

RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

Studying the position of Discourse Relational Devices in signed languages

Gabarro-Lopez, Silvia; Meurant, Laurence

Publication date:
2016

Document Version
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (HARVARD):
Gabarro-Lopez, S & Meurant, L 2016, 'Studying the position of Discourse Relational Devices in signed languages: adapting the Basic Discourse Units Model to the signed modality?', TextLink Second Action Conference, Budapest, Hungary, 11/04/16 - 13/04/16.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Studying the position of Discourse Relational Devices in signed languages: adapting the Basic Discourse Units Model to the signed modality?

Sílvia Gabarró-López & Laurence Meurant
silvia.gabarro@unamur.be laurence.meurant@unamur.be

Sign languages (SLs):

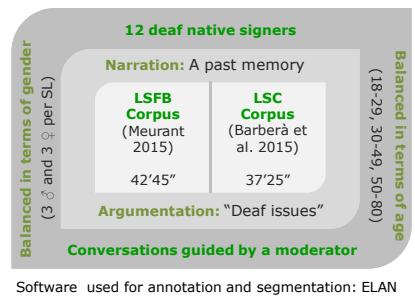
- **Natural languages**, so not universal and not linked to a spoken language
- Visual-gestural modality: use of the **manual and non-manual articulators** (eyes, eyebrows, mouth, head and body movements)
- Linguistic research on them starts in the 1960s
- SL video corpora appear in the 2000, so discourse studies are very recent
- **French Belgian Sign Language (LSFB)**: 6 000 signers, used in Wallonia (southern region of Belgium) and Brussels
- **Catalan Sign Language (LSC)**: 12 000 signers, used in Catalonia (north-eastern Spanish region)
- Two under-studied minority and minorized languages

Background: no existing model for the segmentation of SL discourse

Our need: a segmentation model for SL data that allows the study of discourse markers (DMs)

How? Adapting the **Basic Discourse Units (BDU) Model** (Degand & Simon 2005, 2009ab) to the signed modality

1. Delimit syntactic units (i.e. clauses) on the basis of the Dependency Grammar.
 2. Delimit prosodic units according to a set of acoustic cues: a silent pause (longer than 250 ms), lengthening of the syllable (three times longer than the syllables in context) or a sharp rise of f0 (intra-syllabic f0 superior to ten semi-tones).
 3. Establish BDUs where syntactic and prosodic boundaries coincide.
- The first and second steps are independent



1 Delimiting syntactic units (SyU)

Following the principles of the DEPENDENCY GRAMMAR for spoken French as conceived by Blanche-Benveniste et al. (1990)

- **Verbal dependency clauses** → the verb is the nucleus
[I **STUDY** COLLEGE BEFORE PROFESSIONAL TRAINING IN] LSC
[I took professional training courses at college]'
- **Averbal dependency clauses** → another element (pronoun, noun or adjective) is the nucleus
[BANK **DIFFICULT** MONEY RECEIVE] LSF
[it was difficult to get money from the bank]'
- **Elliptical dependency clauses** → incomplete clauses that can be interpreted as averbal dependency clauses when referring to the context
S045: [IRSA WOLUWE TEAM AGAIN PLAY AGAIN] §[FOOTBALL PLAY AGAIN] [LESS] LSF
S044: § [THAT EVERYDAY] [LESS]
S045: '[the teams at IRSA and Woluwe still play] [they still play] §[they still play football] [less (yes)]'
S044: '[§[not everyday] [less often]]'
- **Interrupted clauses** → an obligatory element is missing or the clause is not finished
S056: [FEEL]⁻¹ LSF
S055: [FEEL MORE DEAF] §<PALM-UP> [BECAUSE PERSON-BLOW]⁻¹ [YES] [THAT-S-IT] LSF
S056: §[YES] <PALM-UP> [GIVE] [YES] <PALM-UP>
S056: [I feel]⁻¹
S055: [you feel more deaf] §<don't you> [because I realised]⁻¹ [yes] [that's it]'
S056: '[yes] <erm> [it makes me feel] <yeah>'
- **Clauses with a nondependent element** → the clause contains an adjunct
[THROW WINDOW OUTSIDE] <BUT> [SMELL SMOKE THERE-IS] LSC
['(they) threw it outside the window] <but> [you could still smell the cigarette smoke]'

Hide the SyU tier before starting prosodic segmentation

2 Delimiting prosodic units (PrU)

Adapting the acoustic cues to visual cues, i.e. "boundary markers" that segment discourse into rhythmic units because they are punctual in nature (Pfau & Quer 2010)

- **Pauses** (= pauses) → periods of no signing at all with the hands along the body, crossed or in the neutral space as in Figure 1
- **Sign holds or lengthened signs with respect to the context** (= lengthening of a syllable) → a sign held appears when the handshape of a sign is frozen, and a lengthened sign appears when the movement of the sign is repeated, slowed or exaggerated
- **Eye blinks layered with another prosodic cue** (head nod, a change in gaze, a shrug, etc.) (= sharp rise in f0) → widely acknowledged a prosodic function of marking boundaries (Wilbur 1994, Brentari & Crossley 2002, Crasborn et al. 2004, Sze 2008, Herrmann 2010)

(Watch the videos)

When prosodic segmentation is finished, display the SyU tier



Figure 1. Types of pauses

3 Establishing BDUs

Finding the convergence point between syntactic and prosodic units

Different types of BDUs as in the original model:

- **Congruent** → syntactic and prosodic boundaries coincide (cf. second BDU in Figure 2)
- **Syntax-bound** → a syntactic unit contains several prosodic units
SyU []
PrU []
- **Intonation-bound** → a prosodic unit contains several syntactic units (cf. third BDU in Figure 2)
- **Regulatory** → the BDU is an adjunct or a DM
DM
SyU []
PrU []
- **Mixed** → there are several syntactic and prosodic units within the BDU before the boundaries coincide (cf. first BDU in Figure 2)



Figure 2. A mixed BDU, a congruent BDU and an intonation-bound BDU

Case study: SAME in LSF

- Articulation: the indexes of both hands extended get in contact with an inward movement as in Figure 3
 - Core meaning of resemblance or similarity, but very productive in natural discourse as a DM
 - Same position for the most common functions: addition (adding information to the same topic as in example 1) and specification (introducing an example as in example 2)
1. [HEARING I GO BICYCLE LEARN] [BICYCLE THERE GO] /// <SAME> [GO HORSE] [I GO HORSE]
[the Hearing taught me how to cycle] [I went cycling] /// <and> [I went to ride horses] [I rode horses]'
→ **SAME**: out of the dependency structure of the third clause containing the verb go (i.e. clausal left periphery), but prosodically integrated at the beginning of the second BDU (i.e. syntactic left periphery).
 2. [YES] <SAME> [REMEMBER BEFORE LITTLE ALWAYS I] [TODAY SECOND MEMORY CHILD]
[yes] <for instance> [I remember when I was young] [this is my second childhood memory today]'
→ **SAME**: out of the dependency structure of the verb REMEMBER (i.e. clausal left periphery), but prosodically integrated in the middle of the BDU (i.e. BDU medial position)



Figure 3. SAME

Conclusions

- Segmenting with this adaptation of the BDU Model is a time consuming, but allows a more fine-grained study of the position of DMs in the signed modality
- The coupling of position and function of SAME is regular across different examples of our corpus, so the position can be used to identify the function of a polysemous DM such as SAME, whose annotation strongly depends on the annotator's interpretation
- The study of the left periphery could give insight on (among others):
 - the assumption that SLs prefer constructions of topicalization
 - whether SLs prefer implicit discourse relations over explicit discourse relations
 - the discourse features that define a formal vs. an informal speech
 - the devices preferred in a monologue over a dialogue

References
Barberá, G., Quer, J., & Frigola, S. (2015). Primers passos cap a la documentació de discurs signat. El projecte pilot de constitució del corpus de la llengua de signes catalana. *Treballs de Sociolingüística Catalana*, 25.
Blanche-Benveniste, C., Bilgeç, M., Rouget, C., & Eynde, K. van den. (1990). *Le français parlé: études grammaticales*. Paris: Éditions du CNRS.
Brentari, D., & Crossley, L. (2002). Prosody on the hands and face. Evidence from American Sign Language. *Sign Language & Linguistics*, 5(2), 105-130.
Crasborn, O., Kooij, E., van der, & Emmenik, W. (2004). *Prosodic features of focus in NGT*. Presented at the Theoretical Issues in Sign Language Research (TISLR) Conference 8, Barcelona.
Degand, L., & Simon, A. C. (2005). Minimal Discourse Units: Can we define them, and why should we? In *Proceedings of SEM-05. Connectors, discourse framing and discourse structure: from corpus-based and experimental analyses to discourse theories* (pp. 65-74). Biarritz.
Degand, L., & Simon, A. C. (2009a). Mapping Prosody and Syntax as Discourse Strategies: How Basic Discourse Units vary across Genres. In D. Barth-Weingarten, N. Dehé, & A. Wichmann (Eds.), *Where Prosody meets Pragmatics* (Vol. 8, pp. 75-105). Bilingual: Emerald.
Degand, L., & Simon, A. C. (2009b). Minimal Discourse Units in Spoken French: On the Role of Syntactic and Prosodic Units in Discourse Segmentation. *Discours*, 4. <http://doi.org/10.4000/discours.5852>
Herrmann, A. (2010). The interaction of eye blinks and other prosodic cues in German Sign Language. *Sign Language & Linguistics*, 13(1), 3-39.
Meurant, L. (2015). *Corpus LSF: Corpus informatisé en libre accès de vidéo et d'annotation de langue des signes de Belgique francophone* (LSFB Lab). FRS-FNRS, Université de Namur. Retrieved from <http://www.corpus.lsf.be>
Pfau, R., & Quer, J. (2010). Nonmanuals: their prosodic and grammatical roles. In D. Brentari (Ed.), *Sign Languages* (pp. 381-402). Cambridge: Cambridge University Press.
Sze, F. (2008). Blinks and intonational phrasing in Hong Kong Sign Language. In J. Quer (Ed.), *Signs of the time: selected papers from TISLR 2004* (pp. 86-107). Hamburg: Signum.
Wilbur, R. (1994). Eyeblinks and ASL phrase structure. *Sign Language Studies*, (84), 221-240.



We would like to thank the informants of the LSF Corpus for their participation as well as the LSC Lab for the data provided. This research is funded by a F.R.S. - FNRS Research Fellow Grant (I.A.697.14F) and by a F.R.S. - FNRS Incentive Grant for Scientific Research (F.4505.12). Travel costs were covered by the COST Action *TextLink: Structuring Discourse in Multilingual Europe* (IS1312).