

Freezing the hands when signing

A corpus-based study of manual holds in French Belgian Sign Language conversations

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This paper examines manual holds in French Belgian Sign Language (LSFB) conversations. Holds have usually been examined in sign languages in relation to linguistic structures but barely for their relevance in managing signed discourse. Nonetheless, scholars have begun to argue for their non-arbitrary positions as part of interactional practices that signers employ during conversations. Rather than approaching holds in relation to prosody and syntax, this paper investigates their roles as potential meaning-making practices used by LSFB signers in their organization of social interaction. The following question is explored: what are their roles in LSFB conversations? The present paper argues in favour of a paradigm shift in the conception of holds by showing that an absence of manual motion does not equal an absence of meaning. On the contrary, the results reveal that these are not mere insignificant moments of signing excursions but efficient means to achieve pragmatic goals in conversation. Results show that LSFB signers use holds to carry out four main functions in discourse, i.e., to: monitor addressees, plan discourse, hold the floor and suspend one's turn when the addressee intervenes in the main line of action.

Keywords: Sign Language Discourse, Corpus Linguistics, Multimodality, Interaction

1. Introduction

Since Stokoe's (1960) work on the linguistic structure of American Sign Language (ASL), many linguists have largely focused on the grammatical and lexical descriptions of lexical signs (Cibulka 2016), examining certain parts of those signs and leaving the rest of the manual stream largely unexplored. Similarly, little comparative work has been conducted on the interactional mechanisms of SL discourse. One reason for this was the emphasis on finding analogues to spoken languages (SpLs) at all levels of linguistic structure to ground SLs as proper languages (Vermeerbergen and Nilsson 2018).

Consequently, phenomena such as holds, have usually been excluded from analyses because they happen "for reasons other than the production of lexical items" (Cibulka 2016: 449). At first, holds seem easy to define as moments when hands stop moving. Yet, the task turns out to be difficult. For instance, when do we consider instances of stillness in the signing stream as legitimate holds? How can these motionless phases play an actual role in conversations? The present paper will address previous claims on the interactional potential of holds in LSFb conversation. More specifically, this paper seeks to reveal a more thorough picture of how interaction can be managed when examining parts of the signing stream that occur before or after the stroke phase (Kita et al., 1998).

After a state of the art on holds in the field of SL linguistics (section 2), the methodology and the annotation process are outlined (section 3). Section 4 will survey the results. A last section is devoted to discussing the findings and their contributions to language theory.

2. The case for manual holds in signed interaction

2.1. *Manual holds as part of the sign structure*

A hand movement can be conceived of as a stream of temporally distinct manual phases with different dynamic characteristics. Kita and colleagues (1998) provide a comprehensive account of all phases, as displayed in LSFb below. In Fig. 1, the signer (S001) articulates the sign RIGHT in the LSFb Corpus (Meurant 2015):

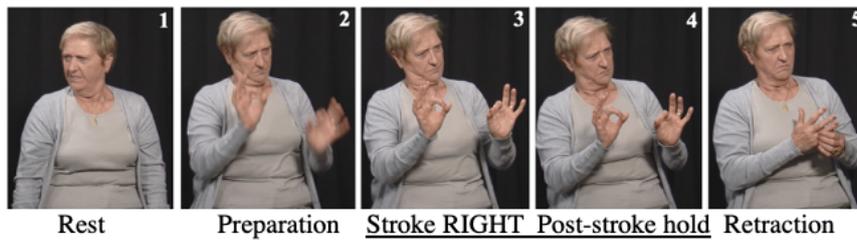


Fig. 1: Illustration of a post-stroke hold in LSFB, Task 18, S001 (1:12-1:14.483).

S001's hands are resting and her gaze is away from her addressee (picture 1) but when she starts signing, her hands leave their rest position to reach the conventional starting position of RIGHT (pictures 2-3). Then, as the hands reach the correct location and display the appropriate handshape and orientation to produce the sign (picture 3), the stroke – the meaningful part of the sign – occurs in picture 4 where both hands are accompanied by a downward move that brings both hands in front of her chest. Following the stroke, S001 holds her hands for 377ms in the exact same location, maintaining the same manual orientation and handshape. In Fig. 1, the hold is described as a dependent hold “parasitic to the stroke” (Kita et al. 1998: 27). Once the addressee provides feedback, the hands go back in neutral space (picture 5). Similar manual phases have also been reported for gestures in SpLs (Kita et al. 1998).

2.2. Identifying moments of holds in signed discourse

While holds have thus been formally acknowledged as part of the composition process of a sign, their roles in language have been examined from different perspectives, some of which are briefly introduced below (but see Notarrigo 2017, for a review of holds' linguistic functions).

Holds can be addressed from a twofold perspective: as a lengthening phenomenon at the beginning and/or ending of signs or as a pause phenomenon to mark syntactic boundaries. Sign lengthening has different functional roles at the level of coordination, semantics, structure of discourse segments, management of cognitive processes and hesitations, as well as interaction.

Similar to the phonological function of post-stroke holds in SpLs, holds may take place on one of the hands waiting for the other one to synchronize with it. Holds can also be used to add a specific meaning to a sign (e.g., WATCH to mark

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the duration of the activity) and signers can produce holds on their non-dominant hand while signing with their dominant hand. These have been described as weak hand holds or BUOY in Liddell's (2003) terms, playing a structuring and guiding role in discourse. Moreover, holds also occur when signers cope with the cognitive overload of heavier information content. Holds provide not only extra time for the primary signer to process heavier information content but they also provide "the addressee [with] additional time to interpret and process the extra information" (Stewart 2014: 95).

While other functions of holds are well-known, fewer studies have addressed their role in conversation management. Baker (1977), working on ASL interaction, pinpointed uses of holds on the last sign of a proposition signaling turn continuation or shifting. More comprehensively, Groeber and Pochon Berger (2014) examined the placement of holds within turns as well as the timing of their release in Swiss-German Sign Language (DSGS). They found additional turn-related characteristics: (1) a participant who did not release his hold despite the fact that the next signer had already taken the floor, and (2) a hold that was not released "but maintained throughout the responsive turn" (2014: 9). This was particularly noticeable in holds at the end of turns with a strong next action projection, such as usually found in questions.

The role of holds in language use has been demonstrated by several scholars. Particularly relevant to the present paper is Cibulka's (2016) analysis of holds in Japanese SL, which reveals a wider range of interactional functions. Cibulka's work focuses on moments when holds occur as a sequence suspension during joint word searches. He emphasizes how holds "should be accounted for as being part of an established interactional practice rather than as failure or incomplete signs" (Cibulka 2016: 459). Groeber and Pochon-Berger (2014) add that holds act as well as means of establishing collaboration during repair and word searches, regulate turn taking, and prompt for responses in SpLs and SLs.

These studies demonstrate how hands cannot only be perceived as means of expressing propositional content but also as important tools to regulate interaction, enabling participants to reach interpersonal understanding (Sikveland and Ogden 2012). All of this sheds light on how individuals construct their conversational exchanges moment-by-moment through various embodied strategies that also include less attended manual phases to build meaningful utterances.

3. Methodology

3.1. *Data*

This study draws on data from the LSFB Corpus, created between 2012 and 2015 (Meurant 2015). The LSFB Corpus is an open online database made up of approximately 150 hours of LSFB productions of 100 signers from 18 to 66+ years of age, coming from diverse areas of Belgium.¹ The LSFB Corpus is also composed of a diverse sample in terms of discourse genres (not only narratives) and registers (from formal to informal styles), as well as signers (with various sociolinguistic backgrounds) (see Meurant and Sinte 2013). Participants came in pairs to the Namur LSFB-Lab to be recorded and a deaf moderator guided the recording sessions in LSFB. Further information about data collection is available at <https://www.corpus-lsfb.be/>.

The present work is based on the study of two dyads of LSFB signers. Participants were between 67 and 83 years old at the time of data collection. Both dyads were equally divided by gender and each pair came from the same region in Belgium (S001-S002 are from Liège and S003-S004 from Woluwe). Signers' age and the availability of ID-gloss annotations (Johnston 2010) already present determined the selection of the analyzed corpus. In the present sub-corpus, participants took part in four tasks, including spontaneous dialogues between participants. These tasks explore the following topics: childhood memories (task 3), differences between deaf and hearing culture (task 4), hobbies, work, and passions (task 15), and the comparison between past and present events (task 18). In total, 1hr 25 min. of data (8317 signs) were annotated and analyzed.

3.2. *Data annotation*

3.2.1. *Overall annotation procedure*

The samples were transcribed and annotated using ELAN (Wittenburg et al. 2006). Pre-existing annotations (ID-Glosses) were already available, and the following tiers were created for each hand: markers identifying turn-at-talk as belonging to the main signer (L1) or the addressee (L2), signing overlaps, gaze directions

¹ 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)*.

(Notarrigo 2017), types of holds, and their respective interactive functions (Funct-C).

3.2.2. *Formal identification of holds*

The first step consisted in watching each video and stopping when there seemed to be a visible prolonged halt on a manual movement to verify whether it was concretely followed by a succession of fixed frames. Relying on Notarrigo's (2017) results of Cohen's Kappa, a threshold of 200ms was applied to identify holds. Holds were first annotated on an independent tier for each hand as <HOLD>. Then, on a dependent tier, three types were distinguished using Notarrigo's (2017) typology:

- <S1:ST> and <S1:EN> were holds produced at either the initial stage or the end of the sign with the handshape and the location on hold; <S2:NE> occurred in neutral space between signs in front of the signer's body; <S3:IN> characterized holds with the shape of an index finger extended, identified as a floating index without any grammatical meaning in itself.

3.2.3. *Functional annotation of holds*

Holds with an interactive function were then categorized following previous functional typologies (Bavelas et al. 1992, and Bolly and Crible 2015). Bolly and Crible's protocol is itself inspired by Halliday's (1970) categorization of language that comprises three main domains: the ideational (content-oriented), structuring (text-oriented), and interpersonal levels (further subdivided in expressive: speaker-oriented, and the interactive functions: addressee-oriented). These macro-language functions can be further decomposed into specific functions called "micro-" functions. For instance, the interactive domain can be decomposed into the following micro-functions: opening, suspending, or closing a turn; showing agreement; monitoring; or marking common ground. Only holds serving an interactive function were annotated.

4. Results

4.1. Overview of the data

The results revealed that LSFBS signers produced a total of 547 hold tokens (in approximately 1hr 25min. and 8317 signs). These holds occurred in different sign positions and served various relevant interactive functions.

The majority of holds (390 tokens, 71%) takes place in final sign position <S1:EN> while only 10% of holds (55 tokens) occur in initial position <S1:ST>, 15% of cases in neutral position (80 tokens), between signs, in front of the signer's body and only 4% of <S3:IN> (22 tokens).

Thus, the vast majority of holds are performed at the end of a given sign. Now, the following question is addressed: what are the interactive functions lying behind manual holds in the LSFBS corpus under study?

Four key interactional functions of holds stood out. Signers performed holds to manage their dialogic exchange to (i) suspend their turn-at-talk due to addressees' intervention into the main frame of speakership (40%), (ii) plan forthcoming discourse segments (30%), (iii) monitor addressees (26%), (iv) hold their turns (1,5%), and for other less attended interactive roles (2,5%).

The most striking finding concerns turn suspension (40%). While this study does not systematically investigate the organization of signed discourse in depth, such as the practices for overlap resolution and timing (see de Vos et al. 2015, Girard-Groerber 2015), the results suggest that simultaneous talk in signed interaction "is not messy but organized" and that despite such overlaps, signers "continue [their conversation] while simultaneously signing for longer stretches than it has been shown for spoken interaction" without resulting in conversational trouble (Girard-Groerber 2015: 211).

4.2. Interactive functions of holds in LSFBS and BF conversations

4.2.1. Holds for turn-holding

In (1), signers are discussing the development of new pills that would replace cochlear implants in the future. S001 signs that it is better than implants and performs a two-handed Palm-Up (PU), which is then held for 909ms during S002's entire response. This hold at the end of S001's utterance maintains the same location, handshape and orientation parameters as the preceding PU and can

be construed as a way for S001 to show S002 that she is not relinquishing her signing turn yet and that as soon as S002 is done with her response, she will resume signing:

- (1) S001: STILL BETTER PT:DET LESS IMPLANT <PALM-UP> (909ms)

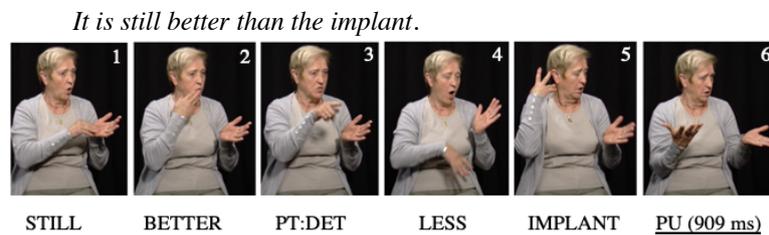


Fig. 2: LSFb Corpus, Task 04, S001 (04:57.134 - 05:00.644).

This hold does not function as a turn-yielding device as no change in signership occurs after its release. Instead, it shows that “the timing of the release is based upon the current [signer]’s meticulous on-line analysis of the co-participant’s conduct” (Groeber and Pochon-Berger 2014: 9), which is “key to understanding the interactional job that the hold performs” (2014: 10). This example displays how S001 knows what to expect from the sequence: First, in terms of “what should come next as relevant action (e.g., an answer to a question)”, and “in terms of specific content implemented through this action (e.g., the appropriate answer)” (2014: 9).

4.2.2. *Holds for turn suspension*

Holds may also occur in the regulation of turn taking when addressees intervene into the main line of action, which results in pushing the primary signer to suspend signership. Consequently, this kind of overlap leaves the main signer either to ignore the addressee’s intervention or to suspend their turn to allow it.

Below, S003 tells S004 how many constructions used to be made out of wood. S003 is in the midst of his explanation, producing the two-handed sign for TOO, when S004 intervenes to bring details regarding the type of wood: LIGHT and THIN. S003 repeats these lexical items as a means to acknowledge S004’s contribution and then attempts to move on with his story. As S004 raises his hands in space to interrupt, S003’s hands freeze retaining the orientation, location, and handshape of the end of the lexical sign TOO (790ms). This hold is released when S004’s

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contribution is deemed sufficient by S003. Next, S003 wishes to resume his story and does so by maintaining his hands on stage and by producing the sign AND accompanied by a repeated GSIGN (e.g., a manual movement) to redirect S004's attention to him (pictures 5-6 in Fig. 6).

(2) S003: WOOD **TOO (790ms)** LIGHT THIN AND GSIGN

There were more wooden objects before. The wood has to be light and thin, and...

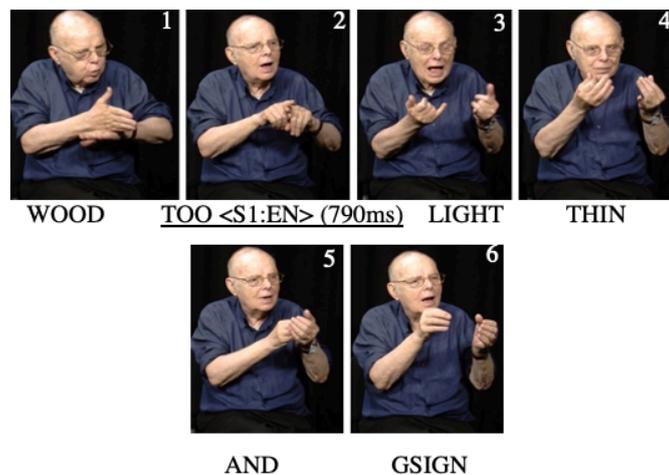


Fig. 3: LSFb Corpus, Task 15, S003 (06:11.746-06:15.206).

S004's intervention outlines the multiple back-and-forths that characterize signed conversations. The example makes visible the case of manual holds allowing the insertion of a sequence into a main line of action. Furthermore, in performing holds, S003 shows that he has not yet completed his utterance. In keeping his hands on hold, he acknowledges his addressee's contribution, which is "interruptive to or inserted into [his] anecdote rather than as the beginning of a completely different activity: In this way, [they] manage to put aside [their] own project for the moment while allowing [their] coparticipant to contribute" (Cibulka 2016: 460).

This has implications for understanding the functioning of the turn-taking system. If the holds performed by signers (S001 in (1) and S003 in (2)) were to

work as unique turn-yielding mechanisms only, then the subsequent unfolding of the line of action would result in the immediate release of the signer's hold as the next participant would directly take over the turn. This is not the case in either of the examples. Instead, the hold is maintained and its release is not random thanks to the locally fine-tuned online coordination of the social moves carried out by both participants in the exchange.

4.2.3. *Holds during collaborative word searches*

There are times when individuals suspend their utterance to search for their words, which, as a result, often implies that the manual articulators stop for a certain lapse of time. This type of hold with a planning function represented 30% of all interactive holds in the analyzed LSF sample. (3) shows how the momentary suspension of a sign is used by participants to seek help from addressees while searching for words, and the resulting interactional implications of this collaboration.

In (3), signers are engaged in a joint word search. S002 talks about past kitchen amenities and how past kitchen stoves used to work with charcoal. Yet, she experiences difficulties recalling the sign COAL. This is expressed through the use of a series of different manual holds that serve as an invitation for S001 to actively participate in the process of providing the missing item. After a number of failed attempts, S001 shows S002 the correct sign COAL (see picture 8 below).

(3) S002: BEFORE PT:LOC **HOLD** (338ms) **COAL** (534ms) **HOLD** (434ms)
STOVE+ **COAL(5x)** (301ms)

Do you remember charcoal stoves?

S001: COAL
Charcoal.

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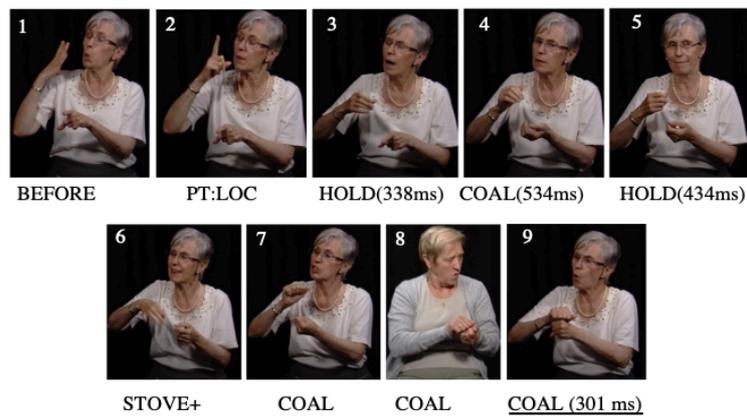


Fig. 4: LSFb Corpus, Task 15, S001 (07:02.554-07:09.059).

The first hold emerges in neutral space in front of S002's body (308ms) after producing the locative pronoun (PT:LOC) without yet adopting the handshape of the sign COAL. As she is about to perform the correct sign, her hands stop at the beginning (534ms) as a signal of her hesitation (picture 4), slightly change their orientation (picture 5) and remain motionless in front of her for 434ms. This last hold is accompanied by an interesting vague gaze direction that, together with the hold, adds meaning to the status of the word search activity which is still pending. Then, S002 changes tactics and articulates the sign STOVE to provide S001 with a hint for the missing sign. S002 repeats the sign for STOVE twice (picture 6). Next, she initiates a hand movement featuring the same handshape as COAL and simultaneously mouths the French word "charbon" (picture 7). Following all this information, S001 finally intervenes and shows S002 the end of the movement (picture 8) for the sign COAL, which S002 repeats five times as if to memorize the lexical item. Once given the correct form, S002 resumes her story.

These holds bring out how participants deploy manual and non-manual strategies in word searching activities, which indicate to their addressee that they are planning parts of their utterance while seeking help from them, making the planning activity more communicative and interactive.

4.2.4. *Holds for monitoring addressees*

Dialogical exchanges involve bilateral moves where each participant is active by monitoring not only their own actions but also their addressee's understanding and attention. (4) illustrates this by providing some evidence that the cessation of manual movement does not imply a cessation of the smooth unfolding of the ongoing interaction. This example is a continuation of (1) where S002 is telling S001 about the effects that those pills would have on the internal structure of the inner ear. S002 then clarifies what she means by making a comparison with the ear shape, viz., the part that looks like a snail:

(4) S002: PILL.MEDICINE IN-1H PT:LOC+ LIKE **[SNAIL (1280ms)]** CILIA
Those pills would make it grow back, inside the ear, inside the cochlea, you know the part in snail-shaped, cilia

S001: head nodding
mm mm

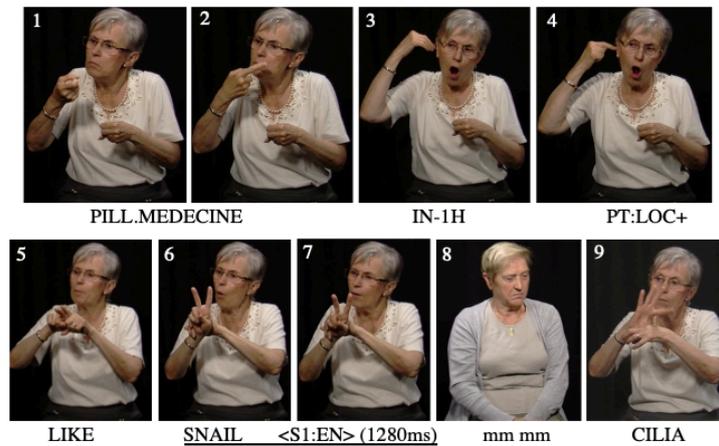


Fig. 5: LSFB Corpus, Task 04, S002 (04:30.703-04:38.777).

As S002 produces the sign *SNAIL*, she stops her hands for about one second to ensure that S001 understands what she is talking about. The suspension of her own signing thereby shows that she is attending to her addressee's needs, viz., smoothly following the conversation and understanding the topic.

Acknowledging the hold, S001 keeps S002 informed by producing a head nod as feedback. Once more, the fine-tuned association of the hold and its release are temporally coordinated: it is only when receiving S001's feedback that the hold is

released. In this case, the hold serves a monitoring function and does not work as a turn-hold strategy as the hands stop in mid-utterance and not at the end of the turn, as in (1).

5. Discussion and conclusion

The presented results reveal how location-, handshape- and orientation holds can work interactively in sign language conversation.

The main interactive functions found here have also been reported in previous literature for SLs (Cibulka 2016, Groeber and Pochon-Berger 2014, and Notarrigo 2017) as well as interaction in SpLs (Sickveland and Ogden 2012). A case in point was particularly visible in (1). Such holds in utterance-final position are typical question markers in spoken and signed conversations (Groeber and Pochon-Berger 2014). Future work is encouraged to explore holds not only within and across languages but across modalities.

Overall, this study challenges not only the assumption that meaning in multimodal language is associated with movement, as embodied by the stroke, pushing other phases (e.g., holds) to the periphery of the analytical lens, but also the common assumption that linguistic meaning is inherently propositional. Therefore, the present paper offers a shift away from this conception by showing that an absence of motion does not equal an absence of meaning. On the contrary, not only are these moments of sign halts meaningful, but they are also relevant at the level of conversation management. Yet, it is important to mention that these interactive accounts of holds should not be viewed in diametric contradiction to the other functional accounts of holds in language. Instead, the two sides should be viewed as complementary, and taken together, they allow for a better and more accurate depiction of the functioning of holds in language use.

Moreover, examining holds as part of the interactional practices that signers draw on in their discourse raises new theoretical and methodological challenges for revisiting and rethinking their ambiguous status in language theory. For instance, do holds still form part of the internal linguistic structure of a sign? Is it a linguistic or para-linguistic feature of SLs? And if so, what about their status in gesture studies? These issues await future work.

Ultimately the present work invites scholars to (re-)consider including less attended manual forms within a wider spectrum of language use, recognizing language as a situated communicative and inherently multimodal phenomenon.

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