buoys (Hansen and Heßmann, 2015) and SAME. One of the younger signers (S055) was prone to the articulation of these two DMs; in fact, she was above average if compared to the others. Her percentages suggest an overuse of these two DMs that resembles the use of their counterparts in spoken French and that makes the construction of her productions significantly different from the other signers. PALM-UP has been said to be age sensitive in different SLs (McKee and Wallingford, 2011; van Loon, 2012; Jarque et al., 2013; Mesch, 2016). In LSFB, the use of discourse-marking palm-ups is not age-bound: although old signers do use PALM-UP frequently, there is one young signer (S056) with the same average of PALM-UP. Interestingly, this signer's use of the three DMs under study is closer to S003 and S004 (the two older signers) than to S055 (the other informant in the same recording session). However, it remains to be seen whether the whole category of PALM-UP is age sensitive as in the previously mentioned works.

The description of the discourse-marking functions of the three items was divided into three parts: the type of DM, the domain (or macro-function) and the function. The type of DM refers to the situation of the DM on a scale of relationality, the domain (or macro-function) groups together different functions that share properties and the function concerns the role of the DM. List buoys and SAME are mainly relational DMs (they connect clauses), whilst PALM-UP is mainly non-relational (it is used for punctuation and turn-taking, among others). The three DMs can be relational and non-relational, or they can have two non-relational functions, but two relational functions never combine. All domains are represented in C2, and the sequential domain is the most frequent in the three DMs. PALM-UP often belongs to the interpersonal and SAME to the rhetorical. The ideational domain is found in the three DMs, but it is always the least represented.

Of the 31 possible discourse-marking functions (Crible, 2014; Bolly and Crible, 2015), 27 are fulfilled by at least one of the three DMs under study in this dissertation (see Table 6.16). PALM-UP is the most polysemous with 19 functions followed by SAME with 15. Although PALM-UP has more functions from the interpersonal domain and SAME from the rhetorical domain, there are some functions shared by the two DMs. Only two functions are shared among the three DMs: planning and emphasis. The first is very infrequent in list buoys and the second rarely appears in isolation. List buoys are the least polysemous DM with five different functions. Despite being the least versatile DM, it is worth underlining that list buoys have only been given the function of ordering (which is similar to enumeration) and sometimes the function disjunction (which is similar to alternative) in the literature.

The detailed description and instantiation of the different functions is one of the main contributions of this chapter: a more fine-grained description of the possible uses of list buoys has been provided including more functions, PALM-UP has been systematically approached as a DM as suggested by Amundsen and Halvorsen (2011) and McKee and Wallingford (2011), and SAME has been investigated for the first time. The selection of list buoys, PALM-UP and SAME has allowed us to get a general pic-

Describing features			DMs under study		
Domain	**Function**	**Type of DM**	**List buoys**	**PALM-UP**	**SAME**
Ideational	Cause	Relational	—	✓	✓
	Consequence	Relational	—	✓	✓
	Temporal	Relational	—	✓	—
	Contrast	Relational	—	✓	—
	Concession	Relational	—	✓	✓
	Condition	Relational	—	✓	—
	Alternative	Relational	✓	—	—
Rhetorical	Conclusion	Relational	—	—	✓
	Opposition	Relational	—	✓	—
	Reformulation	Relational	—	—	✓
	Hedging	Non-relational	—	✓	✓
	Comment	Relational	—	—	✓
	Specification	Relational	—	✓	✓
	Emphasis	Non-relational	✓	✓	✓
Sequential	Opening	Non-relational	—	✓	✓
	Closing	Non-relational	—	✓	—
	Resuming	Relational	—	—	✓
	Topic-shifting	Relational	—	✓	✓
	Quoting	Non-relational	—	✓	—
	Enumeration	Relational	✓	—	—
	Addition	Relational	✓	—	✓
	Punctuation	Non-relational	—	✓	—
	Planning	Non-relational	✓	✓	✓
Interpersonal	Monitoring	Non-relational	—	✓	—
	Face-saving	Non-relational	—	✓	✓
	Disagreeing	Non-relational	—	✓	✓
	Agreeing	Non-relational	—	✓	—

Table 6.16: Summary of the type of DM, domains and functions fulfilled by each DM under study in C2

ture of the DM category in LSFB because all types of manual activity were included (i.e. fully-lexical signs, partly-lexical signs and gestures), and all domains were represented as well as almost every function.

The annotation of DMs followed a protocol (Crible, 2014), which ensures a consistent annotation of the selected items and its reproducibility to other items in the same language or in other languages either signed or spoken. Furthermore, this protocol was developed for the annotation of DMs in spoken corpora, so the LSFB data in this chapter prove that the same discourse/coherence relations that can be found in a SpL exist in a SL. This finding demonstrates that discourse/coherence relations are a property of human language regardless of the modality.

Non-manual marking has been said to bring meaning to list buoys (Davidson, 2012) and to PALM-UP (McKee and Wallingford, 2011; van Loon, 2012). For PALM-UP, the importance of linguistic context to assign a function has also been underlined by these authors. The analysis of non-manual marking showed that there are some nonmanuals associated with particular functions regardless of the DM that is uttered; for instance, a head tilt is frequently layered with the expression of contrast or opposition, the mouth closed with tight lips relates to hedging and face-saving, a non-directed gaze is used for turn-holding functions and a gaze directed at the addressee is used for opening and closing the turn (among other sequential functions). Nevertheless, there is no combination of nonmanuals that allows us to distinguish one function from another. Linguistic context (preceding and upcoming utterances) and position (as discussed below) are key to teasing apart closely related functions such as addition and opening, hedging and face-saving, among others. The importance of position as a defining feature of DMs is another contribution of this chapter to the literature on DMs in SLs.

The position was studied at three different levels – the clause (Blanche-Benveniste et al., 1990), the BDU (Degand and Simon, 2005, 2009a,b) and the turn – in order to see whether the function-position paradigm of DMs in SpLs (Briz Gómez and Pons Bordería, 2010; Estellés and Pons Bordería, 2014; among others) also applies to the signed modality. Interestingly, some function-position correlations were found for each DM and there are even some positions in which a particular function is found regardless of the DM. In Table 6.17, the position of some of these functions shared between at least two DMs is presented.[25] Few positions appear with the asterisk (i.e. another position was possible but it was not shared among the two or three DMs), which suggests that the function is restricted to this position (Degand, 2014).

There are three other important findings concerning the function-position paradigm that must be emphasised. First, the position varies according to the domain. The interpersonal is found in right peripheries, the rhetorical in medial positions, and the ideational and sequential in left peripheries. This matching is helpful when two similar functions (e.g. hedging from the rhetorical domain and face-saving from the interpersonal domain) need to be distinguished and non-manual marking is the same.

Second, results confirm that the right periphery attracts intersubjective meanings, whereas the left periphery attracts subjective meanings (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). Intersubjective meanings are related to the addressee (e.g. monitoring or face-saving), whilst subjective meanings are related to the sequencing of discourse segments (e.g. addition or topic-shifting) or to the coherence relations that the signer wants to be inferred (e.g. consequence or concession).

[25]There are three other functions shared between two DMs that have not been included (cause, specification and emphasis) because their use is marginal (except for specification when it is expressed by SAME) and the data were inconclusive as regards to these three functions.

Domain	**Function**	**Position in the...**		
		Clause	**BDU**	**Turn**
Ideational	Consequence	Left periphery	Medial *	Medial
	Concession	Left periphery	Syntactic left periphery *	Medial
Rhetorical	Hedging	Medial	Medial	Medial
Sequential	Opening	Left periphery	Syntactic left periphery	Initial
	Topic-shifting	Left periphery	Syntactico-prosodic left periphery *	Medial
	Addition	Left periphery	Syntactic left periphery	Medial
	Planning	Left periphery *	Medial *	Medial
Interpersonal	Face-saving	Right periphery	Syntactic right periphery	Medial

Table 6.17: Summary of the positions in which some functions shared among the three DMs are found in C2

Third, the position in the turn was relevant for the functions of opening and closing (the only two that were not found consistently in turn-medial positions). On the one hand, the position in the turn helps distinguish these two functions from similar functions with the same non-manual marking and the same position in the clause and the BDU such as addition and punctuation respectively. On the other hand, the study of turn-initial and turn-final positions is the first step towards understanding how turn exchange takes place in a language (Fischer, 2000). In LSFB, both PALM-UP and SAME participate in the turn-taking system: PALM-UP is frequently used to close the turn and, together with SAME, they are sometimes used to open the turn or to bid for the floor.

In this chapter, the results of the analysis of the three DMs under study in LSFB, namely list buoys, PALM-UP and SAME, were presented. Before setting out the conclusions and main contributions of this dissertation, there is another chapter devoted to the same DMs in which the same five aspects (i.e. variation per genre and signer, functions, position and functional paradigm) are described from a cross-linguistic perspective. Two comparable samples, one from the LSFB Corpus and another from the LSC Corpus, will be contrasted in order to find out the extent and the nature of the differences and similarities between these two SLs in the use of these discourse-marking items they share.

Chapter 7

Cross-linguistic study of discourse markers: list buoys, PALM-UP and SAME

Le sens fait signe par ses mains.

Michel Deguy ("Ouï dire", *Poèmes 1960 - 1970*)

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General objective of this chapter

This chapter aims to compare the three items under study in this dissertation – list buoys, the PALM-UP particle and the sign SAME – in French Belgian Sign Language (LSFB) and in Catalan Sign Language (LSC), when they have a discourse-marking status. This cross-linguistic study will include five different aspects. First, the frequency per genre will indicate whether the variable of genre affects discourse markers that have the same form in two different sign languages in the same way. The frequencies are expected to be different, especially if one discourse marker has very different functions in the two sign languages that make it likely to appear in a particular genre. Second, the frequency of use per signer will let us know whether the idiosyncratic use of discourse markers that was observed in LSFB seems to be an exception or it is also found in another language of the signed modality. Third, examining the type of discourse marker, the domains (or macro-functions) and the functions will cast light on the differences and similarities between these three discourse markers shared by the two sign languages. Fourth, the position in the clause, the basic discourse unit and the turn will tell us whether the initial position is the only location in which discourse markers can be found (Schiffrin, 1987; Brinton, 1996; Fraser, 1996; Schourup, 1999) in LSC. The comparison of the location in which discourse markers appear can uncover differences between LSFB and LSC in how clauses or basic discourse units are related. Fifth, the expected correlation between function and position will also be investigated in LSC. If such a paradigm exists, the comparison between LSFB and LSC may reveal that some functions are bound to a particular position regardless of the sign language. The final section summarises the results presented throughout this chapter as well as its main contributions.

7.1 Introduction

The study of discourse markers (DMs) from a cross-linguistic point of view is a growing trend in spoken languages (SpLs). This approach not only contributes to language typology but also has many applied interests; for instance, the creation of sound tools that support second language learners and translators in their productions (Zufferey and Degand, 2013). Existing studies on DMs in sign languages (SLs) are scarce and they focus on one SL (see section 2.3 in chapter 2). The lack of large comparable datasets has hindered the development of this type of research the interest of which is twofold. On the one hand, it also contributes to language typology and widens the knowledge about the human language capacity. On the other, the differences and similarities found between SLs could be applied to other fields such as language acquisition to test 'general' proposals about how deaf children must be taught coherence relations and what difficulties they will encounter in this learning process.

This chapter aims to present the first cross-linguistic research on DMs in SLs by comparing list buoys, PALM-UP and SAME in French Belgian SL (LSFB) and Catalan SL (LSC). Two comparable samples from the LSFB Corpus and the LSC Corpus were selected for this purpose. This sub-corpus (C3) lasts for 1 hour and 56 minutes. It contains the conversations of 12 signers, six from each SL, with a balance in terms of age and gender. The conversations include one explicative, one argumentative and two narrative productions per couple of signers (see p.48 for further details). All tokens of the three DM candidates in both SLs were annotated by deaf annotators, and their discourse-marking status was confirmed on the basis of three criteria: to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes (see chapter 5; sub-sections 5.2.2, 5.3.2 and 5.4.2). Table 7.1 contains the total number of tokens of the three DM candidates and the number of tokens that have a discourse-marking status per SL in C3.

	LSFB		**LSC**	
Token	**Total number**	**DM status**	**Total number**	**DM status**
LIST BUOY	14	6	11	4
PALM-UP	332	206	291	139
SAME	116	44	32	22

Table 7.1: Number of list buoys, PALM-UP and SAME in C3

In the following sections, list buoys (7.2), PALM-UP (7.3) and SAME (7.4) will be compared. In each section, five aspects will be described: (i) frequency of occurrence per genre, which will cast light on inter-genre differences between the two SLs; (ii) frequency per signer, which will reveal whether there is a common pattern regarding age-sensitivity; (iii) functions of each DM, which will show the differences and similarities in how the three DMs mark discourse structure; (iv) their position (in the clause, the basic discourse unit and the turn), which is a feature that has rarely been analysed in the SL literature on DMs; and (v) the function-position paradigm, which

will refine the description of each DM. The possible values that can be assigned to a DM regarding its functions and positions are defined and exemplified in chapter 6, section 6.2. The last section of this chapter (7.5) highlights the main findings and contributions of this chapter to the domain.

7.2 List buoys

The category of list buoys was defined in chapter 5 (p.130) as numeral signs held and used to make associations with from one to five ordered or unordered entities (Liddell, 2003). They were described in LSFB in chapter 6 (sub-section 6.3), in which no evidence was found relating the form of the list buoy (sequentially built or static, held during a chunk of discourse or dropping after its articulation) and its (non-)discourse-marking status. In this chapter, no evidence was found in this respect either in LSFB or in LSC.

Following the organisation of the previous chapter, list buoys (all digits that build a unique entity, from one to five) will be used to compare frequencies (regarding genre and the distribution per signer), whereas digits will be used to compare their position in discourse and the function-position paradigm in the two SLs. Both list buoys and their digits will be taken into account when contrasting functions in LSFB with LSC because there are some digits belonging to a list buoy with a particular function that can combine the general function of the list buoy with another. In the sample, there are six discourse-marking list buoys and a total of 10 digits in LSFB, and four discourse-marking list buoys and a total of nine digits in LSC.

7.2.1 Frequency per genre

The distribution of discourse-marking list buoys across genres in LSFB and LSC is quite similar in C3. Each SL had two list buoys in the expository dialogues (presentation and explanation of each signer's sign name) and two more in one of the narratives (i.e. the narration of a past memory, hereafter narrative PM). The only difference between the two SLs was found in the argumentative genre (conversation about 'hot topics' related to deaf culture, i.e. deaf culture vs. hearing culture in LSFB and the future of deaf clubs in LSC): there were two discourse-marking list buoys in LSFB, whereas there were not in LSC (see Table 7.2).

Genre	Total in LSFB	Total in LSC
Argumentative	2	0
Expository	2	2
Narrative PM	2	2
Narrative FS	0	0

Table 7.2: Distribution of list buoys per genre in C3

Signers did not use list buoys in storytelling (hereafter narrative FS, which stands for Frog Story). In LSFB, signers were asked to tell a story from a video or paper-based medium, and the other signer had to finish it; whereas in LSC signers were asked to tell the story *Frog, where are you?* (Mayer, 1969) to the moderator (see 3.2 in chapter 3 for further details). This supports what was claimed in the previous chapter (sub-section 6.3.1) about the use of list buoys in narratives; i.e. they are used in this genre if the production is not restricted to the description of a setting and involves the explanation of a situation.

7.2.2 Frequency per signer

Although the numbers of list buoys per SL in C3 are close to each other, the distribution across signers varies from one SL to the other. The six list buoys in LSFB were produced by the same signer (S055), who is prone to the use of this device in her productions as illustrated in Figure 7.1 (see sub-section 6.3.2 in the previous chapter for a more detailed account). The four list buoys in LSC were produced by three different signers: DU is a woman in her 40s, CG is another woman in her 20s and QF is a man in his 20s (see Figure 7.2).[1]

The distribution shown in these graphs indicates that the use of list buoys depends on the signer's preferences as Hansen and Heßmann (2015) observed in German SL (DGS). In the samples of both SLs, women used list buoys more often than men. Furthermore, it seems that list buoys are more frequent in young and middle-aged signers, at least in LSC (recall that in LSFB one old signer also used discourse-marking list buoys, see 6.3.2).[2]

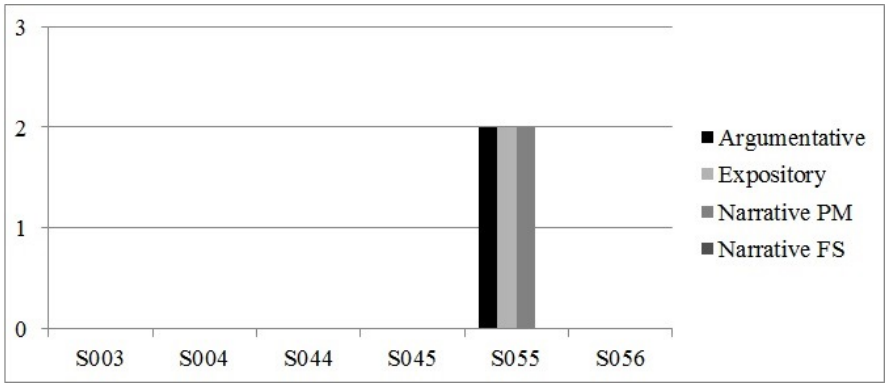


Figure 7.1: Distribution of discourse-marking list buoys per signer in LSFB in C3

[1] When naming the signers, the conventions of the LSFB Corpus and the LSC Corpus have been kept in the two samples that constitute C3.

[2] Unlike the sections devoted to the description of the frequency per signer of PALM-UP and SAME (see 7.3.2 and 7.4.2 below), the proportion of list buoys taking into account the total number of signs per signer is not calculated because all the signers in the two SLs produced fewer than one list buoy per 100 signs.

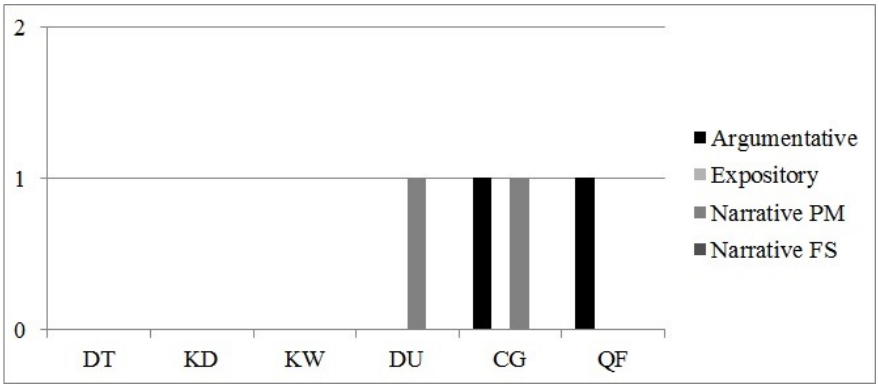


Figure 7.2: Distribution of discourse-marking list buoys per signer in LSC in C3

7.2.3 Type of DM, domains and functions

In C3, list buoys were relational devices in both SLs (six in LSFB and four in LSC), so as a whole they put together two or more segments of discourse. When inspecting the digits, some of them combined a relational and a non-relational function (i.e. they were given the tag 'both'). In Table 7.3, which contains the distribution of digits according to type of DM, it can be observed that the proportions in the two SLs are almost the same.

Type of DM	LSFB		LSC	
	Total of digits	Percentage	Total of digits	Percentage
Relational	8	80%	7	78%
Non-relational	0	0%	0	0%
Both	2	20%	2	22%

Table 7.3: Type of DM for the digits in C3

All list buoys and their digits belong to the sequential domain, which groups together discourse structuring functions (see definitions below). The general function of the four list buoys in LSC is enumeration, whereas there are three list buoys with the function of enumeration and three with the function of addition in LSFB. If the digits are inspected, there are seven with the function of enumeration and two with the function of enumeration + planning in LSC. In LSFB, there are three digits expressing addition, five expressing enumeration and two expressing enumeration + planning. This information is summarised in Table 7.4.

Interestingly, the double function of enumeration + planning was found in the selected samples of the two SLs and it "might reflect some general tendencies about the cognitive similarity of some discourse relations" (Cartoni et al., 2013, p.83). In addition, this double function was not idiosyncratic in LSC as two signers, DU and CG, used it.

Function	LSFB		LSC	
	List buoys	Digits	List buoys	Digits
Addition	3	3	0	0
Enumeration	3	5	4	7
		2 (enumeration + planning)		2 (enumeration + planning)

Table 7.4: Functions of list buoys and their digits in C3

In what follows, I will describe the functions of list buoys and/or their digits that were identified in the two SLs. Since these functions were defined and exemplified in LSFB in the previous chapter, here I will only give a short reminder of each one and examples will be in LSC. In addition, I will compare non-manual marking, the extension of scope and the articulation of tokens in both SLs.

Enumeration This function (defined on p.219) indicates the sequential ordering of discourse events. In Figure 7.3,[3] the signer is suggesting different activities that make young people go to the deaf club. All activities except the first one (i.e. meetings) are introduced by a list buoy digit. For the last activity proposed (i.e. games), the signer points on two different occasions towards the same digit.

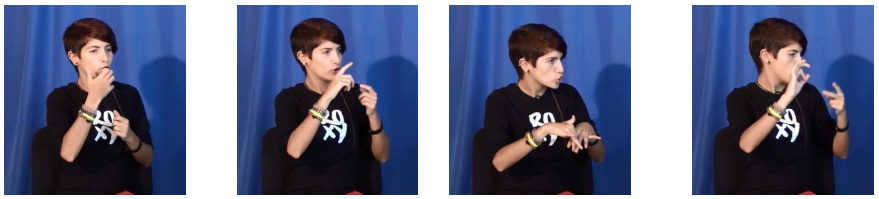
In LSC, non-manual marking occurring with list buoy digits expressing enumeration included a gaze directed at the addressee and blinkings were frequent as well. Sometimes, signers turned their head or had their chin down. The mouth was either closed or it produced different mouthings. The mouthing could be related to the digit that was pointed at or to surrounding signs. For instance, when CG articulates the last digit of the example in Figure 7.3 (fourth row, first picture), she mouths 'cuatro' in Spanish[4] which means 'four' in English; but when she articulates the first digit, i.e. LBUOY(2):SECOND, she mouths 'o', which means 'or' as the previous sign was OR.

Non-manual marking in LSC seems to be more consistent than in LSFB as no clear pattern was found in this last SL: several movements of the head were possible (nods, a turn, a movement forward or backwards), the gaze could be directed at the addressee or not, the mouth could be closed or open, and mouthings were rare. Because of this variability in non-manual marking in LSFB, some non-manual marking coincides with LSC, but no unified cross-linguistic trend can be derived from these examples.

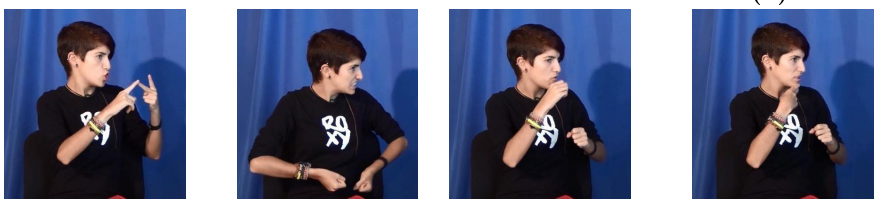
[3]This figure (like many others in previous chapters as well as in the present) does not contain a picture for each sign. When this happens, (...) appears after the last illustrated sign. In any case, the content of the whole chunk of discourse can be read in the translation.

[4]Catalan deaf people use mouthings in Catalan and/or Spanish. There are many variables that influence the choice of one of these two surrounding SpLs (e.g. education, age group and family background, among others), but discussing them falls beyond the scope of this research.

(LSC Corpus, session 1, task 8, signer CG, 02:14 - 02:25)



RH	EXAMPLE	PT:DET	MEETING	OR
LH			MEETING	**LBUOY(2):SECOND**

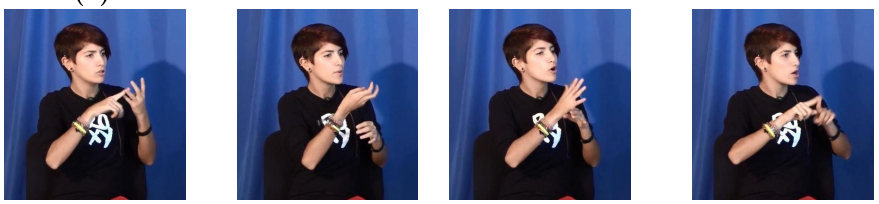


RH	PT:LBUOY-SECOND	SKI	OR	GSIGN
LH	- - - - - - - - -	SKI		

(...)

RH	PT:LBUOY-THIRD	PLAY	PARTICULAR	PLAY
LH	**LBUOY(3):THIRD**	PLAY		PLAY

(...)



RH	PT:LBUOY-THIRD	SEVERAL	PLAY	SAME-NOT
LH	**LBUOY(4):THIRD**		PLAY	SAME-NOT

'For example, they should organise meetings or... Second, they could organise trips to go skiing or something interesting, yeah. Third, there could be events in which there were games such as video games. Boys play more than girls, but it's still good. I don't know... Games should be different, not always the same ones.'

Figure 7.3: Example of a list buoy expressing enumeration in LSC

As regards articulation, most features presented in chapter 6 (pp.219-223) regarding list buoys expressing enumeration in LSFB are shared with the same devices in LSC. First, digits were also extended sequentially in LSC. Of the nine digits found in the LSC data, there were only three that had a static handshape (i.e. digits were extended before the signer pointed at them) and two of them were the echoes of a sequentially built list buoy (the signer was interrupted twice and repeated the same

handshape, see Figure 7.4). However, unlike sequentially built list buoys in LSFB, digits were extended following the handshape of the first item. That is, a 2 handshape was followed by a 3 handshape and not by an 8 handshape.[5]

Second, it seems that the construction of list buoys does not start at the first digit of the list in LSC either. There is only one list buoy of the four in which the first digit is used. In the other three cases, the signers always started at the second digit and the first item in the enumeration could either be introduced by another DM, e.g. by the sign EXAMPLE as in Figure 7.3 (first row, first picture), or not (i.e. it is left to pragmatic inference). This finding suggests cognitive similarities when constructing discourse in the two SLs.

Third, signers extended up to five digits in static or sequentially built list buoys in LSFB, although they would only count up to three elements (i.e. the signer points to the same digit several times). In LSC, signers extended up to four digits in sequentially built list buoys and they counted up to three elements. When there was a fourth item, the signer would point to the third item again as in the last digit of Figure 7.3 (fourth row, first picture). It could be hypothesised that, similarly to LSFB, this is due to the degree of preparedness. To confirm or refute this hypothesis, prepared productions should be included in the sample as all dialogues including list buoys in C3 are spontaneous.

Fourth, the digit that is pointed at can refer to a previous segment of discourse instead of referring to an upcoming segment. There is only one example of this type in the LSC data that is illustrated in Figure 7.4. The signer is explaining that when she was a kid, she and her parents used to blow at each other to attract the other's attention, specially if there was no light in the room where they were. She articulates a list buoy on her left hand while the right hand is concluding her first past memory. Once she finishes this first part, she articulates the second digit of the sequentially built list buoy also with her left hand. She is interrupted by the moderator[6] and the list buoy drops while she answers. Some seconds later, the list buoy appears again for the third time (the second time it appears is not illustrated in the figure) as a static list buoy.[7]

Unlike list buoys expressing enumeration in LSFB that were discussed in the previous chapter, fingers are always pointed at in order in the LSC sample analysed in this research. Two reasons may justify this: (i) list buoys did not include more than four items and these items were close enough to avoid breaking the logical order, and (ii) the total number of list buoys is too low to observe this variation. However, it seems plausible that list buoy digits would not be pointed at in order in LSC if a larger

[5] See the annotation conventions of list buoys in chapter 3, p.51.

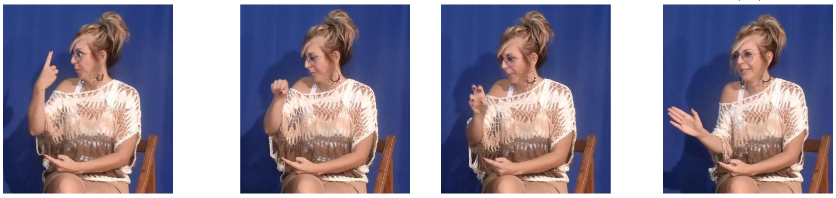
[6] This interruption is made explicit as (*interruption*) in between the pictures of Figure 7.4 and in the translation provided below.

[7] In sub-section 6.3.3.3 of the previous chapter, it was said that list buoys with a 2 handshape are frequently used to mark alternative if co-occurring nonmanuals and/or surrounding signs express contrast in LSFB. This is not the case of the list buoy illustrated here because non-manual marking is the same as in other enumerative list buoys and there are no signs expressing contrast such as BUT or OR.

sample was analysed because, as mentioned earlier, cognitive processing seems to be similar when using list buoys in the two SLs.

(LSC Corpus, session 2, task 4, signer DU, 03:00 - 03:24)

RH	TOUCH	GSIGN	BLOW	PT:PRO1
LH	TOUCH	GSIGN	BLOW	**LBUOY(1):FIRST**



RH	ONE	PT:DET	TOPIC	THAT-S-IT	(...)
LH	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	

RH	ANOTHER	PT:LBUOY-SECOND		NOW	(interruption)
LH	**LBUOY(2):SECOND**	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	

RH	PT:LBUOY-SECOND	ONE	PALM-UP	PT:PRO1	(...)
LH	**LBUOY(2):TWO**	- - - - - - - - - -	PALM-UP	- - - - - - - - - -	

'When somebody blows, you feel it. This is one of the memories. Second... I used to blow and now (*interruption*) Second, I don't know if it's really appropriate. I studied a professional training course at college.'

Figure 7.4: Example of a list buoy in which one digit refers to a previous segment of discourse

All in all, there are no differences between the articulation of list buoys in LSFB and in LSC in C3, although I have observed list buoys constructed from the little finger until the thumb and list buoys in which the thumb is used to point towards the

other fingers in LSC.[8] These two articulations have only been described in Spanish SL (LSE) by Villameriel (2008, 2014) and they have not been attested in any other SL. The existence of these forms in the two SLs of Spain may be due to the contact with the hearing community that uses these forms as co-speech gestures when counting (Ueda and Martinell Guifré, 1990). According to Jarque's (2014) study on DMs in LSC, this would be a case of pragmaticalisation in which a manual gesture in the surrounding hearing community becomes a manual lexical item in LSC, then a manual grammatical item and finally a DM.

In C3, the scope of list buoys expressing enumeration in LSC is more reduced than the scope of the list buoys with the same function in LSFB. List buoys can contain from four to 66 clauses in addition to other DMs and pause fillers in LSC. The average number of clauses within the scope of a list buoy seems to be around 10, but no conclusions can be drawn with such a low number of examples. Concerning the scope of each digit in LSC, it ranges from two to 40 clauses. As argued in chapter 6 (p.223), the different size of scope is due to the level at which list buoys are found if discourse is represented as a tree that follows the principles of the Question Under Discussion (Büring, 2003). If the list buoy introduces an implicit question, it is likely to contain many more clauses than a list buoy that introduces an assertion (see sub-section 5.2.3 in chapter 5 for further details).

Planning This function is assigned to DMs that allow the signer to hold the floor while s/he is thinking about what to say next (see definition on p.223). Similarly to LSFB, there are no list buoys whose only function is planning in the LSC data. There are only two digits (out of nine) that combine the function of enumeration + planning. One of these tokens is exemplified in Figure 7.4 (fourth row, first picture). The signer not only uses this digit in order to introduce her second past memory, but also to take some time to think about it.

Her gaze is floating (i.e. not directed at the addressee) because she wants to hold her turn. She also blinks and her mouth is closed. This non-manual marking coincides with the other digit expressing this function in LSC (except that the mouth is open) and with non-manual marking in LSFB accompanying this function, especially in the gaze behaviour. This finding supports that "[t]he gestural origin of nonmanuals used for linguistic purposes may account for typological similarities [...] across sign languages" (Herrmann, 2012, p.376).

There is no particularity in the handshape of digits expressing planning in C3. Since planning is never the function of a list buoy in the sample analysed, nothing can be said about the form and the scope as a whole. Concerning the scope of each digit, one contains two clauses and the other 40 together with other DMs. Hence, it is very variable and no conclusions can be drawn about the average with only two examples.

[8] I would like to thank my grand-uncle for giving me these examples spontaneously while we were talking about football.

7.2.4 Position

To the best of my knowledge, the position of list buoy digits has never been investigated in any SL. It is studied for the first time in LSFB in chapter 6 (see sub-section 6.3.4) at three different levels, i.e. the clause (Blanche-Benveniste et al., 1990), the basic discourse unit (Degand and Simon, 2005, 2009a,b), and the turn; and a cross-linguistic perspective will be given in this sub-section along the same lines.

There are almost no differences between LSFB and LSC when inspecting the location of digits in C3. The left periphery of the clause was clearly preferred over the right periphery. As a result, the syntactic left periphery of the basic discourse unit (BDU) was also more populated by list buoy digits than any of the other positions (see tables 7.5 and 7.6).

Position clause	**Total digits in LSFB**	**Total digits in LSC**
Left periphery	9	8
Right periphery	1	1

Table 7.5: Position of list buoy digits in the clause in C3

Position BDU	**Total digits in LSFB**	**Total digits in LSC**
Syntactico-prosodic left periphery	1	1
Syntactic left periphery	8	5
Medial position	1	2
Syntactic right periphery	0	1

Table 7.6: Position of list buoy digits in the basic discourse unit in C3

Furthermore, all digits appeared in the turn-medial position; that is, list buoys would not be turn-taking devices in any of the two SLs under study.

7.2.5 The function-position paradigm

In sub-section 6.3.5 of the previous chapter, I showed that the function-position paradigm holds true for DMs regardless of the modality as some domains and/or functions correlate with a particular position in LSFB. This paradigm also exists in LSC, which supports the previous claim. In this sub-section, I will compare the function-position paradigm in LSFB and LSC. I will restrict myself to the functions shared between these two SLs because (i) the only function that is found in LSFB and not in LSC (i.e. addition) was explained in the previous chapter, and (ii) the results of the LSFB sample in C3 correspond with the results from the other LSFB sample (i.e. C2).

In both SLs, the function of enumeration was in the left periphery of the clause, in the syntactic left periphery of the BDU and in the turn-medial position. The function of planning (+ enumeration) was also in the turn-medial position (i.e. list buoys can be used to hold the turn while the signer is planning upcoming speech), but the position in the clause and the BDU varied from one SL to the other. On the one hand, one of the digits expressing the two functions in LSFB was found in the left periphery of the clause and in the middle of the BDU, whereas the other digit was in the right periphery of the clause and in the syntactic-right periphery of the BDU. These different positions coincide with the different positions that were identified in sub-section 6.3.5 for list buoys expressing planning. On the other hand, the position of the two digits in LSC is less variable: both were in the left periphery of the clause, one in the syntactic left periphery of the BDU and the other in the syntactico-prosodic left periphery. Table 7.7 summarises the positions in the two SLs that appear in C3.

Domain	**Function**	**Position of digits in the...**		
		Clause	**BDU**	**Turn**
Sequential	Enumeration (15)	Left periphery (14)	Syntactic left periphery (11)	Medial (15)
	Planning (+ enumeration) (4)	Left periphery (3) / right periphery (1)	Syntactico-prosodic left periphery (1) / syntactic left periphery (1) / medial (1) / syntactic right periphery (1)	Medial (4)

Table 7.7: Summary of the function-position correlation of list buoy digits in C3

7.2.6 Interim summary of main findings

This section aimed to compare discourse-marking list buoys in LSFB and LSC. In general, a lot of similarities were found between LSFB and LSC as they are urban Western SLs from Europe, but there are also some differences.

To begin with, the distribution of discourse-marking list buoys across genres is quite similar. List buoys were found in the expository genre and in the narration of the past memory (narrative PM) in both SL. In LSFB, list buoys also appeared in the argumentative genre. The storytelling task (narrative FS) had no list buoys in either of the two SLs, which confirms that this device is only used in narratives if the production involves the explanation of a situation and not just the description of a setting.

Second, the frequency per signer varied from one SL to the other in C3. There was only one signer (S055) who used list buoys in LSFB, whereas there were three (DU, CG and QF) who used this device as a DM in LSC. Hence, the articulation of list

buoys depends on the signer's preferences in line with what has been previously found in DGS by Hansen and Heßmann (2015). S055, CG and QF belong to the group of young signers (18-29 years old), whereas DU belongs to the group of middle-aged signers (30-49 years old). Two hypotheses can be formulated: (i) list buoys are more frequent in young generations than in older generations, and (ii) list buoys are more frequent in women (of the four signers who use discourse-marking list buoys in C3, QF is the only man).

Third, list buoys were relational devices in the sample analysed of the two SLs, but they could also contain digits that combined a relational and a non-relational function. Regardless of the type of DM, list buoys belonged to the sequential domain, which groups together discourse structuring functions such as enumeration, planning and addition (this last function was only found in the LSFB data). In both SLs, enumeration was the most frequent function, whilst planning scarcely appeared and was always combined with enumeration. Although no common patterns in non-manual marking could be observed between the two SLs in the function of enumeration, the function of planning was characterised by a floating gaze (i.e. not directed at the addressee).

There were many common points in the articulation of list buoys expressing enumeration in both SLs: list buoys were mainly sequentially built, the first digit was not pointed at, signers repeated the pointing towards digits that had previously been pointed at, and a digit might refer to a previous segment of discourse instead of referring to the upcoming segment. The scope of both list buoys and their digits contains more clauses in the LSFB data than in the LSC data. When each SL is inspected separately, there are also differences in terms of the extension of the scope depending on the level at which list buoys are found if discourse is represented as a tree following the principles of the Question Under Discussion (Büring, 2003; see sub-section 5.2.3 in chapter 5).

Finally, list buoy digits in both SLs were found in similar positions at the three levels of analysis, namely the clause, the BDU and the turn. Left peripheries (in the clause and the BDU) were preferred over right peripheries when list buoys express enumeration, whereas no conclusions can be drawn about the function of planning due to the heterogeneity of locations of the few examples in C3. Regardless of the function, list buoys always appeared in the turn-medial position; so they are not turn-taking devices in the LSFB and LSC samples of C3. However, they have the function of planning which is used to hold the turn; that is, they participate in the turn-exchange system.

7.3 The PALM-UP particle

The functions of PALM-UP have been investigated in different SLs (see sub-section 5.3.1 in chapter 5). LSC is among these SLs (see Jarque et al., 2013), but PALM-UP is not tackled from the point of view of DMs. At present, there are no studies that take a cross-linguistic perspective, and existing studies are not fully comparable be-

cause of the differences in the definition of the gesture, the approach of each research project, the size of the dataset and the type of data. This section fills this gap by comparing PALM-UP in LSFB and LSC: tokens were identified on the basis of the working definition which was given on p.180, the objective of the research project is the same, and the size of the dataset as well as the type of data are comparable.

As shown in section 6.4 (see previous chapter) devoted to the study of PALM-UP in LSFB, this gesture is the most polysemous of the three DM candidates under study in this dissertation. This claim also holds true for LSC. Before describing the functions of PALM-UP, the frequency per genre and per signer of the 206 discourse-marking PALM-UP tokens in LSFB and the 139 discourse-marking PALM-UP tokens in LSC will be presented. Despite the difference in numbers, the averages of PALM-UP per SL are very close to each other (three PALM-UP/100 signs in LSFB and two PALM-UP/100 signs in LSC).[9]

7.3.1 Frequency per genre

In C3, the distribution of PALM-UP across genres in the two SLs was the same. Argumentative productions (conversation about deaf and hearing culture in LSFB and conversation about the future of deaf clubs) attracted the highest number of PALM-UP tokens. The second genre with more discourse-marking palm-ups was one of the narratives (narrative PM, i.e. telling a past memory).

Genre	Total in LSFB	Percentage	Total in LSC	Percentage
Argumentative	93	45%	65	47%
Expository	22	11%	10	7%
Narrative PM	73	35%	53	38%
Narrative FS	18	9%	11	8%

Table 7.8: Distribution of PALM-UP per genre in C3

The expository genre (presentation and explanation of each signer's sign name) and the other narrative production (telling a story from a video or paper-based medium, and the other signer has to finish it in LSFB and telling the story *Frog, where are you?* (Mayer, 1969) to the moderator in LSC) contained the lowest number of tokens. However, PALM-UP was more frequent in the expository genre because productions contained fewer signs in total. There are five palm-ups per 100 signs in the expository task of both SLs, whereas there is only one palm-up per 100 signs in the storytelling task of both SLs. This indicates that storytelling is different from the other genres in that other discourse structuring devices or strategies are preferred.

[9]These averages have been calculated taking into account the total number of discourse-marking PALM-UP tokens in each SL sample and dividing it by the total number of signs produced, i.e. 6473 signs in LSFB and 5794 signs in LSC.

7.3.2 Frequency per signer

When the frequency of use of PALM-UP per signer was investigated in LSFB (see sub-section 6.4.2), results showed that this gesture is used as a DM more frequently by older signers (S003 and S004), although there was one young signer (S056) with a similar average of palm-ups per 100 signs. Figure 7.5 illustrates the distribution of PALM-UP per signer in the LSFB sample of C3 and Table 7.9 contains the averages per signer.

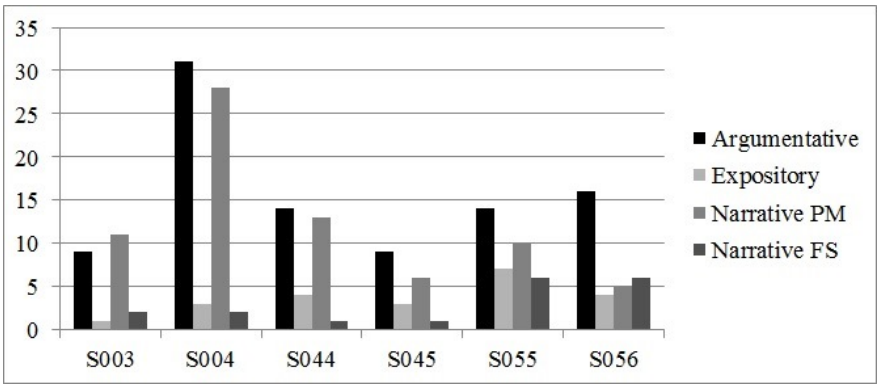


Figure 7.5: Distribution of discourse-marking palm-ups per signer in LSFB in C3

Signer	Number of palm-ups	Number of signs	Average	Age group
S003	23	696	3/100	50-85
S004	64	1233	5/100	
S044	32	1311	2/100	30-49
S045	19	1046	2/100	
S055	37	1420	3/100	18-29
S056	31	767	4/100	

Table 7.9: Number of PALM-UP tokens per signer in LSFB in C3

The averages of PALM-UP tokens in Table 7.9 are not far from the averages presented in Table 6.9 (p.233): S004 and S045 have the same average; S003, S044 and S056 have one point less; and S055 has one point more. These slight differences may be due to how the signer adapts to the communication situation (Beeching, 2007): s/he will choose to use a certain DM more or less frequently depending on the content s/he wants to communicate. The two older signers still produce a high number of palm-ups in C3, but the two young signers have very similar proportions. The two signers from the middle-aged group have the same average (2/100), which is the lowest of the group as in Table 6.9.

The distribution of discourse-marking palm-ups per signer in LSC is quite different (see Figure 7.6 and Table 7.10). The two young signers (CG and QF, a woman and a man) produced the highest number of palm-ups. One of the middle-aged signers

(DU, a woman) produced the lowest number, which contrasts with her partner in the recording session (KW, a man). KW has the same average as KD, a man from the older group of signers. Finally, DT (a woman from the older group) is in between the young signers and the two men (KW and KD). This variability indicates that the use of PALM-UP as a DM varies from one signer to another, just as the use of some DMs varies in a SpL (ibid.).

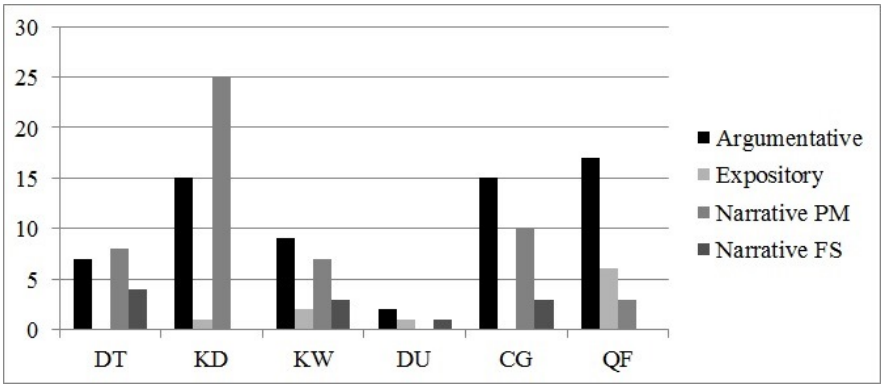


Figure 7.6: Distribution of discourse-marking palm-ups per signer in LSC in C3

Signer	Number of palm-ups	Number of signs	Average	Age group
DT	19	718	3/100	50-85
KD	41	1744	2/100	
KW	21	1095	2/100	30-49
DU	4	790	0.5/100	
CG	28	740	4/100	18-29
QF	26	707	4/100	

Table 7.10: Number of PALM-UP tokens per signer in LSC in C3

In short, it seems that there is no common tendency in the distribution of discourse-marking palm-ups per signer in LSFB and LSC. The samples of the two SLs need to be enlarged in order to confirm or refute this claim. Furthermore, recall that these figures for the two SLs are limited to discourse-marking palm-ups; so they neither apply to the whole category nor can they be compared with other studies (e.g. the work of Jarque et al. (2013) on PALM-UP in LSC).

7.3.3 Type of DM, domains and functions

PALM-UP was mostly non-relational in the selected sample of the two SLs under study (see Table 7.11). However, it fulfilled more relational functions in LSFB than in LSC. PALM-UP did not frequently fulfil a relational and a non-relational function at the same time, although this type of combination was slightly more frequent in LSC.

PALM-UP fulfilled functions of the four domains in the two SLs (see Table 7.12), but the most frequent was the sequential domain (i.e. discourse structuring). Interpersonal functions (i.e. management of exchange between signers) were more frequent in LSC, although they could also be found in LSFB. On the other hand, the ideational domain (relations between real world events) was less frequent than the two domains discussed, but the proportion of palm-ups in LSFB was higher. Finally, the rhetorical domain (subjective or metadiscursive relations) was the least common in the two SLs.

Type of DM	**LSFB**		**LSC**	
	Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Relational	33	16%	2	1%
Non-relational	168	82%	128	92%
Both	5	2%	9	7%

Table 7.11: Type of DM for PALM-UP in C3

Domain	**LSFB**		**LSC**	
	Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Ideational	22	11%	8	6%
Rhetorical	10	5%	6	4%
Sequential	129	62%	69	49%
Interpersonal	33	16%	51	37%
Double	12	6%	5	4%

Table 7.12: Domain of PALM-UP in C3

The tag 'double' means that domains can combine when a polysemous DM is assigned a double function because no function is predominant over the other (see Table 7.13). Surprisingly, the same domains combined in the LSFB and LSC data and the proportions are very similar. The sequential domain combined with the other three domains because the functions of opening, closing, punctuation and planning easily appear with another function as mentioned in sub-section 6.4.3.2.

Domain	**LSFB**		**LSC**	
	Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Ideational + sequential	2	17%	1	20%
Rhetorical + sequential	4	33%	1	20%
Sequential + interpersonal	3	50%	3	60%

Table 7.13: Double domains of PALM-UP in C3

As regards the functions in C3, PALM-UP has 17 single functions (+ nine double functions) in LSFB and 16 single functions (+ four double functions) in LSC. 12 single functions are common to the two SLs (agreeing, cause, close, concession, condition, monitoring, opening, opposition, planning, punctuation, quoting and temporal marking), whereas there are five functions that only appear in LSFB (consequence, face-saving, hedging, specification and topic-shifting) and three that only appear in LSC (alternative, conclusion and emphasis). However, note that the function of emphasis together with another function can also be fulfilled by PALM-UP in LSFB (see sub-section 6.4.3.3). The number of palm-ups per function in each SL is summarised in Table 7.14.

Domain	**Function**	**LSFB**		**LSC**	
		Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Ideational	Alternative	0	0%	1	0.7%
	Cause	2	0.9%	1	0.7%
	Concession	3	1.4%	2	1.4%
	Condition	1	0.4%	1	0.7%
	Consequence	6	2.9%	0	0%
	Temporal	10	4.8%	3	2.1%
Rhetorical	Conclusion	0	0%	1	0.7%
	Emphasis	0	0%	4	2.8%
	Hedging	1	0.4%	0	0%
	Opposition	8	3.8%	1	0.7%
	Specification	1	0.4%	0	0%
Sequential	Closing	52	25.2%	16	11.4%
	Face-saving	1	0.4%	0	0%
	Monitoring	12	5.8%	23	16.4%
	Opening	4	1.9%	10	7.1%
	Quoting	4	1.9%	4	2.8%
	Topic-shifting	1	0.4%	0	0%
Interpersonal	Agreeing	20	9.7%	28	14.4%
	Planning	16	7.7%	12	8.5%
	Punctuation	52	25.2%	27	19.2%

Table 7.14: Functions of PALM-UP in C3

Despite the fact that some functions are shared between the two SLs in C3, the percentages are different. The functions of closing, opposition, punctuation and temporal marking are more frequent in LSFB, whereas the functions of agreeing, monitoring, opening and planning are more frequent in LSC. This distribution agrees with what was said earlier about the domain: functions from the sequential domain are frequent in the two SLs, but LSFB has more functions from the ideational domain (consequence, opposition and temporal marking) and LSC from the interpersonal domain (agreeing and monitoring). There are four functions left (cause, concession, condition and quoting) for which it is difficult to see if they are more frequent in

a particular SL because either the percentage or the number of tokens in the data is (almost) the same. It is also interesting to observe that the functions that were considered idiosyncratic in sub-section 6.4.3.3 can also be found in LSC.

Table 7.15 contains the cases in which PALM-UP has two functions in C3. Although these combinations seem to be idiosyncratic, there were two double functions (opening + agreeing and punctuation + monitoring) that were found in the two SLs. In addition, the combination of punctuation + monitoring is used by two signers in LSFB, whereas there is only one signer who produces this combination in LSC. The existence of double functions and the fact that some of these double functions are shared between the two SLs may indicate that there are similarities in the cognitive processing of discourse relations (Cartoni et al., 2013).

Double functions	**Total of palm-ups in LSFB**	**Total of palm-ups in LSC**
Opening + agreeing	1	1
Punctuation + monitoring	2	2
Planning + opposition	2	0
Monitoring + closing	2	0
Closing + agreeing	1	0
Consequence + opening	1	0
Consequence + planning	1	0
Opposition + punctuation	1	0
Punctuation + emphasis	1	0
Planning + reformulation	0	1
Consequence + punctuation	0	1

Table 7.15: Double functions of PALM-UP in C3

In the following pages, I will go into detail about the functions that PALM-UP can have in the two SLs under study. Since all the functions were defined in the previous chapter, I will proceed as in sub-section 7.2.3 and I will only give short summaries of each function (if they have not already been provided in this chapter) and examples in LSC. I will also explain the non-manual marking that accompanies each function and how PALM-UP is articulated. These two aspects will also be compared with the results obtained in LSFB from C2.

Agreeing This function is used to express understanding of what the interlocutor said (see definition on p.239). In example (160), signers are talking about the future of deaf clubs. KD says that he does not know whether deaf clubs will close in the future or not because nowadays young people do not get involved in them. DT agrees with KD by overlapping her turn.[10]

[10] As in previous chapters, § precedes the segment of text that overlaps with another and both of them are underlined.

KD: [PT:PRO1 KNOW-NOT] <PALM-UP> [PT:PRO1 A-LITTLE HELP A-LITTLE VOLUNTEER NOTHING] §[PT:PRO1+ HELP+] [PT:PRO1 A-LOT++] [ALREADY PAY++ MONEY HAVE-NOT] [PT:PRO1 ALWAYS+] <PALM-UP>

(160) DT: §[ALWAYS VOLUNTEER] <**PALM-UP**>

KD: 'I don't know. Young people neither help nor volunteer for the cause. §I have helped a lot... I have even paid money when there wasn't any in the deaf club. I've always done these things.'

DT: '§We have always worked as volunteers, that's it.'

(LSC Corpus, session 3, task 8, 01:11 - 01:20)

The function of agreeing in LSC was expressed with a head nod, a gaze directed at the addressee and sometimes a blinking. The mouth was usually closed except for some cases in which the signers mouthed 'claro' in Spanish ('of course' in English). Non-manual marking was exactly the same in the LSFB data, the only thing that changed was that the mouthing was produced in French and not in Spanish.

Another point in common between LSFB and LSC in C3 when PALM-UP expresses this function is that one-handed forms are preferred over two-handed forms (12 vs. eight in LSFB and 17 vs. 11 in LSC). Moreover, there are five PALM-UP tokens of the 17 one-handed ones that are reduced on the lap. As in LSFB, the signer uses a lower location "in order to not direct attention away from the primary signer" (Mesch, 2016, p.32).

Punctuation This function underlines the separation between discourse segments (see full definition on p.237). Example (161) is an excerpt from the first task of the LSC Corpus in which signers have to introduce themselves and explain why they were given their sign name. PALM-UP is used to mark the transition between the two clauses.

(161) [PT:PRO1 NS:PAU FS:PAU] <**PALM-UP**> [PT:PRO1 NS:PAU BECAUSE PT:PRO1 PAST BORN PT:PRO1 DS:CHINESE-EYES] <FOR PT:DET> [GIVE]
'My name is Pau and this is my sign name. So, I received this sign name because when I was born I had almond-shaped eyes. That's the reason why.'

(LSC Corpus, session 1, task 1, signer QF, 00:12 - 00:19)

Both non-manual marking accompanying this function and the articulation were the same in the two SLs. On the one hand, non-manual marking included a movement of the head (mainly a head turn, tilt or nod), and if such movement was absent, there was a body movement (backward, forward or to the side). The gaze was mostly directed at the addressee, although on occasions it could be floating. Blinking frequently occured with this function because punctuation separates discourse units and eye blinks may have the same prosodic function (see 4.3.2.3 in chapter 4). As regards the mouth, it could be open or closed; and no mouthings were produced. On the other hand, two-handed forms were preferred over one-handed forms (36 vs. 16 in LSFB and 17 vs. 10 in LSC).

Monitoring This function is used to check that the interlocutor has understood (see definition on p.240). Example (162) is an excerpt from one of the two past memories that KD narrates. He says that he did not go to school until the age of 12 because there was no school nearby and his parents were illiterate.

(162) [PARENTS PT:PRO1 HAVE-NOT FAULT] [NAFF PEASANT BE] <**PALM-UP**>
'It wasn't my parents' fault. They were illiterate peasants, you see?'

(LSC Corpus, session 3, task 4, signer KD, 01:59 - 02:02)

Again, there are similarities between LSFB and LSC in C3 as regards PALM-UP tokens expressing monitoring. Non-manual marking includes a head movement (a head nod, a turn or even a tilt). The body may move to the side, backward or forward in LSC; but this non-manual marker is not found in LSFB when PALM-UP is used for this function. Not surprisingly, the gaze is directed at the addressee in order to elicit backchannel. No clear pattern can be observed in the activity of the mouth: it is either closed or open. Mouthings are rare and, if they are produced, they are a part of a word that was mouthed with the previous sign.

Concerning the articulation of PALM-UP, it seems that two-handed forms are more frequent than one-handed in C3. There are 15 two-handed forms and eight one-handed in LSC, whereas there seems to be no preference in LSFB because there are six tokens representing each possibility. However, if we go back to the previous chapter (p.240), there is also a slight preference for two-handed forms over one-handed in the LSFB data that make up C2.

Closing This function ends a sequence or a turn (see full definition on p.238). Example (163) is extracted from the conversation about the future of deaf clubs. DU says that she feels that deaf clubs will disappear in the future, but it is hard to predict what will happen. She uses two palm-ups: the first to express stance and the second to end her turn.

(163) [HERE FUTURE CAPABLE DISAPPEAR CAPABLE] <OR> [DIMINISH YEAR FROM-NOW] <PALM-UP> [KNOW NEVER FUTURE] <**PALM-UP**>
'In the future, deaf clubs may disappear here or be diminished by time. I have no idea, you never know what will happen, so.'

(LSC Corpus, session 2, task 8, signer DU, 01:58 - 02:04)

Palm-ups that close the turn or a discourse sequence are similar to palm-ups expressing punctuation in the data analysed for the two SLs. On the one hand, non-manual marking is not only shared between the two functions but also between the two SLs. It includes a gaze directed at the addressee (or the moderator) and a head movement (tilt, turn or nod). The mouth can be open or closed, and mouthings are rarely produced. Blinking is occasionally found in both SLs (although it seems to be more frequent in LSFB) because of its possible prosodic function of marking boundaries.

On the other hand, two-handed forms are preferred over one-handed forms (nine vs. seven in LSC and 34 vs. 18 in LSFB). There is one PALM-UP used for closing a role shift that spreads over the following signs in LSC. This usage of the sign together with spreading is not found in LSFB, either in C2 or C3.

Planning This function (see the definition on p.223) can be shared among list buoys, PALM-UP and SAME in the two SLs under study. Although planning is not a function fulfilled by SAME in the LSFB sample of C3, it can be found in C2 (see p.268). Example (164) is also extracted from the conversation about the future of deaf clubs. KW adds his opinion about the future of LSC to the discussion. He thinks that there should be an act guaranteeing that basic LSC is taught at school and later in order to avoid the use of this language diminishing.

(164) [SIGN LANGUAGE CAN DIMINISH] <GSIGN> <OR> <**PALM-UP**> [MUST FXD:OBLIGE] <OR> [REALISE JUST-IN-CASE ONE LAW TEACHING OBLIGE BASIS LANGUAGE SCHOOL UNTIL-ADULT]
'It may be that the use of sign language diminishes or, I don't know, it must... or, we need to realise that there should be an act guaranteeing that some basic sign language is taught at school until students are adults.'

(LSC Corpus, session 2, task 8, signer KW, 03:00 - 03:10)

In C3, non-manual marking was the same for all of the three DMs under study that expressed this function in LSFB and LSC: the gaze was floating and there was a head movement (head turn, chin up or chin down in order to help deviate the gaze). No common pattern could be observed for the mouth. Two-handed forms prevailed over one-handed in both SLs (seven vs. five in LSC and 11 vs. five in LSFB), although the difference was more pronounced in LSFB if both samples (C2 and C3) are taken into account. There was only one PALM-UP in LSC that spread over the following signs.

Opening This function is used to begin a discourse sequence or a turn (see definition on p.245). In C3, PALM-UP and SAME shared this function in LSFB; whereas it was only fulfilled by PALM-UP in LSC. Example (165) has been extracted from the conversation in which signers narrate a past memory. Each signer has already narrated one personal story and the moderator asks for more. DT articulates a gesture to express stance, the moderator says something[11] and she starts to tell her second past memory[12] by using PALM-UP.

[11] The moderator was not filmed in any of the three sessions that I am analysing, so his productions are not available.

[12] The two past memories are about the boarding school for the deaf she attended in Barcelona, i.e. La Purísima.

(165) <GSIGN> <**PALM-UP**> [A-LITTLE SHORT++ TOPIC NS:PURISIMA] [EXAGGERATE]
'I don't know... Well, I have a short story about La Purísima. The nuns used to exaggerate.'

(LSC Corpus, session 3, task 4, signer DT, 07:00 - 07:05)

This function presents some differences between the LSFB and LSC examples in non-manual marking and in the articulation. On the one hand, the only common non-manual marker was the gaze directed at the addressee in order to let him/her know that the signer wanted to start a turn or that s/he was bidding for the floor. The head movement (nod or turn) seems to be more frequent in LSC than in LSFB. The mouth can be closed or open, and mouthings were not uttered. On the other hand, two-handed forms prevailed over one-handed forms in LSC (six vs. four). The contrary was true for LSFB, i.e. one one-handed form vs. three two-handed forms. This tendency was also observed in C2 (see p.245).

Emphasis This function stresses a neighbouring pragmatic function or proposition (see p.216 for further details on the definition). In the LSC data, this function is only fulfilled by palm-ups and it appears alone, i.e. not combined with another function. The other two DMs under study were not used to express emphasis in this SL. Although this function does not appear in the LSFB sample of C3, PALM-UP can be used to express emphasis in LSFB but in combination with another function (see sub-section 6.4.3.3). Moreover, list buoys and SAME can also be used for the same purpose; list buoys in combination with another function (see sub-section 6.3.3.3) and SAME in combination with another function or alone (see sub-section 6.5.3.3).

Example (166) is the continuation of (165). The second past memory that DT narrates is about the nuns at the boarding school, who used to hit girls whose clothes were stained. She finds their reaction disproportionate and she stresses it using PALM-UP.[13]

(166) [WOMAN-LITTLE+++ REALLY PERFECT CLEAN DIFFICULT] <**PALM-UP**> [PT:PRO6 NUN DEMANDING BE+++]
'It's very difficult for little girls to be clean and perfect! The nuns were too demanding.'

(LSC Corpus, session 3, task 4, signer DT, 07:35 - 07:40)

Regardless of the DM that fulfils this function and of the SL sample used in this dissertation, emphasis goes with a gaze directed at the addressee. There is also a head movement and/or a body movement that provides emphasis. The mouth is frequently closed or the mouthing related to the previous sign can spread over PALM-UP. As regards the articulation, two-handed forms prevail over one-handed in LSC (three vs. one). In LSFB, no conclusions can be drawn because there are no PALM-UP whose only function is emphasis.

[13] In the following example, PALM-UP is translated as a punctuation mark because markers of emphasis "[correspond] to prosodic stress or graphical underlining" (Crible, 2014, p.23).

Quoting This function, defined on p.244, is fulfilled by DMs that signal the beginning of reported speech. Example (167) contains a piece of constructed dialogue between KD and his father. Since KD started school late, he was delayed as compared to the other pupils and the nuns of the boarding school made him clean instead of going to class. The first segment of constructed dialogue is introduced by the verb SAY, whereas the second segment is introduced by PALM-UP.

(167) <AFTER+++> [FATHER SAY] [PT:PRO1 CAN-NOT PT:DET PT:PRO1 STUDY NOTHING] [CLEAN+++] <**PALM-UP**> [NUN PT:PRO2 SILENCE] [OBEY] [GIVE PITY] [GSIGN CLEAN]
'Afterwards, I told my father "I can't stand being there, I don't study, I spend my time cleaning". "Oh, you must obey the nuns, bless them, you have to go on cleaning."'

(LSC Corpus, session 3, task 4, signer KD, 04:28 - 04:38)

In each SL sample, there are four PALM-UP tokens that express this function. Three different signers produce it in LSFB, whereas the same signer produces all examples of quoting in LSC. Non-manual marking layered with this function includes a spatial gaze that introduces constructed dialogue (Meurant, 2008c) by establishing a locus and a head movement (frequently forward in LSFB and a turn in LSC). Sometimes, there can be a blink before the spatial gaze. No common pattern can be observed in mouth actions and mouthings in either of the two SLs. Two-handed forms of PALM-UP are preferred over one-handed forms in both SL datasets (all tokens are two-handed in LSFB and three are two-handed in LSC under this function).

Temporal This function links discourse segments chronologically (see p.243 for further details). Example (168) is an excerpt from the Frog Story (Mayer, 1969). PALM-UP signals that the action contained in the second clause happens after the action contained in the first clause.

(168) [LEAVE.PLACE LEAVE-OUT] <**PALM-UP**> [MAN MAN TOGETHER DOG GET-UP SEE DISAPPEAR]
'The frog escaped. Then, when the kid and the dog got up, they saw that the frog had disappeared.'

(LSC Corpus, session 3, task 2, signer DT, 00:28 - 00:36)

The only non-manual marker that was shared between the two SLs under study in order to express this function was a head movement, particularly a head nod. The gaze was always directed at the addressee in LSC, whereas it could be directed or floating in LSFB. The mouth could be open or closed in LSC, whilst it was open in LSFB. Concerning the articulation, there were only two-handed forms in LSC. In LSFB, two-handed forms seemed to be preferred as well (six two-handed vs. four one-handed), although no preferences were observed in C2 (four one-handed vs. four two-handed, see p.243).

Concession This function is used to deny an expectation given in the previous discourse segment (see definition on p.241). PALM-UP and SAME shared this function in LSFB, whilst the only DM investigated in this dissertation that could express concession in LSC was PALM-UP. In example (169), CG gives her opinion about the future of deaf clubs. PALM-UP introduces a discourse segment that contradicts what one would expect after reading the first clause about people attending deaf clubs.

(169) [PT:PRO1 OPINION FUTURE BE CONTINUE PT:PRO1 FUNCTION NO BECAUSE PERSON++ PT:PRO6 CONTINUE GO++ MONEY PAY] <**PALM-UP**> [GO NO++] [REASON-WHY] [HOUSE LOSE]
'In my opinion, I don't think that deaf clubs will continue to function because people still pay the fees to go there, but they don't go in reality so it's worthless to have such a big place.'

(LSC Corpus, session 1, task 8, signer CG, 00:36 - 00:44)

When PALM-UP was used as a marker of concession in LSFB and LSC, there ws always a head movement. This movement was different in each token, so no conclusions can be drawn. The mouth frequently uttered a DM in the surrounding SpL: 'mais' in French for LSFB, and 'pero' in Spanish for LSC (both mean 'but' in English). The main difference in non-manual marking between the two SLs was the gaze direction: it was addressed towards the interlocutor in LSC, but floating in LSFB. As regards the articulation, two-handed forms prevailed over one-handed forms in both SLs.

Alternative This function signals that there are two possibilities, exclusive or not. In C3, there is only one PALM-UP token (two-handed form) that expresses this function in LSC. Alternative is not a function fulfilled by PALM-UP in LSFB (either in C2 or C3). However, alternative can be expressed by list buoys in LSFB (see p.216 for an example and the full definition). The content of example (170) comes after the content of (169). CG proposes that deaf clubs become a smaller place and QF does not agree because he thinks that contact between deaf people will be lost. CG uses PALM-UP (the first in her turn) in order to introduce an alternative to keep contact, i.e. mobile technologies.

(170)
QF: [CHANGE EXAMPLE NO ROOM.7 NOTHING-MORE EXPLAIN ROOM.7 ONLY FOR OBJECTIVE INTERPRETER BETTER PT:PRO4 DEAF MEET++ NO DS:SEPARATE-GROUP++] <SAY> [DS:SEPARATE-GROUP MORE.6 FAR] <PALM-UP>

CG: [YES] [PT:PRO2] [YES] <**PALM-UP**> [TECHNOLOGY MOBILE CONTACT ALSO BE-WORTH NS:SPAIN ALL GOOD] <PALM-UP>

QF: 'If deaf clubs change into a small room with the objective of getting better interpreting services, deaf people will be separated. So we will be further and further away one from the other.'

CG: 'Yes, you are right, but mobile technologies are also good to keep contact with people around Spain, you know?'

(LSC Corpus, session 1, task 8, 01:07 - 01:22)

Non-manual marking in this example consists of a floating gaze followed by a directed gaze towards the addressee. The chin is down, eyebrows are raised and the mouthing 'pero' (i.e. 'but') is uttered. As mentioned throughout section 6.4 in the chapter devoted to LSFB, mouthings expressing contrast are articulated with almost every relation of contrast or opposition, be it pragmatic or not. Non-manual marking does not help disambiguate between objective and subjective discourse relations, but linguistic context does.

Cause This function introduces the reason why something happened in the real world (see definition on p.245). Both PALM-UP and SAME can fulfil this function in LSC. In LSFB, cause can also be expressed by these two DMs (see chapter 6), but it is only expressed by PALM-UP in C3. Example (171) is the only one in which PALM-UP (the first one) is used as a causal marker in LSC. The excerpt is in between (165) and (166). DT says that the reason why nuns hit girls whose clothes were stained is that they did not like girls to be dirty.

(171) [DS:HANDS-TAKE-BODY PT:DET STAIN THAT-S-IT ANGRY] [HIT++] <**PALM-UP**> [SEE LIKE-NOT DIRTY] <PALM-UP>
'The nuns would take the girls by their arms to examine them. If a girl had her clothes stained, the nuns would be angry and they would hit her because they didn't like it when the girls were dirty, yeah.'

(LSC Corpus, session 3, task 4, signer DT, 07:25 - 07:33)

Non-manual marking in LSFB and LSC for this function consisted of a floating gaze and the mouth was closed. The floating gaze was also found in the token of SAME that expressed cause in LSFB. In both SLs, one-handed forms prevailed over two-handed for this particular function.

Condition This function relates two segments of discourse, one containing a condition and the other containing a consequence (see definition on p.246). In C3, this function was shared between PALM-UP and SAME in LSC, whereas it was only fulfilled by one PALM-UP in LSFB. In example (172), KW says that he would not be worried about the future of deaf clubs if he knew that young people will continue to move forward.

(172) [PT:PRO1 WORRY NO **PALM-UP** KNOW YES GENERATION DEAF PT:PRO3 MUST FIX FUNCTION ADVANCE]
'I wouldn't be worried if I knew that the younger deaf generations will keep on moving forward.'

(LSC Corpus, session 2, task 8, signer KW, 02:39 - 02:43)

When the signer produces this example, his chin is up and he turns his head. The gaze is floating and the mouthing he produces is an anticipation of the mouthing that goes with the following sign. Non-manual marking is different from what was found

in LSFB: in this SL, there was a body movement backwards, a gaze directed at the addressee, the eyebrows were raised and the mouth was closed. Raised eyebrows are a marker of condition in many SLs, among them LSC (Quer, 2016). The other example in LSC of conditional is found in the upcoming (180). In this example, eyebrows are raised as well, so non-manual marking in (172) may be an exception. Other tentative explanations that would need further research could be that: (i) the segment including the condition is found after the nucleus of the clause and not before as in the other examples, and (ii) raised eyebrows are used to mark the first conditional, whereas the second conditional (which is hypothetical) is marked with a floating gaze.

Conclusion This function introduces a subjective result and is only fulfilled by PALM-UP in the LSC sample of C3, whereas it can be expressed by SAME in the LSFB data of C2 (see example and full definition on p.270). Example (173) is at the end of the conversation about past memories. KD says that he participated in a car race in which the prize was a new car. He won the race, but he did not receive the car because somebody took it away. DT reacts by using PALM-UP to introduce a pragmatic result, i.e. he received nothing, from the situation that KD explained.[14]

(173)
KD: [DISAPPOINTMENT] [NOTHING GIVE NO++]
DT: <**PALM-UP**> [NOTHING] <GSIGN>
KD: 'I was disappointed. They didn't give me the car.'
DT: 'So you got nothing? I see...'

(LSC Corpus, session 3, task 4, 13:52 - 13:58)

PALM-UP expressing conclusion in this example goes with a head shake, a directed gaze towards the addressee and the mouth is closed. Non-manual marking is the same that can be found in PALM-UP tokens expressing consequence in the LSFB data. The form of PALM-UP when it fulfils these two functions in C3 is also the same, i.e. only two-handed forms are produced. Hence, there are no cues that help disambiguate between these two functions that introduce a pragmatic result (conclusion) or a factual result (consequence). The task remains highly contextual.

Opposition This function introduces a subjective contrast or concession (see definition on p.244). In example (174), the signer is answering the moderator who tries to elicit KD's opinion about the future of deaf clubs. KD says that he thinks that meetings in person are better than online meetings, and that he feels that people prefer to go out rather than going to the deaf club. There are three palm-ups: the first is used to punctuate, the second is used to introduce the epistemic opposition and the third is used to express stance.

[14] This PALM-UP is one of the cases in which a discourse-marking function (conclusion) is combined with a non-discourse-marking function (expressing surprise, i.e. epistemic stance). Discussing this last function is beyond the scope of this work.

(174) [BETTER MEETING] [BETTER MEETING] [COMPUTER HAVE] [MEETING BETTER SEE-MEET] <PALM-UP> <**PALM-UP**> <PALM-UP> [PT:PRO1 SEE ATTRACT VICE+ LIKE LEAVE.PLACE WALK]
'It's better that people meet in the deaf club. There are computers, but it's better to see each other in person, sure. But... I don't know, I see that people prefer to go out.'

(LSC Corpus, session 3, task 8, signer KD, 02:39 - 02:51)

PALM-UP tokens expressing opposition in C3 were similar in the two SLs. There was a floating gaze and a word in the surrounding SpL expressing opposition was uttered, i.e. 'mais' in LSFB and 'pero' in LSC. Non-manual marking (especially the use of a mouthed word) was similar to the other functions expressing any type of contrast (pragmatic or not) in both SLs, which again underlines the importance of context to distinguish between closely related functions. In both SLs, two-handed forms were preferred over one-handed.

7.3.4 Position

As mentioned in the sub-section devoted to the position of PALM-UP in LSFB (see 6.4.4), most studies about this gesture in other SLs talk about a position in the sentence but they do not describe how sentences are delineated (the only exception is van Loon, 2012). Hence, segmentation is not reproducible to other samples and results in two SLs can not be compared.

In this research, data have been segmented using the Basic Discourse Units Model (Degand and Simon, 2005, 2009a,b) adapted to the signed modality (see sub-section 4.3 in chapter 4), and the positions of the three DMs are analysed at the level of the clause, the basic discourse unit (BDU) and the turn. In what follows, the number of tokens per position are presented.

PALM-UP could be found in any position in LSFB, whereas in LSC it could be in any position except in the middle of the clause. However, all common positions had a very similar percentage of tokens. The most frequent position in the two SLs was the right periphery of the clause (55%), followed by the left periphery (33% in LSFB and 32% in LSC). Some palm-ups were in an independent position, although the number was slightly higher in LSC. Table 7.16 summarises this distribution.

The percentage of tokens in the different positions of the BDU was also quite similar in the two SLs (see Table 7.17). From the distribution presented in Table 7.16 it derives that, in C3, the most frequent position of PALM-UP in the BDU was the syntactic right periphery (43% in LSFB and 36% in LSC). The syntactico-prosodic right periphery was fairly common as well (10% in both SLs). If the percentage of tokens in the syntactic left periphery and the syntactico-prosodic left periphery are added (53% in LSFB and 46% in LSC) and these percentages are subtracted from the percentage of tokens in the right periphery of the clause in each SL (55%), it can be observed that there are more clausal right peripheral tokens in the middle of the

BDU in LSC (9%) than in LSFB (2%). Consequently, there are more tokens in the clausal left periphery that are found in the middle of the BDU in LSFB than in LSC in this sample. This would indicate some differences in the prosody of discourse-marking PALM-UP between LSFB and LSC.

Position in the clause	**LSFB**		**LSC**	
	Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Left periphery	68	33%	45	32%
Initial position	1	1%	1	1%
Medial position	6	3%	0	0%
Final position	2	1%	1	1%
Right periphery	114	55%	76	55%
Independent	15	7%	16	11%

Table 7.16: Position of PALM-UP in the clause in C3

Position in the BDU	**LSFB**		**LSC**	
	Total of palm-ups	**Percentage**	**Total of palm-ups**	**Percentage**
Syntactico-prosodic left periphery	12	6%	12	9%
Syntactic left periphery	31	15%	29	21%
Initial position	1	1%	0	0%
Medial position	36	17%	17	12%
Final position	1	1%	1	1%
Syntactic right periphery	89	43%	50	36%
Syntactico-prosodic right periphery	21	10%	14	10%
Independent	15	7%	16	11%

Table 7.17: Position of PALM-UP in the basic discourse unit in C3

As regards the distribution of PALM-UP in the turn, Table 7.18 shows that the most common position in both SLs (with similar percentages) was turn-medial followed by turn-final position. The other positions (i.e. turn-initial and whole turn) were more frequent in LSC than in LSFB. The highest percentage of PALM-UP tokens at the beginning of the turn in LSC suggests that this DM participates more actively in the turn-taking system of LSC than in the turn-taking system of LSFB (see sub-section 7.3.5 for further details).

Position in the turn	LSFB		LSC	
	Total of palm-ups	Percentage	Total of palm-ups	Percentage
Turn-initial	10	5%	17	12%
Turn-medial	132	64%	81	58%
Turn-final	53	26%	27	20%
Whole turn	11	5%	14	10%

Table 7.18: Position of PALM-UP in the turn in C3

7.3.5 The function-position paradigm

In the previous chapter, I already mentioned that there is not always a clear correlation between the function of PALM-UP tokens and their position in LSFB. The analysis of C3 supports this claim in both LSFB and LSC. In what follows, I will compare the paradigm of the functions that are shared between these two SLs. For this purpose, I will first give an account of all functions that PALM-UP can fulfil in LSC. I will not present the function-position paradigm in LSFB again because the results of C3 are in line with those of sub-section 6.4.5.

Table 7.19 contains a summary of all the functions fulfilled by PALM-UP in LSC (the asterisk goes with the functions that were not found in LSFB) and their position in the clause, the BDU and the turn in C3. The functions for which different positions are possible contain all the positions unless one is more representative than the others (i.e. it represents 50% of the tokens or more).

The only two functions that clearly correlated with a position in the clause, the BDU and the turn in LSC were closing and monitoring. There are other functions (agreeing, planning, punctuation, temporal marking and emphasis) for which there was usually a predominant position in the clause, but they appeared in different locations in the BDU. The function that had more variable positions at the three levels was quoting. For the other functions left (concession, cause, condition, conclusion, opposition and alternative), there were only one or two tokens, so the function-position paradigm cannot be considered representative.

Generally speaking, PALM-UP shows clearer function-position correlations in the LSFB data (see tables 6.11 and 6.12, pp.254-255) than in the LSC data. However, there are many similarities between the functions and the position of PALM-UP between the two SLs under study. For instance, the functions of closing and monitoring were found in similar positions consistently. The first function is used to end a turn, so closing palm-ups are found in the right periphery of discourse segments and at the end of the turn. The second function is used to check for understanding, so something has to be said before PALM-UP tokens fulfilling this function appear. Hence, monitoring was also in the right periphery of the clause and the BDU. It was predominantly in the middle of the turn, although the final position was possible as well. Bearing in mind these right peripheral positions, LSC data confirms Traugott's

Domain	Function	Position in the...		
		Clause	**BDU**	**Turn**
Sequential	Punctuation (27)	Right periphery (20)	Syntactic left periphery (7) / Syntactic right periphery (12)	Medial (27)
	Planning (12)	Left periphery (8)	Syntactic left periphery (6)	Medial (12)
	Opening (10)	Left periphery (9)	Syntactico-prosodic left periphery (7)	Initial (5) / medial (4)
	Closing (16)	Right periphery (15)	Syntactic right periphery (11)	Final (16)
	Quoting (5)	Left periphery (2) / right periphery (2)	Syntactic left periphery (1) / Medial (1) / Syntactic right periphery (1)	Medial (3)
Interpersonal	Agreeing (28)	Left periphery (7) / right periphery (8) / independent (13)	Syntactic left periphery (5) / syntactico-prosodic right periphery (5) / independent (13)	Initial (9) / final (6) / whole turn (12)
	Monitoring (23)	Right periphery (21)	Syntactic right periphery (15)	Medial (16)
Ideational	Temporal (3)	Left periphery (2)	Syntactic left periphery (2)	Medial (3)
	Concession (2)	Left periphery (2)	Syntactic left periphery (2)	Initial (1) / medial (1)
	Cause (1)	Left periphery (1)	Medial (1)	Medial (1)
	Condition (1)	Initial position (1)	Medial (1)	Medial (1)
	Alternative* (1)	Left periphery (1)	Medial (1)	Medial (1)
Rhetorical	Emphasis* (4)	Right periphery (3)	Medial (2)	Medial (4)
	Opposition (1)	Left periphery (1)	Syntactico-prosodic left periphery (1)	Medial (1)
	Conclusion* (1)	Left periphery (1)	Syntactic left periphery (1)	Initial (1)

Table 7.19: Summary of the function-position correlation of PALM-UP in LSC

(2012) hypothesis about the right periphery being the preferred position for functions that express intersubjective meanings (i.e. meanings related to the addressee).

The functions of agreeing and planning could be found in different positions in the clause, the BDU and even the turn. These positions are similar in both SLs and, unlike closing and monitoring, the functions of agreeing and planning seem to little constrain the position. Agreeing could be in the left or right periphery of the clause or in an independent position, whereas its positions in the BDU included: the syntactico-prosodic left periphery, the syntactic left periphery, the syntactic right periphery, the syntactico-prosodic right periphery and an independent position. Different positions in the turn were possible as well: initial, medial, final and whole turn. In both SLs, this last position was preferred over the others. Planning could be found in almost the same positions as agreeing in the clause and the BDU, but the position in the turn was restricted to medial.

The paradigm also points out differences between the LSFB and LSC samples. Although the function of opening was located in the clausal left periphery in both SLs, the preferred position in the BDU was the syntactic left periphery in LSFB and the syntactico-prosodic left periphery in LSC. These positions confirm that subjective meanings (i.e. meanings related to the signer) appear in left peripheries (ibid.). Opening could either be found in the turn-initial or turn-medial position in both SLs. The turn-medial position was rare in LSFB, but it was fairly common in LSC to start a new sequence within the same turn, either after a long pause or after another PALM-UP. In any case, PALM-UP in the turn-initial position was predominant in LSC and if the percentage of tokens is compared to LSFB, the weight of PALM-UP as a turn initiator is heavier in LSC (3.5% in LSC vs. 1.4% in LSFB).

There are functions that appeared in a predominant position in one SL, whereas there was no predominant position in the other SL. For instance, the function of quoting in LSC could be found in the left or right periphery of the clause; in the syntactic left or right periphery or in the middle of the BDU, and in the turn-initial or turn-medial position. Conversely, the same function in LSFB presented a clear correlation: clausal left periphery, medial position of the BDU and the turn. The opposite happened with the function of punctuation. In LSFB, it could be found in the clausal left or right periphery, the medial, final or independent position. There were many possible locations in the BDU as well (syntactic left or right periphery, syntactico-prosodic right periphery, medial, final or independent position), and the position in the turn was almost restricted to medial. However, the paradigm for punctuation is clearer in the LSC sample, in which this function is predominantly in the clausal right periphery, in the syntactic right periphery of the BDU and in the turn-medial position.

The other functions left and shared between the two SLs in C3 (temporal marking, opposition, concession, cause and condition) have few examples at least in one SL, so correlations are not comparable and do not reveal striking differences.

7.3.6 Interim summary of main findings

This sub-section aimed to analyse discourse-marking PALM-UP from a contrastive perspective. This study included 206 tokens of the gesture in LSFB and 139 tokens in LSC. Despite the difference in numbers, both SL samples have a similar average of tokens if the total number of signs is considered (three PALM-UP/100 signs in LSFB and two PALM-UP/100 signs in LSC). The convergent and divergent points that were found for PALM-UP in these two SLs are presented below.

First, the distribution of PALM-UP per genre in C3 is almost the same in the two SLs. The genre that attracted the highest number of discourse-marking palm-ups is the argumentative (almost 50% of the total tokens) followed by the narrative (almost 40% of the total tokens), in particular the narration of a past memory. The narration of a tale and the explanation of the sign name have few tokens, but the length of both tasks is different. The narration of a tale is longer than the explanation of the sign name, so if the total number of tokens per genre is calculated, there are more palm-ups in the latter (5/100 signs) than in the first (1/100 signs). This difference would indicate that signers use different discourse structuring devices in storytelling as compared to other genres.

Second, the distribution of PALM-UP per age group varies from one SL sample to the other. Old and young signers produce a similar average of discourse-marking palm-ups in LSFB, whereas middle-aged signers produced a lower average. In LSC, young signers are above average in the use of this item, whilst older and middle-aged signers have a similar average. Despite the small size of the sample, these results show that the use of this discourse-marking gesture in C3 is age-sensitive in LSC but not in LSFB. However, note that this finding does not apply to the whole PALM-UP category (i.e. it is restricted to discourse-marking tokens).

Third, discourse-marking PALM-UP was mostly a non-relational DM in the two SLs. The proportion of relational tokens was higher in LSFB and the proportion of relational and non-relational tokens (i.e. 'both') was higher in LSC. PALM-UP could fulfil functions of the four domains in both SLs and the distribution was quite similar. The sequential domain was the most frequent, but the interpersonal domain was more common in LSC. The two other domains (ideational and rhetorical) were scarcely represented. Domains could combine and, interestingly, the combinations always included the sequential domain in the two SLs.

As for the functions, 12 were found in the two SLs (agreeing, cause, closing, concession, condition, monitoring, opening, opposition, planning, punctuation, quoting and temporal marking). In addition, five functions only appeared in LSFB (consequence, face-saving, hedging, specification and topic-shifting) and three only in LSC (alternative, conclusion and emphasis). Generally, these functions that only appeared in one SL had a low number of tokens. The functions could combine too, and there were two combinations (opening + agreeing and punctuation + monitoring) that were found in the two SLs. That is, there seem to be similarities in the cognitive processing of discourse relations (Cartoni et al., 2013) because a double meaning in the same token is repeated by different signers in two different SLs.

Non-manual marking occurring with these functions as well as the handshape were examined. There were some similarities in both the non-manual marking and the handshape of palm-ups expressing agreeing, punctuation, monitoring, closing, planning, quoting, cause and opposition; but these two features were different when palm-ups express opening and condition or are temporal markers. Other functions only shared some nonmanuals. For instance, the behaviour of the gaze was different in concessive palm-ups, but the head movement was the same and the signers always mouthed a contrastive word in the surrounding SpL. The fact that non-manual marking is consistent intra- and inter-linguistically for most functions indicates that there are typological similarities due to the gestural origin of nonmanuals (Herrmann, 2012). However, non-manual marking does not help disambiguate between closely related functions such as alternative and concession. Linguistic context is necessary for this purpose.

Eventually, PALM-UP was found in the same positions in the clause and the BDU in the two SLs. The preferred location in the clause was the right periphery, although the left periphery was fairly common too. In the BDU, the syntactic right periphery prevailed over the other locations followed by the syntactic left periphery and the medial position. The most remarkable inter-linguistic difference in the position of PALM-UP concerns the turn. Although most PALM-UP tokens were in the turn-medial position (followed by the turn-final position), the percentage of tokens in the turn-initial position was higher in LSC. The study of the functional paradigm revealed that most functions appeared in the same position in the two SLs (closing, monitoring, agreeing and planning), whereas others did not (quoting and planning). The hypothesis of the left periphery attracting subjective meanings and the right periphery attracting intersubjective meanings (Traugott, 2012) was also confirmed in LSC: opening was always in left peripheral positions, whilst closing and monitoring were in right peripheral positions. The percentage of opening palm-ups in the turn-initial position in LSC doubled the percentage of LSFB, which indicates that the use of PALM-UP to initiate a turn or to bid for the floor could be more frequent in LSC.

7.4 The sign SAME

The sign SAME was defined in chapter 5 (p.185) as a fully-lexical sign whose canonical form consists of the indexes of both hands extended and coming into contact with an inward movement. Its meaning is related to resemblance or similarity. To the best of my knowledge, SAME has never been investigated before (at least from the perspective of DMs); that's why cross-linguistic studies are non-existent to date.

SAME was the second most polysemous DM in LSFB (see sub-section 6.5.3.3 in the previous chapter). This claim is confirmed here and also applies to LSC. In the following pages, the five aspects that were described for the other two DMs under study will be analysed for the 44 tokens in LSFB and the 22 tokens in LSC that appear in C3. Similarly to PALM-UP, the average of tokens per SL are close (0.7 tokens of SAME/100 signs in LSFB and 0.4 tokens of SAME/100 signs in LSC) despite the fact that the number of tokens in LSFB is double the number in LSC.

7.4.1 Frequency per genre

Similarly to PALM-UP, the genre that attracted the highest number of tokens of the sign SAME is argumentation (see Table 7.20). The percentages are very close in both SL samples. The narration of a past memory (narrative PM) is the second task with more tokens of SAME, but the percentages vary from one SL to the other. The percentage of SAME in the narrative PM in LSC is not far from the percentage of argumentation in the same SL. In the other two tasks, i.e. the explanation of the sign name and storytelling (narrative FS), there are no tokens of the sign.

Genre	Total in LSFB	Percentage	Total in LSC	Percentage
Argumentative	26	59%	13	57%
Expository	3	7%	0	0%
Narrative PM	12	27%	9	43%
Narrative FS	3	7%	0	0%

Table 7.20: Distribution of SAME per genre in C3

Conversely, the percentage of SAME in the narrative PM in LSFB is half the percentage of tokens of this sign in the argumentative task in the same SL. The percentage of tokens of SAME left is divided between the expository and the narrative FS genres. However, SAME is more frequent in explanation (0.7 tokens of SAME/100 signs) than in storytelling (0.2 tokens of SAME/100 signs). These results are in line with the distribution of PALM-UP per genre and support that DMs in storytelling are not the same as can be found in other genres.

7.4.2 Frequency per signer

The distribution of SAME per age group in C3 does not reveal any clear intra- or inter-linguistic pattern. Figure 7.7 depicts the number of tokens of discourse-marking SAME per signer in LSFB. In the graph, it can be observed that S055 is the signer who produces more tokens of the sign under study. This seems to agree with what is said in sub-section 6.5.6 about the overuse of the sign by S055 in LSFB.

However, when the average of tokens of discourse-marking SAME is calculated per signer by taking into account the total number of signs s/he produced (see Table 7.21), we can see that S045 (a woman in her 40s) and S055 (a woman in her 20s) have the same average (i.e. 1/100). Furthermore, S044 (a man in his 40s) and S056 (a woman in her 20s) also share the same average (i.e. 5/100). The oldest couple of informants have lower averages, although they are not very different from the two other age groups. The lack of a clear pattern in LSFB is in line with the results presented in sub-section 6.5.2 of the previous chapter.

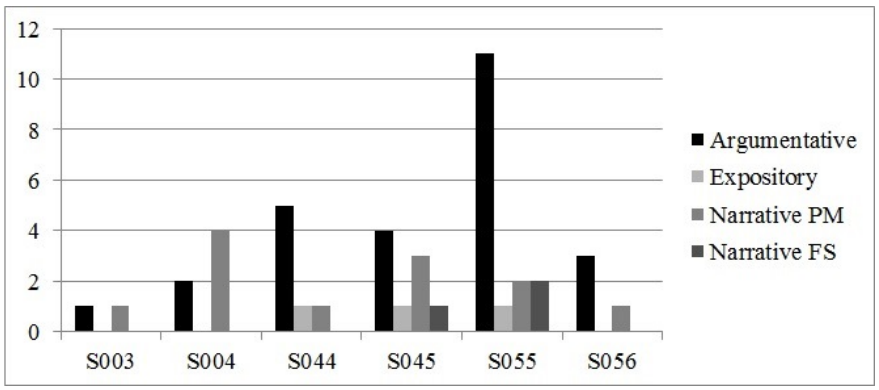


Figure 7.7: Distribution of discourse-marking tokens of SAME per signer in LSFB in C3

Signer	Number of tokens of SAME	Number of signs	Average	Age group
S003	2	696	0.2/100	50-85
S004	6	1233	0.4/100	
S044	7	1311	0.5/100	30-49
S045	9	1046	1/100	
S055	16	1420	1/100	18-29
S056	4	767	0.5/100	

Table 7.21: Number of tokens of SAME per signer in LSFB in C3

In LSC, the picture is even more fuzzy than in LSFB. KW (a man in his 40s) produced the highest number of tokens of SAME and is the signer with the highest average

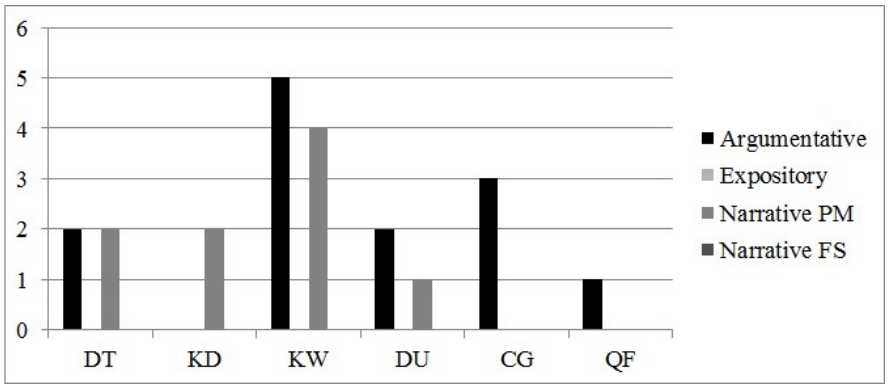


Figure 7.8: Distribution of discourse-marking tokens of SAME per signer in LSC in C3

as well (see Figure 7.8 and Table 7.22). His partner in the recording session, DU (a woman in her 40s), has a much lower average. This average is shared with CG (a woman in her 20s) and is very close to DT (a woman in her 60s). QF (a man in his

20s) and KD (a man in his 80s) have the lowest averages. Generally speaking, women showed a less variable average among themselves than men, but no sociolinguistic conclusions can be drawn due to the size of the sample. So far, these varied results reveal that the use of this DM depends on the signer's preferences.

Signer	Number of tokens of SAME	Number of signs	Average	Age group
DT	4	718	0.5/100	50-85
KD	2	1744	0.1/100	
KW	9	1095	1/100	30-49
DU	3	790	0.4/100	
CG	3	740	0.4/100	18-29
QF	1	707	0.1/100	

Table 7.22: Number of tokens of SAME per signer in LSC in C3

7.4.3 Type of DM, domains and functions

SAME is the DM under study that presents more differences in terms of types, domains and functions from a contrastive point of view. In the LSFB sample of C3, SAME was mostly relational (75% of the tokens), although it could be non-relational or be both relational and non-relational at the same time. Conversely, SAME was much more balanced on a scale of relationality in LSC. The proportion of relational and non-relational tokens was almost fifty-fifty, and there were no tokens that put together a relational and a non-relational function.

Type of DM	LSFB		LSC	
	Total of SAME	Percentage	Total of SAME	Percentage
Relational	33	75%	12	55%
Non-relational	7	16%	10	45%
Both	4	9%	0	0%

Table 7.23: Type of DM for SAME in C3

The functions that SAME fulfilled in LSFB belong to the four domains, and even two domains could be combined (i.e. sequential + rhetorical). In LSC, SAME fulfilled functions of the ideational, rhetorical and sequential domain; but it did not have interpersonal functions or a double domain. The percentages for each domain also showed great variability from one SL sample to the other. For instance, the rhetorical domain (i.e. expressing pragmatic coherence relations or metadiscursive relations) was the most frequent in the two SLs; but it represented 43% of the total of tokens of SAME in LSFB, whereas it represented 73% in LSC. The differences between the ideational and the sequential domain were striking too. The ideational domain was the most frequent after rhetorical in LSC, whilst the sequential domain was the sec-

ond most frequent domain in LSFB. SAME could also have ideational functions in LSFB, but they were not common.

Domain	LSFB		LSC	
	Total of SAME	Percentage	Total of SAME	Percentage
Ideational	4	9%	5	23%
Rhetorical	19	43%	16	73%
Sequential	16	37%	1	4%
Interpersonal	1	2%	0	0%
Double	4	9%	0	0%

Table 7.24: Domain of SAME in C3

Table 7.25 contains the functions that SAME fulfilled in C3. Six functions (cause, comment, consequence, hedging, reformulation and specification) were found in the two SLs under study. There are five functions that only appeared in LSFB (addition, concession, face-saving, opening and topic-shifting) and there is one function (condition) that was only identified in LSC. As for the function of planning, it did not appear in C3, but it was found in C2 (see sub-section 6.5.3.3). Furthermore, a combination of functions (resuming + emphasis and addition + emphasis) only occurred in LSFB.

Domain	Function	LSFB		LSC	
		Total of SAME	Percentage	Total of SAME	Percentage
Ideational	Cause	1	2.2%	3	13.6%
	Concession	2	4.5%	0	0%
	Condition	0	0%	1	4.5%
	Consequence	1	2.2%	1	4.5%
Rhetorical	Comment	1	2.2%	1	4.5%
	Hedging	6	13.6%	8	36.3%
	Reformulation	7	15.9%	4	18.1%
	Specification	5	11.3%	3	13.6%
Sequential	Addition	12	27.2%	0	0%
	Opening	1	2.2%	0	0%
	Planning	0	0%	1	4.5%
	Topic-shifting	3	6.8%	0	0%
Interpersonal	Face-saving	1	2.2%	0	0%

Table 7.25: Functions of SAME in C3

Only metadiscursive functions (i.e. reformulation and specification) present similar percentages in both SLs. The function of hedging, which was also found in the two

SLs, is much more frequent in LSC than in LSFB (36.3% vs. 13.6%) in C3. In fact, hedging is the most usual function of SAME in the LSC data, whereas the most usual function of the sign in the LSFB data is addition. SAME does not express addition in LSC as there is another sign glossed as ALSO that is used for this purpose.[15] It is articulated with an extended index finger going downwards as shown in Figure 7.9 (the picture needs to be read from left to right).

Figure 7.9: Sign ALSO in LSC

In what follows, I will go into detail with the functions that SAME can have in the two SLs under study. All the functions were elaborated in the previous chapter and LSFB examples were provided, so I will only briefly recount some definitions (unless they appeared earlier in the present chapter) for the reader's convenience, give examples in LSC and describe non-manual marking (taking into account the results obtained in LSFB from C2 as well).

Hedging This function signals that the content of the discourse segment introduced is not precise (see definition on p.247). In Figure 7.10, KD is saying that he participated in the organisation of a deaf event years ago. It was a car race in which people from different parts of Spain and other countries went to Barcelona. Although he was a member of Acció Catòlica, he had to go to Casal de Sords because they were somehow in charge of the organisation.[16] SAME is used to introduce a lack of exactness, i.e. an approximation.

In C3, the function of hedging usually goes with a head tilt or a head turn in LSFB, whereas the head rarely moves in LSC. In both SLs, there is a mouthing related to the meaning of the sign: 'comme' in French (which means 'as' or 'like') and 'como' or 'igual' in Spanish (the first means 'as' or 'like' and the second 'same'). The most salient non-manual marker in both SLs is a floating gaze (transcribed as 'fl-g', see second picture of the first row in Figure 7.10), i.e. not directed to the addressee.

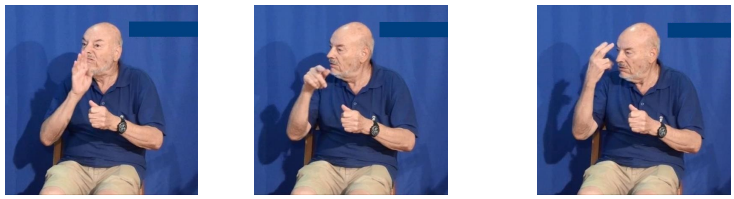
[15] I am not suggesting that ALSO is the only sign in LSC that expresses addition as SAME is not the only sign in LSFB used likewise. An onomasiological study of all markers of addition would cast light on this issue, but it is beyond the scope of this dissertation.

[16] Acció Catòlica (called Cerecusor at present) and Casal de Sords are two deaf clubs based in Barcelona.

(LSC Corpus, session 3, task 4, signer KD, 08:15 - 08:22)

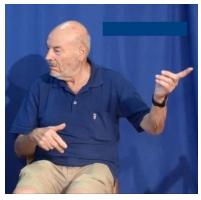
RH PT:DET **SAME** PT:DET
LH **SAME**
fl-g

RH DELEGATE ORGANIZE RACE
LH DELEGATE ORGANIZE RACE



RH WHERE PT:DET NS:ACCIO-CATOLICA
LH

RH NO CASAL-DE-SORDS.2 CASAL-DE-SORDS.8
LH CASAL-DE-SORDS.2



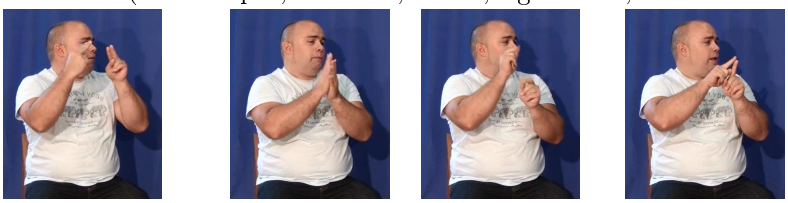
RH PT:DET
LH

'The entity that was somehow in charge of the organisation of the race was not Acció Catòlica, but Casal de Sords.'

Figure 7.10: Example of SAME expressing hedging with a floating gaze in LSC

As mentioned on p.191, the gaze can also be directed at the addressee in LSFB and LSC, in which case there are other signs or gestures surrounding SAME that express approximation as in Figure 7.11. In this example, the signer is saying that he used to communicate with his hearing cousin using some sort of home signing. The gaze is directed at the addressee (transcribed as 'as-g', see fourth picture of the first row) but before there is the sign A-LITTLE which is used for mitigation in this context.

(LSC Corpus, session 2, task 4, signer KW, 00:44 - 00:48)



RH	SEE-MEET++	SIGN	A-LITTLE	**SAME**
LH	SEE-MEET++	SIGN	A-LITTLE	**SAME**
				as-g

RH	TRY-UNDERSTAND	SPECIAL	PT:PRO4(2)	FAMILY
LH	TRY-UNDERSTAND	SPECIAL		FAMILY

'When we saw each other, we used to sign... Sort of understand each other with family signs.'

Figure 7.11: Example of SAME expressing hedging with a directed gaze in LSC

The direction of the gaze and the existing surrounding signs are of utmost importance for distinguishing SAME when it is a DM expressing hedging from non-discourse-related functions. For instance, one syntactic function of SAME in LSC is to be a copulative verb as shown in Figure 7.12.[17] The signer is giving her point of view about the status of deaf clubs. When she uses SAME, her gaze is directed at her addressee and there is neither another sign emphasising the approximation nor other cues such as a pause or a hold of the sign that are typical of the discourse-marking function of hedging.

[17] This syntactic function has been identified in Australian SL and reported in the *Auslan SignBank* (`http://www.auslan.org.au/dictionary/words/same-1.html`). Surprisingly, the use of SAME as a copulative verb has not been found in LSFB.

(LSC Corpus, session 2, task 8, signer DU, 01:37 - 01:40)

RH	DEAF-CLUB	**SAME**	FS:NGO	PT:DET
LH	DEAF-CLUB	**SAME**		
		as-g		

'Deaf clubs are NGOs.'

Figure 7.12: Example of SAME functioning as a copulative verb in LSC

Reformulation This function is used to explain the same content with a different wording (see definition on p.266). It includes simple paraphrase as in (175) and actual reformulation as in (176). Example (175) is the chunk of discourse that goes before Figure 7.11 in which the signer is explaining a past memory concerning his hearing cousin. SAME is used to introduce another way of saying that they met every summer.

(175) [ALWAYS PT:PRO1 SUMMER EVERY-YEAR PT:PRO1 GO++] [SEE **SAME** ONCE A-YEAR PERIOD HOLIDAY]
'I used to go there every year at summer, so I would see him once a year for holidays.'

(LSC Corpus, session 2, task 4, signer KW, 00:39 - 00:44)

In example (176), CG is giving her point of view about how deaf clubs should be and what they should do to continue to exist. SAME is used here to reformulate in the sense of marking that the segment of discourse it introduces is more appropriate than the previous.

(176) [DEAF-CLUB FOR MEETING THING NO] <**SAME**> [ACTIVITY CREATE SAME.0] [YES] [SMALL]
'Deaf clubs should not be aimed at hosting meetings or big things. I mean, they should organise activities as they do but in a small place.'

(LSC Corpus, session 1, task 8, signer CG, 00:49 - 00:54)

Regardless of the type of reformulation that SAME introduces and of the SL in which it appears, this function goes with a gaze directed at the addressee in C3. The same mouthings in the surrounding SpL are used in both SL: 'même' in French and 'igual' in Spanish (i.e. 'same') and 'comme' in French and 'como' in Spanish ('like' or 'as').

Specification This function is used to instantiate previously given content (see definition on p.248). In C3, this function was expressed by PALM-UP and SAME in LSFB, whereas it was only fulfilled by SAME in LSC. Example (177) is an excerpt from the conversation about the future of deaf clubs. KW links their situation to the decrease of SL users due to cochlear implants. KW produces SAME in order to introduce an example in this respect, i.e. hearing parents who prefer their deaf children to have implants and prevent them from learning a SL.

(177) [LINK ALSO COCHLEAR-IMPLANT.0] [PT:DET COCHLEAR-IMPLANT.5] <PALM-UP> <PT:DET> <**SAME**> [PT:DET MAJORITY PARENTS HEARING PT:DET WANT AVOID PT:DET LANGUAGE FS:LSC NORMAL FS:SL]
'This is also related to the use of cochlear implants, yeah. For instance, hearing parents do not want their children to learn sign language.'

(LSC Corpus, session 2, task 8, signer KW, 02:45 - 02:56)

Non-manual marking accompanying this function did not follow a clear pattern in either of the two SLs under study. The gaze could be directed at the addressee or not. The head sometimes moved and mouthings were the same as were described for the function of reformulation (see above).

Cause This function (see definition on p.245) can be expressed by PALM-UP and SAME in LSFB and LSC. In example (178), DT is giving the reasons why deaf clubs had more people years ago. One of these reasons is introduced by SAME which follows a discourse-marking PALM-UP expressing punctuation.

(178) [A-LOT OLD LONG-AGO YOUNG IDEA FEEL-LIKE MEET++ FAULT WORK COVER-EYES A-LITTLE FEEL-LIKE MEETING SIGN] <PALM-UP> <**SAME**> [BEFORE HAVE-NOT FXD:CHANGE TECHNOLOGY]
'A lot of old deaf people felt like meeting when they were young because they were isolated at work and they wanted to see each other to sign, yeah. This happened because there wasn't any technology before.'

(LSC Corpus, session 3, task 8, signer DT, 00:26 - 00:38)

Non-manual marking layered with SAME when it expressed cause in LSC is different from non-manual marking when SAME expressed cause in LSFB or when PALM-UP fulfilled this function in either of the two SLs. When SAME was used for this purpose in LSC, the gaze was directed at the addressee, there was usually a head or body movement, and the mouthings 'como' ('as' or 'like') or 'igual' ('same') were produced.

The production of mouthings when SAME was used to express cause but not when PALM-UP was used for this purpose in LSC was also observed in LSFB (see subsection 6.5.3.3 in the previous chapter). This pattern that the two SLs share in C3 would support the assertion that fully-lexical signs are more likely to be consistently layered with a mouthing that expresses its core meaning (i.e. sameness or likeness in the case of SAME) than gestures such as PALM-UP, which are empty of

meaning. It is interesting to note that mouthings reflect the core meaning of fully-lexical signs but not the meaning of the discourse relation. This is not restricted to SAME but can also be observed in other fully-lexical signs such as FAULT in LSC (see Figure 7.13), which is also used to express cause and appeared in example (178).

Figure 7.13: Sign FAULT in LSC

The fact that these mouthings do not express a discourse relation when layered with a fully-lexical sign but its core meaning in the two SLs under study suggests that: (i) assigning a coherence relation remains highly contextual, (ii) mouthings uttered with some fully-lexical signs are independent of the coherence relation these fully-lexical signs convey, and (iii) there are similarities in the cognitive processing of some coherence relations in the two SLs.

Comment This function is used to insert a parenthesis in discourse (see p.269 for a more detailed definition). Example (179) is the continuation of the story about KW's hearing cousin. KW says that his cousin asked him how he managed to get up in the morning if he was deaf. KW is surprised by the question because he has known his cousin since they were kids. SAME is used to comment that he had never told him how devices were adapted to deaf people.

(179) [PT:PRO1 FREAK-OUT] [PT:PRO3 PT:PRO1 ALL-LIFE DEAF] <PALM-UP> <**SAME**> [PT:PRO1 ADAPT SECTION DEAF DIFFERENT PT:PRO1 EXPLAIN NOTHING PT:PRO1 ALL-LIFE PT:PRO3 MORE.B]
'I was freaking out. He knew that I was deaf, it was weird... And I hadn't told him about the devices adapted to deaf people because we had grown together.'

(LSC Corpus, session 2, task 4, signer KW, 01:37 - 01:45)

Non-manual marking layered with this function was the same in the two SLs: the gaze was directed at the addressee and a mouthing was produced, i.e. 'aussi' ('also') in LSFB and 'igual' ('same') in LSC.

Condition In C3, this function (see definition on p.246) was fulfilled by either SAME or PALM-UP in LSC, whereas it was only fulfilled by PALM-UP in LSFB. Example (180) is an excerpt from the conversation about the future of deaf clubs. DU says that deaf clubs have already disappeared in other European countries, so the same thing will happen in Spain. SAME precedes the first part of the conditional clause.

(180) [A-LOT PT:DET++ NEED-NOT] [**SAME** PT:DET FIRST PT:DET AFTER NS:SPAIN ALWAYS AFTER++]
'Deaf clubs are not needed anymore in a lot of countries. If it happens there first, it will also happen in Spain which always repeats what the other countries do.'

(LSC Corpus, session 2, task 8, signer DU, 01:51 - 01:56)

The most salient non-manual marker in this example (the only one found in C3) is raised eyebrows as Quer (2016) points out. The gaze is directed at signing space because the signer establishes a locus in which she places European countries and another in which she places Spain, and the mouth is closed.

Consequence In C3, this function (see definition on p.244) was fulfilled by SAME in LSC, whereas it was fulfilled by SAME and PALM-UP in LSFB. Example (181) is an excerpt from the past memory about the nuns of the boarding school for the deaf that DT attended. The girls had to stand up in a line so that the nuns could examine their clothes and see whether they were stained.

(181) [MORNING ALWAYS COME] <**SAME**> [EACH-ONE FOUR DS:PEOPLE-LINE SEE]
'The nuns came in the morning, so we stood up in a line so that they could examine us.'

(LSC Corpus, session 3, task 4, signer DT, 07:19 - 07:23)

In this example, SAME goes with a head turn, a floating gaze and the mouthing 'igual' ('same'). Non-manual marking is shared with LSFB (with the mouthing in French), the only difference is that the gaze is directed at the addressee. Since there is only one example in LSC expressing this function, no conclusions about the use of particular non-manual markers can be drawn.

Planning This function (see definition on p.223) is the only function shared among the three DMs under study in the LSFB[18] and LSC data analysed in this dissertation. In example (182), QF is giving his point of view about the purpose of deaf clubs. He uses the first PALM-UP token to agree with what the other signer said, the second to start a sequence and then SAME to plan what he wants to say next.

(182) <PALM-UP> <PALM-UP> <**SAME**> [THINK ROOM.7 EXAMPLE YES DEAF-CLUB MORE.6 CARESS COLLABORATION MEET++]
'Yeah... So, it's like... I think that deaf clubs must be a place for deaf people to meet and exchange more.'

(LSC Corpus, session 1, task 8, signer QF, 00:58 - 01:06)

[18] This function was not fulfilled by SAME in the LSFB sample of C3, although it was found in C2 (see p.268).

When planning was expressed in C3, the most salient non-manual marker shared among the three DMs under study in LSFB and LSC was a floating gaze in order to cut visual contact and hold the turn. The head frequently moved in order to help deviate the gaze from the addressee. When SAME was used to plan upcoming speech, a mouthing was uttered in the two SLs ('aussi', 'comme' and 'même' in LSFB and 'igual' in LSC). However, mouthings were not generally found when list buoys or PALM-UP fulfilled this function. The reason was mentioned before on p.328: fully-lexical signs are articulated with a mouthing related to their core meaning, whereas partly-lexical signs and gestures are highly contextual and do not have a core meaning.

7.4.4 Position

As in sub-sections 7.2.4 and 7.3.4, this sub-section aims to describe the position of SAME in LSFB and LSC at three different levels: the clause (Blanche-Benveniste et al., 1990), the basic discourse unit (Degand and Simon, 2005, 2009a,b) and the turn.

Table 7.26 contains the possible positions in which SAME could be found in the clause in the LSFB and LSC samples (C3) studied. The most frequent position in both SLs was the left periphery. The other locations were marginal in LSFB, whereas the percentages were higher in LSC. Despite this difference between percentages, the position of SAME in the basic discourse unit (BDU) was almost the same in the two SLs (except for the positions that were only found in one SL, see Table 7.27). The most frequent positions in the BDU were the syntactic left periphery and the medial position. The syntactico-prosodic left periphery was fairly common as well in both SLs.

Position in the clause	**LSFB**		**LSC**	
	Total of SAME	**Percentage**	**Total of SAME**	**Percentage**
Left periphery	38	86%	13	59%
Initial position	0	0%	2	9%
Medial position	3	7%	4	18%
Final position	1	2%	3	14%
Right periphery	2	5%	0	0%

Table 7.26: Position of SAME in the clause in C3

Concerning the position in the turn, SAME always appeared in the turn-medial position in LSC. The sign tends to be in this position in LSFB, although it can be found in the turn-initial position on occasions. As mentioned in sub-sections 6.5.4 and 6.5.5 of the previous chapter, SAME could be a turn-taking DM in LSFB, whereas this function has not been identified in the LSC sample.

Position in the BDU	LSFB		LSC	
	Total of SAME	Percentage	Total of SAME	Percentage
Syntactico-prosodic left periphery	6	14%	4	18%
Syntactic left periphery	17	39%	7	32%
Initial position	0	0%	1	5%
Medial position	19	43%	10	45%
Syntactic right periphery	2	4%	0	0%

Table 7.27: Position of SAME in the basic discourse unit in C3

Position in the turn	LSFB		LSC	
	Total of SAME	Percentage	Total of SAME	Percentage
Turn-initial	2	5%	0	0%
Turn-medial	42	95%	22	100%

Table 7.28: Position of SAME in the turn in C3

7.4.5 The function-position paradigm

In the previous chapter (see sub-section 6.5.5), the correlation between the function of tokens of SAME and their position in LSFB was discussed. Although a particular function is not always found in a particular position, some correlations were identified. These types of correlations also exist in LSC. In what follows, I will present the positions in which the different functions that SAME fulfils in the LSC sample of C3 can appear. Afterwards, I will compare them with the results that were given in the chapter mentioned at the beginning of this paragraph because they agree with the results of the LSFB sample of C3.

In Table 7.29, all the functions expressed by SAME in LSC together with their positions in the clause, the BDU and the turn are displayed. For the functions that have different positions, all the positions are listed unless one is more representative than the others (i.e. it represents 50% of the tokens or more). There is one function which is followed by an asterisk (i.e. condition), which means that it was not found in discourse-marking tokens of SAME in LSFB.

Most functions have a clear position in the clause except the function of hedging, for which the medial position seems to be more frequent but does not prevail over other positions. Furthermore, most functions also have a clear position in the BDU except for cause. The fact that SAME is always in the turn-medial position in LSC reveals that this sign may not be a turn-taking DM in this SL (see sub-section 7.4.4), but

it still participates in the turn-exchange system because it can be used to hold the floor (see function of planning).

Domain	Function	Position in the...		
		Clause	**BDU**	**Turn**
Rhetorical	Hedging (8)	Left periphery (2) / initial (1) / medial (3) / final (2)	Medial (7)	Medial (8)
	Reformulation (4)	Left periphery (3)	Medial (2)	Medial (4)
	Specification (3)	Left periphery (3)	Syntactic left periphery (2)	Medial (3)
	Comment (1)	Left periphery (1)	Syntactic left periphery (1)	Medial (1)
Ideational	Cause (3)	Left periphery (2)	Syntactico-prosodic left periphery (1) / syntactic left periphery (1) / medial (1)	Medial (3)
	Condition* (1)	Initial (1)	Initial (1)	Medial (1)
	Consequence (1)	Left periphery (1)	Syntactic left periphery (1)	Medial (1)
Sequential	Planning (1)	Left periphery (1)	Syntactico-prosodic left periphery (1)	Medial (1)

Table 7.29: Summary of the function-position correlation of SAME in LSC

If the positions in which the functions of SAME appeared in LSC are compared to their counterparts in LSFB, the correlations are fairly similar. The function of hedging can appear in different positions of the clause in both SLs, but the position in the BDU was medial most of the time. The functions of reformulation, specification and comment were found in the same position in the clause in LSFB and LSC. Reformulation was predominantly in the same position in the BDU in both SLs, but specification was frequently found in the syntactic left periphery of the BDU in LSC whilst it was in the medial position of the BDU in LSFB (the syntactic left periphery was also possible in LSFB but not predominant). Comment appeared in the clausal left periphery and in the syntactic left periphery of the BDU. So, unlike LSFB, rhetorical functions in C3 are not always found in the middle of the BDU in LSC.

The function of cause was also in the left periphery of the clause in both SLs. Different positions in the BDU were possible in LSC, but only one was identified in LSFB (because there was only one token of SAME expressing this function) and coincided with LSC, i.e. the medial position. The other function of the ideational domain

that appeared in the two SLs (consequence) was situated in the same positions at the three levels (clause, BDU and turn). Ideational functions were always found in the clausal left periphery and, although medial positions were sometimes possible in LSFB, the syntactic left periphery was the most frequent position in the BDU for this domain.

Finally, the only common function belonging to the sequential domain was planning and it was also found in the same positions in the two SL samples: the clausal left periphery and the syntactico-prosodic left periphery of the BDU, so just before the chunk of discourse that SAME introduces when it fulfils this function.

7.4.6 Interim summary of main findings

From the three DMs under study in this dissertation, SAME is the one that presents more differences between LSFB and LSC, at least when the frequency per genre, the frequency per signer and the types, domains and functions are tackled. Results regarding the position and the functional paradigm in C3 are fairly similar, though.

To begin with, the genres that attracted more tokens of discourse-marking SAME in the two SLs were the argumentation about deaf issues and the narration of a past memory (narrative PM). The percentages of discourse-marking SAME in argumentation are similar in the two SLs, but the percentage of tokens in the narrative PM is higher in LSC than in LSFB. Furthermore, there were no tokens of discourse-marking SAME in the expository and storytelling (narrative FS) tasks in LSC. The fact that discourse-marking tokens of this sign are not found in LSC and that the average in the expository genre is higher than in narrative FS in LSFB (0.7 discourse-marking tokens of SAME/100 signs vs. 0.2 discourse-marking tokens of SAME/100 signs) support the assertion that discourse structuring devices are different in storytelling as compared to other genres.

Second, there was neither an intra-linguistic nor an inter-linguistic pattern concerning the distribution of SAME per signer. In LSFB, one young signer (S055) and one middle-aged signer (S045) have the same average (one discourse-marking token of SAME/100 signs), and the other young signer (S056) and middle-aged signer (S044) also share the same average (0.5 discourse-marking token of SAME/100 signs). Older signers have lower averages, but they are close to the other signers. In LSC, men have more variable averages than women. The middle-aged man (KW) produced the highest number of discourse-marking tokens of SAME, whereas the young signer (QF) and the older signer (KD) produced the lowest average. Conversely, all the women produced between 0.4 and 0.5 discourse-marking tokens of SAME per 100 signs. Although no sociolinguistic conclusion can be drawn because of the small size of the sample, such a varied frequency per signer suggests that the use of SAME as a DM depends on the signer's preferences.

Third, SAME was mostly a relational DM in LSFB, although it could also be non-relational or combine a relational and non-relational function. In LSC, half of the tokens of SAME were relational and the other half non-relational, but both types

never combined in C3. As regards the domain, SAME could fulfil functions of any of the four domains or even combine two domains in LSFB, whereas it could not have a function from the interpersonal domain or a double domain in LSC. Moreover, SAME was distributed differently in the two SL samples. Although the rhetorical domain was the most frequent in the two SLs, the percentage of tokens belonging to the sequential domain in LSFB was almost the same. In LSC, there was only one token in this domain and the ideational domain was slightly more frequent.

Concerning the functions, there are six (cause, comment, consequence, hedging, reformulation, specification and planning)[19] that were found in the two SLs, five only in LSFB (addition, concession, face-saving, opening and topic-shifting) and one only in LSC (condition). Hence, SAME could be more polysemous in LSFB than in LSC. Non-manual marking accompanying each function was mostly shared between the two SLs, although there were exceptions such as the functions of cause and consequence that had different non-manual markers in each SL. Bearing in mind that examples of these two functions are scarce, no conclusions can be drawn. Regardless of the function that SAME can express in any of the two SLs, a mouthing was always produced in the surrounding SpL. This mouthing was related to the core meaning of the sign and did not correspond to the function of the DM, so the context remains necessary to assign a function. Additionally, this lack of correspondence between the mouthing and the discourse relation reveals that there are similarities in the cognitive processing of discourse relations across SLs.

Finally, there was not a lot of variation regarding the positions in which SAME could be found in the clause, the BDU and the turn in the two SLs: the left periphery of the clause was the predominant position for SAME, and the syntactic left periphery and medial position of the BDU were also the most frequent in C3. SAME tended to be in the turn-medial position, although it could be found on occasions in the turn-initial position in LSFB as a turn-taking DM. Although SAME did not fulfil this function in LSC, it still participated somehow in the turn-exchange system as a turn-holding DM (see the function of planning). If the functional paradigm is compared between the two SLs, there are many similarities. Most of the functions were found in the same positions in the clause and the BDU in the two SLs. Ideational and sequential functions were always in the left periphery of the clause and the syntactic or syntactico-prosodic left periphery of the BDU in both SLs. Rhetorical functions were in the left periphery of the clause and in the medial position of the BDU in both SLs as well, although these functions could also be in the syntactic left periphery of the BDU in LSC.

7.5 Summary and conclusions

This chapter was devoted to the cross-linguistic description of three DMs in French Belgian Sign Language (LSFB) and Catalan Sign Language (LSC): list buoys, PALM-UP and SAME. Two comparable samples extracted from the LSFB Corpus and the

[19] The function of planning did not appear in the LSFB sample of C3, but it was identified in C2.

LSC Corpus made up the sub-corpus (C3) which was analysed for this purpose. C3 contains three genres (argumentative, expository and narrative) and 12 signers seeking a balance in terms of gender and age. Five aspects were studied for each DM: (i) the frequency per genre, (ii) the frequency per signer, (iii) the type of DM, the domains and the functions, (iv) the position in the clause, in the basic discourse unit (BDU) and in the turn, and (v) the function-position paradigm.

In LSFB, there were 14 list buoys, 332 PALM-UP tokens and 116 tokens of SAME which made a total of 462 potential DM candidates. From this total, 256 tokens had a discourse-marking status: six list buoys, 206 PALM-UP tokens and 44 tokens of SAME. In LSC, there were 11 list buoys, 291 PALM-UP tokens and 32 tokens of SAME which made a total of 334 potential DM candidates. From this total, 165 tokens had a discourse-marking status: four list buoys, 139 PALM-UP tokens and 22 tokens of SAME. Despite the difference between numbers, the three DMs represent more or less the same percentage of the total of signs in C3 (4% in LSFB and 3% in LSC). If the difference between the two SLs was bigger, it could be hypothesised that explicit discourse relations are more frequent in LSFB than in LSC. However, "discourse connectives are in most cases optional, as the coherence relation they convey can often also be left implicit and reconstructed by inference", so cross-linguistic comparisons of DMs are difficult because "languages differ in when and how they use them to mark discourse structure" (Zufferey and Degand, 2013, p.2).

The only two genres in the two SLs in which any of the three DMs could be found are the argumentative (conversation about the differences between deaf and hearing culture in LSFB and conversation about the future of deaf clubs in LSC) and the narrative, particularly the narration of a past memory. List buoys and SAME were neither used in the other narrative task (i.e. storytelling) nor in the expository genre in LSC. In LSFB, list buoys did not appear in the storytelling task but they could be found in the expository genre, and SAME appeared in all genres. The only DM which was used in the four productions was PALM-UP. The fact that storytelling has the lowest number of DMs under study supports the assertion, from a new perspective, that this genre presents differences as compared to the others in line with other works (Pérez, 2006; Sinte, 2015; Meurant and Sinte, 2016). This finding also underlines the importance of using different genres to study discourse structure.

As mentioned in the previous chapter, the use of list buoys and SAME depends on the signer's preferences. Discourse-marking list buoys were only produced by one young woman in LSFB in C3, whereas three different signers (one young man, one young woman and one middle-aged woman) used them in LSC. Although discourse-marking tokens of SAME are produced by all the signers in the sample, the tendency that can be observed in the two SLs is that the average is usually below one token per 100 signs. PALM-UP is also used by all the signers in the sample. Young and old LSFB signers produced a similar average of PALM-UP tokens, whereas young LSC signers produced the highest number of tokens in LSC. This variability suggests that the use of these DMs is different from one signer to another, just as the use of some DMs varies in spoken French, because the signer adapts his/her production to the communication situation (Beeching, 2007). It could be hypothesised that, in LSC,

young signers produce more discourse-marking tokens that are more varied than the other signers because they benefited from a bilingual teaching method in which their language skills developed differently from the other signers who received an oralist education. Further research is to be conducted in this respect.

The description of how the three DMs work in discourse was divided into three parts: the type of DM (i.e. situation of the DM on a scale of relationality), the domain (i.e. the category that puts together different functions) and the function (i.e. the role of the DM). In C3, list buoys were mainly relational DMs (they connected clauses) and PALM-UP was mainly non-relational (it was used for punctuation and turn-taking, among others). SAME was mainly relational in LSFB, whereas it could be relational or non-relational in LSC. This sign could combine a relational and non-relational function at the same time in LSFB, whereas in LSC no combination was found in C3. All domains were represented in C3. The only domain shared among the three DMs in the two SLs was the sequential, which was also the most frequent. It was followed by the interpersonal domain, the rhetorical and the ideational. PALM-UP was the only DM that fulfilled functions from these three domains in the two SLs.

Of the 31 possible discourse-marking functions (Crible, 2014; Bolly and Crible, 2015), 27 were expressed by at least one of the three DMs under study in this dissertation. Hence, this research presents a complete spectrum of almost every function taking into account the three types of manual activity (i.e. fully-lexical signs, partly-lexical signs and gestures) in two different SLs. These 27 functions were identified in LSFB (see Table 6.16 on p.281), whereas 21 were identified in LSC as the functions of contrast, resuming, topic-shifting, addition, face-saving and disagreeing were not fulfilled by any of the three DMs in the LSC sample (see Table 7.30 below). Although the three DMs have the same form in the two SLs, they are not always equivalent in meaning (see tables 7.4, 7.14 and 7.25). This is interesting because it supports the assertion that "the meanings and usage of discourse markers, even between typologically related languages, are at least partially language-specific" and that SLs also "vary in their encoding of discourse relations" (Crible and Zufferey, 2015, p.20).

In the two SL samples, PALM-UP was the most polysemous DM followed by the sign SAME. List buoys were the least polysemous DM of the three, but they were given a new function that had not been reported in the literature before, i.e. planning. In fact, this was the only function that was shared among the three DMs in LSFB and LSC. All the functions were described in detail and exemplified taking into account non-manual marking. There are some combinations of non-manual markers that were shared between the two SLs. For instance, when a DM expressed the function of planning either in LSFB or in LSC, it went with a floating gaze and a head movement. However, no combination of non-manual markers went exclusively with a precise function; which means that deciding the function of a DM remains a task highly dependent on linguistic context.

The position was studied at three different levels – the clause (Blanche-Benveniste et al., 1990), the BDU (Degand and Simon, 2005, 2009a,b) and the turn – in the two SLs. The interest of doing so was to investigate whether the functional paradigm of

DMs that has been described in SpLs (Briz Gómez and Pons Bordería, 2010; Estellés and Pons Bordería, 2014; among others) also applies to the signed modality. Some function-position correlations were found for some DMs in the two SL samples and there were even some positions in which a particular function appeared regardless of the DM. In Table 6.17 of the previous chapter (p.283), the position of some functions shared between at least two DMs in LSFB was presented. Table 7.31 contains the same information for LSC.

Describing features			**DMs under study**					
Domain	**Function**	**Type of DM**	**List buoys**		**PALM-UP**		**SAME**	
			LSFB	LSC	LSFB	LSC	LSFB	LSC
Ideational	Cause	Relational	—	—	✓	✓	✓	✓
	Consequence	Relational	—	—	✓	—	✓	✓
	Temporal	Relational	—	—	✓	✓	—	—
	Contrast	Relational	—	—	✓	—	—	—
	Concession	Relational	—	—	✓	✓	✓	—
	Condition	Relational	—	—	✓	✓	—	✓
	Alternative	Relational	✓	—	—	✓	—	—
Rhetorical	Conclusion	Relational	—	—	—	✓	✓	—
	Opposition	Relational	—	—	✓	✓	—	—
	Reformulation	Relational	—	—	—	—	✓	✓
	Hedging	Non-relational	—	—	✓	—	✓	✓
	Comment	Relational	—	—	—	—	✓	✓
	Specification	Relational	—	—	✓	—	✓	✓
	Emphasis	Non-relational	✓	—	✓	✓	✓	—
Sequential	Opening	Non-relational	—	—	✓	✓	✓	—
	Closing	Non-relational	—	—	✓	✓	—	—
	Resuming	Non-relational	—	—	—	—	✓	—
	Topic-shift	Non-relational	—	—	✓	—	✓	—
	Quoting	Non-relational	—	—	✓	✓	—	—
	Addition	Relational	✓	—	—	—	✓	—
	Enumeration	Relational	✓	✓	—	—	—	—
	Punctuation	Non-relational	—	—	✓	✓	—	—
	Planning	Non-relational	✓	✓	✓	✓	✓	✓
Interpersonal	Monitoring	Non-relational	—	—	✓	✓	—	—
	Face-saving	Non-relational	—	—	✓	—	✓	—
	Disagreeing	Non-relational	—	—	✓	—	✓	—
	Agreeing	Non-relational	—	—	✓	✓	—	—

Table 7.30: Summary of the type of DM, domains and functions fulfilled by each DM under study in LSFB and LSC

Although there are few examples of PALM-UP and SAME for the functions of cause and condition, and few examples of SAME for the function of planning in Table 7.31, it seems that these functions tend to appear in a particular position regardless of the

DM that is uttered. For instance, different positions in the BDU were possible for the function of cause but medial was the common position for PALM-UP and SAME (that's why there is an asterisk after the function). When the function of planning was expressed by any of the three DMs, it was always in the left periphery of the clause. However, the position of list buoys and PALM-UP was the syntactic left periphery of the BDU, whereas the position of the only token of SAME expressing this function was the syntactico-prosodic left periphery.

Domain	**Function**	**Position in the...**		
		Clause	**BDU**	**Turn**
Ideational	Cause	Left periphery	Medial *	Medial
	Condition	Initial	Medial	Medial
Sequential	Planning	Left periphery	Syntactic left periphery / syntactico-prosodic left periphery *	Medial

Table 7.31: Summary of the positions in which some functions shared among the three DMs are found in LSC

The only function that tables 6.17 and 7.31 have in common is planning; which was found in the clausal left periphery and in the turn-medial position in both SLs, but in the middle of the BDU in LSFB and in the syntactico-prosodic left periphery in LSC. Another difference concerning the function-position paradigm is that the position clearly varied according to the domain in the LSFB sample: the interpersonal was found in right peripheries, the rhetorical in medial positions, and the ideational and sequential in left peripheries. In the LSC sample, the same held true for the interpersonal, ideational and sequential domains; but the position of the rhetorical domain could be medial or left peripheral.

The main similarity in the comparison of the functional paradigm in the two SLs was restricted to PALM-UP, which was the only DM with several tokens in both left and right peripheral positions. Results from the LSFB data confirmed that the right periphery attracts intersubjective meanings, whereas the left periphery attracts subjective meanings in line with other works on SpLs (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). LSC data confirms this distribution as the functions of closing (i.e. marking that the signer ends his/her turn) and monitoring (i.e. checking for understanding) are intersubjective (i.e. related to the addressee) and found in right peripheral positions, whereas the function of opening (i.e. marking the beginning of the turn) is subjective (i.e. related to the signer) and found in left peripheral positions.

As in the previous chapter, the study of the position in the turn was relevant for few functions as almost all DM tokens in LSC were found in the turn-medial position. It is interesting to note that PALM-UP was the only DM of the three that was used as a turn-taking device in LSC, although list buoys and SAME also par-

ticipated in the turn-exchange system when they were used to hold the floor while planning upcoming speech. Although the most frequent position of PALM-UP in the turn was medial, the number of turn-initial and turn-final positions are balanced. In LSFB, there were more discourse-marking PALM-UP tokens in the turn-final position as compared to the turn-initial position. Moreover, SAME could be used to open the turn as well. This function fulfilled by this sign was not identified in the LSC sample.

In conclusion, this chapter has made important contributions to the domain despite the limitations of the study (i.e. semasiological approach including three DMs and small-scale sample of signers). This is the first time that LSFB and LSC have been compared and, moreover, this is the first time that cross-linguistic research has been conducted from the point of view of DMs in the field of SL linguistics. The originality of this work also lies in that (i) the variable of genre is taken into account in contrast to previous studies of the three items in which it was rarely considered, (ii) a detailed description and instantiation of the different functions is provided, (iii) the position is investigated following a consistent segmentation methodology (the Basic Discourse Units Model) that allows the comparison of results, and (iv) the functional paradigm is analysed by combining the domains and the functions, the Basic Discourse Units Model and the segmentation into turns. In addition, this research follows an annotation protocol (Crible, 2014) created for spoken corpora that ensures the consistency of annotation. It ensures its reproducibility to a larger sample of LSFB or LSC data, or even to a different SL or SpL sample. The fact that the discourse/coherence relations of SpLs were found in two languages of the signed modality proves that discourse/coherence relations are a property of human language.

Chapter 8

Final remarks

We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths.

Walt Disney

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General objective of this chapter

This chapter closes this dissertation. It is divided into two main sections: the first one underlines the conclusions and main contributions of this research to the domain and the second one presents some possible research avenues.

8.1 Conclusions and major contributions

Discourse markers (DMs) are still a fairly unknown aspect of discourse in sign languages (SLs). This is remarkable because, as Degand (2016) points out, human communication (in context, at the discourse level) implies the use of DMs; which is why their study should cast light on the underlying cognitive and functional principles of human communication. This dissertation has contributed to this domain of linguistics by investigating buoys, PALM-UP and SAME in French Belgian Sign Language (LSFB) and in Catalan Sign Language (LSC). The three items were chosen because they belong to three types of manual activity that have been identified in SLs (Johnston, 2015): fully-lexical signs (i.e. SAME), partly-lexical signs (i.e. buoys) and gestures (i.e. PALM-UP). Investigating an example of a DM from each category was found interesting in order to show potential variety related to this difference in the degree of lexicalisation of the markers.

As stated at the beginning of chapter 1, the following five goals guided this research project:

G1. To establish a set of criteria that allow the discourse-marking tokens of buoys, PALM-UP and SAME to be teased apart from those that have other non-discourse-marking functions. Three criteria were selected from Crible's (2014) definition of what a DM is. Most existing literature on the topic agrees upon the three as defining features of the DM category. The three together allowed a clear distinction to be made between discourse-marking and non-discourse-marking items:

- To be syntactically optional (DMs can be removed and clauses do not lack any syntactic component).
- To be non-truth-conditional (DMs do not have propositional meaning, so they can be removed and the meaning of the clauses is the same).
- To constrain the inferential mechanisms of interpretation processes (DMs make explicit the discourse relation that has to be inferred).

This research has shown that both PALM-UP and SAME can fulfil discourse-marking functions and that, from the category of buoys, only list buoys can work as DMs. The other six types (theme, fragment, pointer, depicting, point and delimit) have functions at phonetic, syntactic and/or discourse levels (Kimmelman, 2014; Kimmelman et al., 2016), but not as DMs. The new function that is added to the category of buoys, i.e. being DMs, supports the idea that the notion of buoys is a conflation of form and meaning. In other words, they share the formal feature of being held while the other hand continues signing, but they are used for different purposes at the linguistic levels mentioned above. Therefore, an SL-specific concept is not necessary and buoys can be studied using notions familiar with the study of SpLs (ibid.).

G2. To come up with a segmentation methodology that allows the study of the position of DMs. In this dissertation, I went through the existing segmentation models for spoken discourse and the segmentation accounts created for

signed discourse. The Basic Discourse Units (BDU) Model (Degand and Simon, 2005, 2009a,b) was considered the most suitable for this research because it is applicable to monologues and dialogues, and it takes into account different types of units that allow the study of the position of DMs.

The BDU Model was designed for the segmentation of spoken data, and it consists of three steps: the first is a syntactic segmentation according to Dependency Syntax as conceived for spoken French (Blanche-Benveniste et al., 1990); the second is a prosodic segmentation taking into account silent pauses longer than 250 ms, syllable lengthening (three times longer than the syllables in context) and sharp rises of F0 (intra-syllabic F0 superior to ten semi-tones); and the third is the delineation of BDUs where the boundaries of syntactic and prosodic units coincide. Some adaptations (especially at the level of prosody) were made so that this model could be applied to the signed modality:

- Syntactic units are essentially delimited following the original model and SL specificities such as rhetorical questions receive special treatment.
- Prosodic units are delimited taking into account visual cues such as pauses, sign holds or lengthened signs, and eye blinks layered with another prosodic cue.
- BDUs are delimited exactly in the same way as in the original model, i.e. in the places where syntactic and prosodic units coincide.

Although the adaptation of the BDU Model was done with LSFB data, it can also be applied to other SLs such as LSC so that cross-linguistic studies (with corpus data) can be carried out. In addition, this model has many applications as it can not only be used to investigate syntactic aspects of a language (like most SL existing segmentation accounts), but also discourse and prosodic aspects.

G3. To study the variation in frequency of discourse-marking tokens of buoys, PALM-UP and SAME across genres and signers, their functions in discourse and the possible existence of a function-position paradigm in LSFB. This dissertation offered a detailed description of the discourse-marking tokens of the three items under study based on two annotation protocols conceived for spoken corpora (Crible, 2014) and multimodal (speech + gesture) corpora (Bolly and Crible, 2015) that allowed a consistent and reproducible annotation to other datasets.

- ***Genre variation:*** One of the original points of this research is that the variable of genre is taken into account, which is almost unprecedented in the literature about DMs in SLs. The three DMs appear in all genres. List buoys and SAME are more frequent in the expository genre, whereas PALM-UP is more frequent in the metalinguistic and argumentative genres. The narrative genre attracts the lowest number of DMs, which distinguishes this genre from the others. This difference suggests that clauses and BDUs are related in a different way in narratives. On the other hand, list buoys are the only DM

affected by the degree of preparation: the more a discourse is prepared, the more it is likely to contain list buoys (Gabarró-López and Meurant, 2014a; Hansen and Heßmann, 2015).

- ***Signer variation:*** The use of the three DMs neither seems to be influenced by the age group nor by gender. As Beeching (2007) claims for spoken French, the use of DMs depends on the signer, who chooses certain DMs to adapt to the communication situation. For instance, there is one young female signer (S056) whose usage of the three DMs looks closer to the pair of older male signers (S003 and S004) than to the other young female signer (S055). She, in turn, overuses list buoys and SAME in her productions as compared to the other signers. In addition to the idiosyncrasy that the use of DMs seems to present in any language, the lack of formal training in this respect in LSFB may favour these differences among signers even more.

- ***Functions:*** The description of the functions included whether the DM is relational (i.e. it connects clauses) or not (i.e. it punctuates or manages exchange), the domain (or macro-function, which puts together different micro-functions) and the function (or micro-function, such as cause, consequence, etc.). List buoys and SAME are mainly relational DMs, whilst PALM-UP is mainly non-relational. The most represented domain is the sequential (i.e. structuring discourse segments). PALM-UP often fulfils functions of the interpersonal domain (i.e. management of exchange) and SAME of the rhetorical (i.e. metadiscursive or subjective relations).

  PALM-UP is the most polysemous DM under study (it can fulfil up to 19 functions, of which punctuation and closing the turn are the most frequent) followed by SAME (it can fulfil up to 15 functions, of which addition is the most frequent). List buoys are the least polysemous (they can fulfil four functions, of which enumeration is the most frequent). Some combinations of nonmanuals appear with particular functions, although no combination allows us to distinguish one function from another. Linguistic context and position are key to tease apart closely related functions.

- ***Functional paradigm:*** The function-position paradigm that is reported in the SpL literature (Briz Gómez and Pons Bordería, 2010; Estellés and Pons Bordería, 2014; among others) also exists in LSFB. Some DMs appear in a particular position in the clause, the BDU and the turn when they fulfil a particular function (e.g. when SAME introduces a reformulation, it appears at the left periphery of the clause, in the middle of the BDU and in the middle of the turn) and there are even some functions that occur in a particular position regardless of the DM (addition appears in the left periphery of the clause, the syntactic left periphery of the BDU and the middle of the turn).

  The study of the position in the clause and the BDU is also related to the type of meaning that the signer conveys, particularly in the use of PALM-UP. The left periphery is likely to attract subjective meanings (i.e. related to the signer or that the signer wants his/her addressee to infer) such as consequence or concession, and the right periphery is likely to attract intersubjective meanings (i.e. related to the interlocutor) such as monitoring or face-saving in line with

other works on SpLs (Degand, 2014; Degand et al., 2014; Martin et al., 2014; Uygur-Distexhe and Degand, 2015). On the other hand, the position of some functions in the turn reveals that PALM-UP and SAME participate in the turn-taking system of LSFB: the first can open and close the turn, whereas the second only opens it. The three DMs also participate in the management of exchange when they are used to plan upcoming speech, as it is a way to hold the turn.

G4. To perform a cross-linguistic study about the variation of the three selected DMs across genres and signers, their functions in discourse and the expected existence of a function-position paradigm in LSFB and LSC. The cross-linguistic part is one of the originalities of this research as it is still scarce in SLs and non-existent in the domain of DMs in SLs. LSFB and LSC not only show more significant similarities than differences regarding some syntactic issues (see pp.13-14), but also regarding the three DMs under scrutiny. This suggests that the grammars of LSFB and LSC are fairly similar, even beyond the sentential level.

- ***Genre variation:*** In the two SLs, the three DMs appeared in the argumentation and the narration of a past memory. In the other two genres, the presence of DMs is more varied in LSFB. The three DMs were also found in the expository genre in LSFB, and PALM-UP and SAME were found in the other narrative production (i.e. storytelling). In LSC, PALM-UP is the only DM under study which was identified in the explanation of the name sign and storytelling. Moreover, the number of PALM-UP tokens in the storytelling production is considerably lower as compared to the other genres in either of the two SLs. The different frequency of DMs in storytelling indicates that clauses and BDUs are connected and/or punctuated in a particular way in this genre not only in LSFB, so different genres are necessary to study the use of DMs.

- ***Signer variation:*** Similarly to LSFB, the use of DMs also depends on the signers' preferences in LSC. All signers produced discourse-marking tokens of PALM-UP and SAME in the two SLs, the first being much more frequent than the latter. Discourse-marking list buoys are not articulated by all signers: only one young signer used them in LSFB (although other older and middle-aged signers produced them in the other LSFB sample that was not compared to LSC), whereas three signers (two young and one middle-aged) articulated discourse-marking list buoys in LSC. Neither age nor gender make a big difference in the choice of DMs in either of the two SLs, which suggests that the idiosyncratic use of DMs is a general feature of this category not constrained by the modality.

- ***Functions:*** Of the three selected DMs, SAME is the one that presents more differences when comparing LSFB data with LSC data. The reason may be that SAME is a fully-lexical sign with a fixed core meaning in each SL that influences the possible discourse relation it makes explicit. SAME is mainly a relational DM from the sequential domain in LSFB, whilst it is mainly a non-relational DM from the rhetorical domain in LSC. Although some functions are shared between the two SLs, SAME mostly expresses addition in LSFB, whereas it expresses hedging in LSC. This difference supports the idea that, as

in SpLs, SLs also "vary in their encoding of discourse relations" because the meaning and usage of DMs are partially language specific (Crible and Zufferey, 2015, p.20), i.e. related to the lexically encoded meaning of the DM, even if the form of the sign is the same.

List buoys and PALM-UP presented more similarities between the two SLs. List buoys are mainly relational, whereas PALM-UP is mainly non-relational. List buoys are used to enumerate and even to plan upcoming speech in both SLs (i.e. sequential domain). Although the frequency varies from one SL to the other, PALM-UP is often used to punctuate or to plan upcoming speech (i.e. sequential domain), or to agree or to check for understanding (i.e. interpersonal domain). In fact, PALM-UP is also the most polysemous DM in LSC (it fulfils functions from all domains) followed by SAME. List buoys remain the least polysemous DM out of the three.

From a typological perspective, these findings show that there are not a lot of differences between the properties of fully-lexical signs, partly-lexical signs and gesture (in the process of grammaticalisation) when they are used as DMs: the three present inter-signer variation, they have different functions and their position in discourse can vary depending on the function (see below). The gestural component of partly-lexical signs and non-lexical signs favours there being less variation in their functions from one SLs to another. However, the fixed core meaning of fully-lexical signs in an SL lexicon favours the opposite, i.e. more variation from one SL to another. It would be interesting to conduct further research on the three items adding non-Western SLs to the picture as it would reinforce these typological observations about the behaviour of manual DMs with different degrees of conventional specification in SLs. From a larger perspective, it will also allow us to carry out cross-linguistic research with SpLs in order to establish modality-independent linguistic universals about the human language capacity.

The study of the functions also included non-manual marking. As in LSFB, some combinations of nonmanuals were found with particular functions in LSC, but there was no combination that allowed us to distinguish one function from another. Linguistic context is what makes the annotator assign one function or another. Interestingly, the gestural origin of non-manual markers means that the same nonmanuals were identified when the function of planning upcoming speech is expressed by any of the three DMs in the two SL: the gaze is floating and the head moves (it may tilt, turn, stay with the chin up or down). This accounts for another typological similarity between the two SLs under study.

- ***Functional paradigm:*** As in LSFB, there are some function-position correlations in LSC (e.g. the function of monitoring is in the right periphery of the clause, the syntactic right periphery of the BDU and the turn-medial position) and, moreover, some functions correlate with a particular position regardless of the DM that is uttered (e.g. the function of condition is found in the initial position of the clause, in the middle of the BDU and in the middle of the turn).

  Generally speaking, the function-position correlations were clear in LSC because of the lower number of tokens of list buoys and SAME. PALM-UP is much more frequent, so the patterns are more reliable and they confirm the

findings about the meanings attracted by the left and right peripheries. For instance, closing and monitoring are intersubjective (the addressee is invited to react) and found in right peripheral positions, whereas the function of opening is subjective (the signer expresses that s/he wants to talk) and found in left peripheral positions.

Similarly to LSFB, PALM-UP participates in the turn-taking system of LSC to open and end the turn. In contrast, SAME is not used to open the turn in LSC. This is compensated by the higher number of PALM-UP tokens in the turn-initial position, which is closer to the number in the turn-final position. A common point between LSFB and LSC is that the three DMs take part in the management of exchange when they are used to hold the turn (i.e. function of planning).

G5. To compare two SLs on a topic that does not fall under the scope of what is usually associated with the typical features of the visual-gestural modality (namely, the use of space, iconicity and simultaneity). The analysis of list buoys, PALM-UP and SAME as DMs showed that LSFB and LSC are fairly similar in the use of DMs. This underlines that what homogenises SLs is not only the typical modality-specific features of iconicity, space and simultaneity. The type of differences and similarities between the two SLs are no different from what has been found when DMs that are considered to be equivalents are analysed from a contrastive perspective in SpLs.

Some scholars working on SpLs have found that some functions are indeed shared between DM equivalents, but that other functions are preferred in one language over the other. For instance, 'so' in English and 'dus' in Dutch are equivalents, but the study of their functions in a bi-directional parallel corpus reveals that the use of 'so' more often involves resultative relations rather than inferential relations, whereas it is the other way round for 'dus' (Buysse, 2017). Similarly, the use of PALM-UP as a closing DM is more frequent than as a DM expressing monitoring in LSFB. However, LSC does the opposite.

Evidence has also been found supporting the idea that DM equivalents in two SpLs may have language-specific functions. The pair 'al contrario' in Spanish and 'al contrario' in Italian (roughly translated as 'on the contrary' in English) are considered equivalents that share the same grammatical category (adverbial phrase). However, their analysis shows that the meanings it carries in Spanish are more restricted than in Italian (Sainz, 2015). For instance, 'al contrario' in Italian can be used to go back to the same topic or to introduce a new topic. In Spanish, 'al contrario' can only have the first function. Likewise, SAME is a fully-lexical sign in LSFB and LSC; but its functions in LSFB are more varied than in LSC.

Beyond cross-linguistic comparisons, DMs in SLs present the same basic features that one can find in SpLs. List buoys, PALM-UP and SAME are not different from other DMs in SpLs as they vary depending on the genre as Crible (2017) finds for English and French, they also vary depending on the signer as Beeching (2007) points out

for French, they are polysemous as it is acknowledged in almost every definition of DMs, they appear in different positions of discourse as Briz Gómez and Pons Bordería (2010) claim for Spanish and Degand (2014) for French; and there is a functional paradigm as Traugott (2012) finds for English. These core properties appear in the same way regardless of the type of manual activity, namely in fully-lexical signs, partly-lexical signs and gestures (in the process of grammaticalisation). Hence, the features of DMs that have been described in SpLs are not restricted to the spoken modality. On the contrary, they are modality independent.

In addition to the fulfilment of the four goals that were set at the beginning of this research project, there are some other important contributions to the domain of DMs that are worth emphasising:

- ***Clear and comprehensive delimitation of the items under study:*** Before the discourse-marking status of buoys, PALM-UP and SAME could be decided, the three items needed to be identified in the data. The identification of buoys in natural data is a tricky issue because there is not a clear set of criteria that delimits the category. Conversely, definitions of PALM-UP are usually too broad and some authors even include pointing signs. In this work, a set of criteria was proposed for these two items as well as for SAME, which had not been described in the literature before. This methodology is replicable by other studies in which these three types are inspected, either in LSFB and LSC or in other SLs.
- ***Different weight of the three DMs in the organisation of discourse:*** The study of the different datasets in LSFB and LSC revealed that there is great variability in the number of tokens of each DM. Although one could think that list buoys are a very recurrent device in order to structure signed discourse, this dissertation proves that they are not so frequent and that signers more often use other DMs such as PALM-UP and SAME.
- ***Application of a discourse theory, namely the Question Under Discussion, to SL data:*** Because of the different type of scope (extension of the marker throughout discourse) that list buoys can have and the way discourse-marking list buoys structure discourse in general, it was thought that they could participate in the switch from one implicit question to another in a Question Under Discussion (QUD) tree. This would be an additional criterion to distinguish discourse-marking list buoys from non-discourse-marking list buoys. Although this hypothesis was a digression because only some list buoys in semi-prepared productions (mostly monologues) are used in this way, this was the first attempt to apply the QUD theory to SL corpus data.

8.2 Future directions

Many different issues were addressed in this dissertation (identification of DMs, segmentation of discourse and description of three DMs in two SLs), but there are some points that could not be tackled because the topic is very broad. In this section,

I point out some methodological issues that should be taken into account in future research as well as some possible research lines that I would like to develop.

8.2.1 Methodological issues

This dissertation contains the productions of 13 native and near-native signers, six from the LSFB Corpus (+ the monological productions of one signer) and six from the LSC Corpus, totalling 3 hours and 35 seconds. This sample is made up of argumentative, explicative and narrative productions for the two SLs, and metalinguistic productions only in LSFB. In order to better study signer variation and DM variation across genres, the dataset should be enlarged with more signers from different age groups and linguistic profiles (i.e. late signers included), more data from each genre and data from other genres (e.g. description). So far, this would be feasible in LSFB but there would be some restrictions in LSC (i.e. no other age groups, no late signers and no additional data from the argumentative and expository genres), as the LSC Corpus is considerably smaller than the LSFB Corpus.

This study of DMs followed a semasiological approach, i.e. only three manual DMs were selected from the bulk of manual, non-manual and spatial DMs (Metzger and Bahan, 2001) that may exist in LSFB and LSC. Although 27 discourse-marking functions (out of the 31 possible functions in the annotation protocols) were fulfilled by list buoys, PALM-UP and/or SAME, this research is only a first step towards understanding how discourse is structured in LSFB and LSC. It would be interesting to adopt an onomasiological approach in which all (explicit) discourse relations are taken into account. As a result, not only could particular phenomena be studied (e.g. what DMs are used to begin the turn? Is a particular discourse relation expressed the same way in argumentation and in narration? What are the most frequent co-occurrences of DMs?), but also the first lists of DMs could be elaborated for these two SLs. The integration of these findings in SL courses for L1 and L2 learners would be innovative and would make their signed productions more coherent and cohesive.

Ideally, an onomasiological approach should not be restricted to explicit discourse relations and it should include implicit discourse relations as well. This study would reveal whether explicit discourse relations are preferred over implicit discourse relations in each of the two SLs. Again, the results would be very useful for improving the pragmatic skills of SL learners and users. On the other hand, the comparison of results between LSFB and LSC would allow us to see whether the preferences for the two types of relations are the same and, therefore, contribute to SL typology from another perspective unprecedented in the SL literature.

Concerning the segmentation of signed discourse, the adaptation of the BDU Model included some simplifications as compared to the original. First, syntactic segmentation in the original model was followed by the annotation of the type of clauses (verbal, averbal, elliptical, interrupted or containing a non-dependent element) and the 'functional sequences' (verb, subject, object, etc.). Although this annotation was not necessary for the purposes of this research (and, therefore, was not done), it would be interesting to have it in order to study syntactic constituency. Second, the

difference between minor, intermediate and major boundaries in prosodic segmentation was not made because I did not have a semiautomatic tool at hand to do so. In future research, I would like to use software such as SLMotion (Karppa et al., 2014) or something similar that can detect the lack of motion, the length of signs and eye blinks (for which it should be checked that there is another non-manual cue at the same time). These functionalities would allow us to delineate prosodic units semiautomatically and to assess how reliable handmade prosodic segmentation is. Third, the different types of BDUs (congruent, syntax-bound, intonation-bound, mixed and regulatory) were not annotated. Doing so would allow us to study whether there are some genres that attract a particular type of BDU as in spoken French (Martin et al., 2014).

Finally, data were segmented and functions were assigned by myself, i.e. a hearing late SL learner. Although I am proficient in the two SLs I study and I had deaf signing colleagues to help me when I double checked my annotations,[1] there may be some nuances that only (deaf) native signers may be able to identify. I would like to take a step forward and see how reliable my results are by asking deaf signers to segment my data and assign functions to the three DMs. Despite the interest of assessing inter-annotator agreement, one needs to be aware that it is currently difficult to find deaf signers with such linguistic skills in LSFB and LSC.

8.2.2 Related topics

Among the different research topics that could be developed from this dissertation, cross-linguistic studies comparing DMs in SLs with SpLs are especially interesting because they have many applications beyond academia. SL communities are minorities that live with SpL communities, who tend to constitute the majority. Since societies are planned by and for the majority, deaf people constantly need to adapt to a structure that does not always take into account their specificities such as the use of another language that is the reflection of a different culture. The study of discourse combining signed and spoken languages can cast light on many issues of daily life with which deaf individuals are confronted and can help to improve their lives in different ways.

A first research topic I would like to explore is aging. The reality is that western societies are growing old. Pathologies such as dementia make deaf and hearing seniors process discourse and produce their messages in a different way in comparison with younger signers and speakers. As a result, it is sometimes difficult for relatives and professionals to understand them and give a suitable answer to their needs. The multimodal study of DMs (including SL, speech and gesture) through interviews on different daily-related topics is one of the aspects of older people's language use that can be inspected in order to improve communication with them. The outcome of this work can contribute to create some guidelines for relatives and professionals about how to adapt their language to particular situations. So far, some research initiatives

[1] I did not check intra-annotator agreement. If this research was to be started again, I would create different tiers in ELAN in order to investigate whether my annotations changed from the first round to the second round.

along these lines have been undertaken by Bolly et al. (2015a,b, 2016), but they need to be expanded. In addition, collecting the experiences of seniors can also give us some clues about how existing settings should be modified in order to make them more adapted.

A second research avenue is investigating how deaf students in bilingual curricula understand and process discourse relations in their SL and the surrounding SpL. In different sections of this dissertation, it has been mentioned that the type of education (bilingual, oralist and other models) and the level of education (secondary school degree, professional degree, university degree and possibly others) may have an effect on the use of DMs by deaf individuals. Exploring how deaf students deal with DMs will uncover the difficulties that these individuals face and will provide teachers with hints about how to teach them in the classroom. Comprehensive lessons about DMs will improve the pragmatic skills of deaf students in both languages as, for example, they will be instructed on how to adapt the use of these devices to the register and genre of different daily situations.

Last but not least, a lot of deaf people use SL interpreters. Interpreters are professionals that have to deliver a good service to the deaf and/or hearing person(s) that hire them. One of the things that makes a good spoken or signed production is the adequate use of DMs. However, the lack of research on them in SLs means that sometimes interpreters use DMs in a different way compared to deaf signers. For instance, interpreters often articulate list buoys in their productions, whereas deaf people do not frequently use them as has been shown in this dissertation. Another problem may be that the use of some DMs in a SpL is copied onto the translation in a SL (i.e. calques). The study of DMs comparing the productions of deaf signers with interpreters translating into a SL, and the productions of hearing speakers with interpreters translating into a SpL, will make explicit the differences between a SL and the surrounding SpL as regards the structuring of discourse. The results will make interpreters more aware of how to use DMs in order to make their SL productions sound more 'deaf-like' and their SpL productions more 'hearing-like'. All in all, the outcome will enhance the quality of interpreting services.

These future projects are only three research avenues from a long list of possible topics that could be explored in relation to DMs. This dissertation has underlined the importance and the need of studying DMs in SLs, a domain that has not attracted the attention of many linguists yet. Even in SpLs, the interest in DMs started after many years of linguistic research tradition. Hopefully, SLs will be faster and they will benefit from the experience of SpLs so that the domain flourishes in the years to come.

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Appendix A

Abstract / résumé / resum / resumen

[EN]

This dissertation aims to contribute to the field of discourse analysis by focusing on three discourse marker candidates, namely buoys, PALM-UP and the sign SAME, in French Belgian Sign Language (LSFB) and Catalan Sign Language (LSC). The first issue in the study of discourse markers is identifying them, which has been based on three criteria: to be syntactically optional, to be non-truth-conditional and to constrain the inferential mechanisms of interpretation processes. PALM-UP and SAME may function as discourse markers, whereas from the category of buoys only list buoys have discourse-marking functions. The analysis of the discourse-marking tokens reveals intra- and inter-linguistic differences and similarities at the level of their distribution per genre, per signer, their functions and their position in discourse. In the corpus analysed in this research, storytelling seems to be the genre that presents more differences in the use of discourse markers as compared to the other genres in the two sign languages. This finding underlines the need to use different types of productions in order to study how discourse is structured. There does not seem to be any sociolinguistic pattern that defines the use of discourse markers: it purely depends on the signer's preferences as it has been reported in the literature on spoken languages. PALM-UP is the most frequent and polysemous discourse marker, followed by SAME. Of the three discourse markers under study, list buoys are the least frequent in spontaneous discourse and the least polysemous. The three discourse markers share most functions with their counterparts in the two SLs, but there are other functions that seem to be language specific, particularly in the use of SAME. The position in discourse is established taking as reference the delimitation of turns and the adaptation of the Basic Discourse Units Segmentation Model (which combines an independent syntactic and prosodic segmentation) to the signed modality. Some discourse markers present a correlation between their function and their position that refines their description as in spoken languages. This study reveals that discourse markers have common properties in the two modalities (spoken and signed).

[FR]

L'objectif de cette thèse est de contribuer aux études discursives en se focalisant sur trois potentiels marqueurs de discours, à savoir les balises, le PALM-UP et le signe MÊME, en langue des signes de Belgique francophone (LSFB) et en langue des signes catalane (LSC). Etant donné que l'identification des marqueurs de discours constitue l'un des enjeux premiers pour leur étude, trois critères ont été établis pour définir les conditions auxquelles doit répondre un signe pour être considéré comme marqueur: il doit être optionnel syntaxiquement, être non-vériconditionnel et contraindre les mécanismes d'inférence. Il ressort de cette étude que PALM-UP et MÊME peuvent fonctionner comme marqueurs de discours, alors que parmi la catégorie des balises, seules les balises-liste peuvent avoir des fonctions de marqueur de discours. L'analyse de ces trois éléments met en évidence des différences et des similarités intra et inter-linguistiques du point de vue de leur distribution par genre discursif et par signeur, de leurs fonctions et de leur position dans le discours. Dans notre corpus, la narration est le genre qui présente plus de différences dans l'usage des marqueurs de discours par comparaison aux autres genres dans les deux langues des signes. Ce résultat souligne la nécessité de prendre en compte une diversité de genres pour étudier la structure discursive. Comme l'indique la littérature sur les langues vocales, la variation de l'usage des marqueurs de discours n'est pas liée à des patrons sociolinguistiques, mais à des préférences individuelles. Des trois marqueurs, PALM-UP est le plus fréquent et le plus polysemique, suivi par MÊME. Les balises-liste sont beaucoup moins nombreuses dans le discours spontané et aussi moins polysémiques. Les trois marqueurs partagent la plupart des fonctions avec leurs analogues dans les deux langues, mais quelques fonctions ne se retrouvent que dans une des langues, en particulier pour le signe MÊME. Grâce à la détermination des tours de parole et à l'adaptation à la modalité signée du modèle de segmentation en *Basic Discourse Units* (unités discursives basiques) – à savoir un modèle combinant une segmentation syntaxtique et une segmentation prosodique opérées indépendamment l'une de l'autre – nous avons pu définir la position des trois marqueurs dans le discours. Comme cela a été observé pour les langues vocales, il s'avère que des corrélations entre la fonction d'un marqueur et sa position existent aussi en langue des signes et peaufinent la description de ces marqueurs. Cette étude met aussi en lumière que les marqueurs de discours ont des propriétés communes dans les deux modalités (vocale et signée).

[CAT]

L'objectiu d'aquesta tesi és contribuir a l'àmbit de l'anàlisi del discurs mitjançant l'estudi de tres candidats a marcador discursiu, a saber, les boies, el PALM-UP i el signe IGUAL, en llengua de signes de Bèlgica francòfona (LSFB) i en llengua de signes catalana (LSC). Atès que la primera dificultat en la recerca sobre els marcadors discursius és la seva identificació, proposo tres criteris que qualsevol signe ha de complir perquè se'l consideri com a tal: ser sintàcticament opcional, no ser vericondicional i limitar els mecanismes d'inferència. El PALM-UP i el signe IGUAL poden funcionar com a marcadors del discurs, mentre que, de la categoria de les boies, només les boies

llista tenen aquest tipus de funció. L'anàlisi dels tres marcadors indica que existeixen diferències i similituds intra i inter-lingüístiques respecte a la seva distribució per gèneres discursius i per signant, a les seves funcions i a la seva posició en el discurs. En el corpus que he utilitzat, la narració és el gènere que presenta més diferències en l'ús dels marcadors en comparació amb els altres gèneres discursius. Aquesta troballa subratlla la necessitat de fer servir diferents tipus de discurs per estudiar-ne l'estructura. No s'observa cap patró sociolingüístic en l'ús dels marcadors, ja que aquest depèn de les preferències de cada signant tal com s'ha afirmat en la literatura sobre les llengües orals. Dels tres marcadors, el PALM-UP és el més freqüent i el més polisèmic, seguit del signe IGUAL. Les boies llista són les menys freqüents en el discurs espontani i les menys polisèmiques. Els tres marcadors comparteixen algunes funcions amb els seus anàlegs en ambdues llengües, tot i que també hi ha algunes funcions que són específiques d'una llengua en concret. Aquesta diferència es troba en particular en el signe IGUAL. La posició en el discurs s'estableix a partir de la delimitació de torns de paraula i de l'adaptació a la modalitat signada del model de segmentació del discurs en *Basic Discourse Units* (unitats discursives bàsiques, és a dir, una combinació de segmentació sintàctica i prosòdica independents). Les correlacions entre la funció d'un marcador i la seva posició també existeixen en llengua de signes, cosa que afina la seva descripció de la mateixa manera que succeeix en les llengües orals. Aquesta recerca també mostra que els marcadors discursius tenen propietats comunes en les dues modalitats (parlada i signada).

[ES]

El objetivo de esta tesis es contribuir al análisis discursivo mediante el estudio de tres candidatos a marcador del discurso, a saber, las boyas, el PALM-UP y el signo IGUAL, en lengua de signos de Bélgica francófona (LSFB) y en lengua de signos catalana (LSC). Siendo la identificación de los marcadores del discurso la primera dificultad en su investigación, se proponen tres criterios que cualquier signo debe cumplir para ser considerado como tal: ser sintácticamente opcional, no ser vericondicional y limitar los mecanismos de inferencia. PALM-UP e IGUAL pueden funcionar como marcadores del discurso, mientras que dentro de la categoría de las boyas, sólo las boyas lista tienen este tipo de función. El análisis de estos tres marcadores indica que existen diferencias y similitudes intra e inter-lingüísticas en lo que se refiere a la repartición de los marcadores según el género discursivo y el signante, a sus funciones y a su posición en el discurso. En el corpus utilizado, la narración es el género que presenta mayores diferencias en el uso de los marcadores en comparación con otros géneros discursivos en las dos lenguas de signos. Este resultado subraya la necesidad de tener en cuenta diferentes tipos de producciones para poder estudiar la estructura discursiva. No se observa ningún patrón sociolingüístico en el uso de los marcadores, pues éste depende de las preferencias del signante tal y como se ha afirmado en la literatura sobre lenguas orales. De los tres marcadores, PALM-UP es el más frecuente y el más polisémico, seguido de IGUAL. Las boyas lista son las menos frecuentes en el discurso espontáneo y también las menos polisémicas. Los tres marcadores discursivos comparten ciertas funciones con sus análogos en ambas lenguas de signos, aunque hay algunas funciones que son específicas de cada lengua. Esta diferencia se

manifiesta principalmente en el signo IGUAL. La posición en el discurso se establece a partir de la delimitación de turnos de habla y de la adaptación a la modalidad signada del modelo de segmentación en *Basic Discourse Units* (unidades discursivas básicas, esto es, una combinación de segmentación sintáctica y prosódica independientes). Las correlaciones entre la función de un marcador y su posición también existen en las lenguas de signos, cosa que afina su descripción igual que sucede en las lenguas orales. Este estudio también muestra que los marcadores discursivos tienen propiedades comunas en las dos modalidades (hablada y signada).

Appendix B

Dvd

This DVD includes the videos of the first LSFB sub-corpus (C1) used in chapter 5.

All LSFB data belonging to the LSFB Corpus used in chapters 4, 5, 6 and 7 (sub-corpus C2 and half of sub-corpus C3) are openly available at: `www.corpus-lsfb.be`.

LSC data belonging to the LSC Corpus used in chapter 7 (the other half of sub-corpus C3) will be soon available at `http://blogs.iec.cat/lsc/corpus/`.