Expression of time in French Belgian Sign Language (LSFB)

Aurélie Sinte

1. Introduction

From 1970 onwards, researchers started to study how temporal informa-
tion can be expressed in sign language discourse. Friedman (1975) initi-
ated the studies by assuming that American Sign Language (ASL), unlike
many spoken languages, does not have a verbal flectional system in order
to express tense. Alternatively, temporal information is encoded by relating
lexical items or grammatical elements to spatial time lines. According to
Friedman (1975), this time line is situated horizontally next to the signer and
is divided into three areas: the body and the area right in front of the signer
represent the present, the zone behind him designates the past, and the future
is located in the space in front of him. Along this line, the signer's body is
considered to be unmarked. By default, the body represents the time of utter-
ance. References are made by index finger pointing or by articulating lexical
signs on the line, i.e., the more extended the arm movement the more distant
the temporal reference. Friedman's description of this line was the first step
of a large number of studies exploring time expression in sign languages
(SL).

    This paper presents some results of a PhD research project dedicated to
the expression of temporal information in French Belgian Sign Language
(LSFB). The paper consists of two main parts. The first part provides a
global synthesis of studies conducted about time in various sign languages
including what has been observed in LSFB (Section 2). The second one
focuses on specific analyses of LSFB on the basis of a corpus of conver-
sational and narrative data. The main research question pertains to the way
temporal reference can be encoded in discourse. Is it lexically marked and is
that always the case? If not, how is temporal reference organised? From my
own research addressing these questions, it appeared that eyegaze behaviour
(directed at the interlocutor or directed at the hands) varies and the regularity
of these variations gives relevant elements in order to describe temporal

reference marking in LSFB. The role of gaze is subsequently illustrated by means of two different structures found in the corpus (Section 3). An additional short section (Section 4) maintains that, unlike what we find in the literature, the unmarked time is not necessarily the present time in the LSFB data.

2. Expressing time in sign languages: Previous studies

When studying temporal reference, a large part of the sign linguistics literature is dedicated to the time lines as metaphorical representations of time, so that they seem to be an unavoidable starting point in any description of temporal marking. Those lines are well known and Section 2.1. presents a summary of their usage in various Sign Languages (LSFB included). However, other elements are also used and mentioned: lexical items (Section 2.2.), some specific markers (Section 2.3.), pointing and weak hand holds (Section 2.4.) and non-manual features (Section 2.5.). For each element, I will briefly outline the situation in LSFB on the basis of the collected corpus.

2.1. Time lines

The use of the "back-to-front-timeline" to refer to past, present and future was first described for ASL but has also been found in many other Sign Languages, including: British Sign Language (BSL) (Brennan 1983; Woll and Sutton-Spence 1998), Danish Sign Language (DSL) (Engberg-Pedersen 1993), Sign Language of the Netherlands (NGT) (Schermer and Koolhof 1990), Flemish Sign Language (VGT) (Van Herreweghe, 1995; Vermeerbergen 1997), French Sign Language (LSF) (Maeder and Loncke 1996), Italian Sign Language (LIS) (Pizzuto et al. 1995), Quebec Sign Language (LSQ) (Lacerte 2001), Spanish Sign Language (LSE) (Soneira and Pereiro 2004) and Australian Sign Language (AUSLAN) (Johnston and Schembri 2007). In those various descriptions, the line receives different names: line A (BSL), deictic line (DSL) or basic line (LSE), etc. This back-to-front-timeline is usually the one mentioned first, but other lines are described as well as shown in Figure 1.
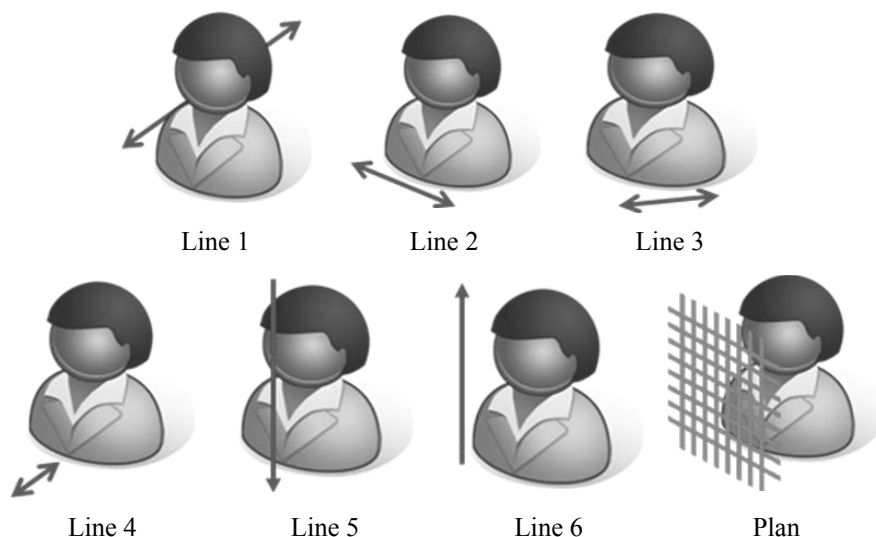
Figure 1. Time lines found in different sign languages

On line 1 (cf. Figure 1), as we said above concerning ASL, the past is situated behind the signer's body, the present is right in front of him and on the body itself, and the future is located in the area in front of the signer. The movement of the signs articulated on this line determines how far removed the reference is. If the movement is distant from the body, the time reference is remote, either in the past or in the future. This line is linked to the western conception of time (among others, Woll and Sutton-Spence 1999; Maeder and Loncke 1996) in which the past features as something we leave behind us and we cannot go back to while the future is a path we are walking on. This representation is not specific to Deaf culture; it is widespread in spoken languages as well, as can be illustrated by the metaphor the "future is ahead" (Taub 2001: 115). The iconic characteristics of sign languages have been widely demonstrated and explained, but this metaphor is not specific to those languages. Spoken languages also have various expressions using space in a metaphorical way to express temporal references, as in *"the deadline is approaching, we are getting close to Christmas, time flows by, I can feel a headache coming"* (Evans 2005: 61, 66). Although it is less common, some cultures (for instance Chinese and other oriental cultures (Lacerte 2001)) represent the future behind the body because we cannot see what is coming while we know the events that occurred in the past and we can have seen them. So in those cultures the past is situated in front, i.e., visible and known.

Line 2 is used in order to situate a sequence of events. The point of reference is not the present embodied by the signer but an event (or a more or

less precise date) which must be explicitly given in the discourse. Other events are situated relative to this point. The line is oriented from left to right (comparable to the written form of western languages) and is parallel to the signer's body. References located on the left side are anterior to those located on the right side.

Line 3 is situated on a diagonal axis embodied by the non dominant arm from the elbow to the fingers. The use of this line varies from one SL to another: situating events related to a reference point mentioned in the discourse (DSL, Engberg-Pedersen 1993), expressing calendar units (BSL (Woll and Sutton-Spence 1999) and LSQ (Lacerte 2001)) or articulating signs like BEFORE or LATER (in LSFB for instance).

Line 4 constitutes a blending of the three first lines, which is why it is called a "mixed line", a name that was first coined in DSL (Engberg-Pedersen 1993). It is perpendicular to the signer, right in front of him, in the middle of his chest. Periods or sequences situated on this line are always perceived from an anterior perspective. Events are seen coming in a very near future. Using this line, the speaker introduces a specific point of view regarding the events.

Not many studies mention the existence of line 5 (exceptions are NGT and LSQ). It is called the "top-down line" as it is a vertical line in front of the signer's face. Days of the week are located here when information is organised in the form of a week's schedule. Monday is then signed at the top of the line and Sunday at the bottom.

The sixth line is a time line on which the growth of an individual from child to adult is expressed. In contrast to 5, it is oriented from bottom to top. Signers frequently use this line when they talk about the major events, like studies and so on, in the life of an individual.

Finally, calendar units (comparable to line 5) can be organised on a plan rather than a line making use of two dimensions in front of the signer. This plan can be used as a schedule of a week or as a schedule of a year. In the first case, the first dimension (from top to bottom) allows the signer to give information about events occurring at different moments in a day (morning at the top and evening at the bottom). The second dimension (from left to right) represents every day of a week (from Monday to Sunday) so that there is one column for each day. In the second case (also mentioned as a diagram in Sallandre 2007:120), every vertical column represents a month. The beginning of the month is located at the top and the end at the bottom.

Not all the lines described above have been described for all the sign languages mentioned. For BSL, for example, lines 1, 2, 3 and 6 have been described (Brennan, 1983; Woll and Sutton-Spence 1998). Lines 1 (deictic),

2 (sequential), 3 (anaphoric), 4 (mixed line) and the plan (calendar plan) have been used in DSL (Engberg-Pedersen 1993). NGT uses lines 1, 2, 4, 6 and the plan (Schermer and Koolhof 1990). Lines 1 and 2 are respectively named basic and secondary lines in ESL (Soneira and Pereiro 2004). Researchers on LIS (Pizzuto et al. 1994) mention line 1 as an axis determined by the fact that the past is situated behind the body and the future in front of it. In LSQ (Lacerte 1993) uses of lines 1, 2, 4, 5 and 6 have been observed. Johnston and Schembri (2007) confirm lines 1, 2 and 3 in AUSLAN but they do not recognize the existence of line 6. Johnston (1989) even contests the description of this structure as a time line. According to him, this axis is only used with lexical items associated with the growth of individuals and has no link with a time line. He makes the argument that if the axis is used upside-down, it signifies that somebody is becoming smaller and is never a reference to the past.

In LSFB, I found uses of lines 1, 2, 3, 4, 6 and the plan.

Figure 2. TWO WEEKS FUTURE (line 1)

Figure 3. (from) MONDAY (to) SUNDAY (line 2)

Figure 4. BEFORE$_1$[1] (line 3)

Figure 5. SOON (line 4)

Figure 6. TIME PASSING / GROW (line 6)

Figure 7. TWO PERIODS OF TIME (Tuesday from
8:30 AM to 10:30 AM and from 16:00
to 18:00) (are) FREE (plan)

2.2. Lexical items

In this paper, lexical time markers are understood as signs articulated by the hands which convey temporal information. Numerous studies on various Sign Languages mention the usage of this kind of signs (LSQ, ASL, BSL, LSE, NGT...). In LSFB, this includes signs such as 1) YESTERDAY, TOMORROW, AFTER, BEFORE and 2) calendar units such as YEAR, MONTH, DAY, etc.
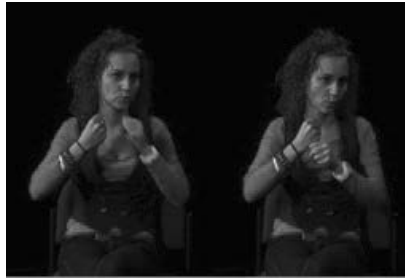

Figure 8. YESTERDAY   *Figure 9.* YEAR

Figure 10. THURSDAY

Many of those signs are articulated in space on the basis of the "time is ahead" metaphor (see above). Variations expressing proximity or distance of the references are marked by bodily movements and other non-manual features (such as facial expression) (Baker and Cokely 1980).

Some lexical items bring up another orientation of time. This is, for instance, the case of the sign BEFORE$_1$ in LSFB (as illustrated in Figure 4). The past is situated on the left of the signer's body and the future on the right.

The signs YESTERDAY and BEFORE$_1$ are respectively associated with lines 1 and 3.

In sign languages such as NGT, LSE, LSQ and LSFB, most calendar unit signs can receive two different modulations: a movement can be added to the base form and they can be modified by means of number incorporation in the

handshape. The two modifications can be combined. Consider the sign YEAR (LSFB) in the example below:

Figure 11. ONE YEAR

Figure 12. FOUR-YEARS-AGO

2.3. Specific markers

Baker and Cokely (1980) have noted in ASL the existence of certain "specific" markers, viz. WILL, FINISH and NOT-YET. In LSFB, such signs are also used as in Figures 13, 14 and 15.
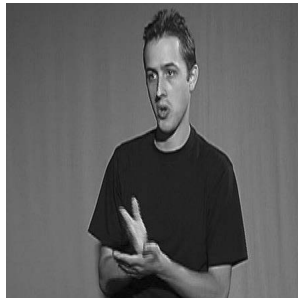

Figure 13. NOT-YET

Figure 14. FINISH[2]

Figure 15. WILL

2.4. Pointing

Friedman (1975) is the first author to mention that index pointing can be used for temporal reference. The past and future are marked by pointing at the areas situated respectively behind and in front of the signer. According to her, this kind of pointing is placed on the time line (see line 1 in Figure 1). She claims that pointing can be combined with lexical items but in these cases, the pointing sign is considered as redundant.

In LSFB, pointing is also very common in temporal marking. When it is associated with hand holds, it is used to maintain temporal references in discourse. This will be discussed further down. To illustrate, here is one screenshot of the sequence developed in Figure 27.

Figure 16. Pointing sign hold (a date)

2.5. Hand holds

Baker and Cokely (1980) have found referential uses of the weak hand. Signs such as BEFORE, AFTER, NEXT and FROM-NOW-ON are produced with both hands but each hand has a different function. One of the hands (in most cases, it is the non-dominant hand of the signer) becomes the reference point and is maintained in a point of space depicting a temporal reference while the other hand indicates a separate moment relative to the time marked by the first hand hold. The same structure has been observed in LSFB. It will be expounded on further down (Section 3.2.2.) and linked to eyegaze behaviour.

2.6. Non-manuals

In addition to information conveyed by the hands, temporal marking is also indicated by non-manual elements, i.e., facial expression and body movements.
   Baker and Cokely (1980) describe the role played by facial expression and shoulder movements in the expression of what they call non-manual adverbs in ASL. The authors say that the behaviour of the cheeks (puffed or hollowed), of the eyebrows (frowning or raised), of the eyes (wide open or nearly closed), of the lips and the mouth (pursed or open) and so on, participate in the construction of temporal references. For instance, puffed cheeks signal that the temporal reference is quite distant from the present, whereas a temporal reference very close to present is indicated *by raising the cheek and side of the mouth* (Baker and Cokely 1980: 177–179). They note that this global facial expression is pretty much tied in with shoulder movements. The shoulder of the signer moves forwards and/or upwards for references to the future while movements backwards refer to the past. The amplitude of the movements and the intensity of the facial expression together mark the time reference. The more intensive the movement, the closer the time reference is to the present both with a movement forwards and backwards. But it seems difficult (if not impossible) to describe exhaustively all the variations of facial expressions and link them one by one to temporal significations. Non-manual behaviour in LSFB does not differ from the description of non-manuals in others SLs.

Figure 17. RECENTLY

Figure 18. VERY-RECENTLY

In these figures, manuals are completely similar but the meaning of the signs differs. Figure 17 shows an unmarked form of the sign RECENT. The face and body are in neutral position. It signifies a temporal reference undetermined in the recent past, not specifically close or distant from the present. Figure 18 illustrates the role of non-manuals. The facial expression is emphasized (eyebrows raised and lips stretched) and the shoulder moves forwards. In this case, the sign is understood as VERY-RECENTLY. The reference is considered as very close to the present.

2.7. Remarks on the basis of LSFB observations

Besides the description of the features developed above (time lines, lexical signs, specific markers, pointing, hand holds, facial expression and body movements) which are overall quite similar for LSFB, in the literature, we find additional comments about time expression. Two of these comments will be discussed here because with respect to LSFB some modification seems to be necessary. First, it is widely accepted (Engberg-Pedersen 1993;

Lacerte 1993; Soneira and Pereiro 2004) that the preferred way to organise different references to time is the chronological order of events. The sequence of events in discourse tends to reflect their real succession. It supposes that the signer knows exactly, in advance, what he is going to say so that he is able to avoid any flashback or anticipation. This adherence to chronology seems to be common. It has been observed in DSL, VGT, LSQ and LSE, as well as in LSFB. All the narratives in the data[3] (which make a total of 21 sequences signed by 8 different signers and a total of 70 minutes recording) are recounted in chronological order. But the conversational data (the majority of the corpus) also shows examples of events told in an order which is not chronological. One of the tasks proposed to the signers is to explain four events organised in a schedule on a slide. Three of the four participants do not use chronological order to situate the events. Since they can see all events on one slide, it was expected that they would follow the chronology but for three of them, this is not the case. The example fully presented below (Section 3.2.2, first example, Figure 27) illustrates that non-chronological order.

Secondly, it is generally considered (Friedman 1975; Cogen 1977; Baker and Cokely 1980; Schermer and Koolhof 1990; Soneira and Pereiro 2004) that, when there is no explicit marking of time, the time by default is the present. This leaves us with at least two questions: firstly, what do we call "no explicit marking of time" and secondly, in the absence of any mark, is the point of reference always anchored in the present? Indeed, in narratives, why do we consider the discourse to be in the present? In the cartoons of the corpus, there is no clue as to when they happen and the signer has no reason to specify the time. But there is no argument to say that no mark implies that the story is told in the present. Analyses of spoken languages in which the use of a verb necessarily implies temporal marking may have influenced the description in sign languages. In French for instance, story-telling can be done in the present tense as what is called a "narrative present" which is used as an undetermined time and is typical of stories. But this story time might be different and tales can also be told using the imperfect tense. So, in LSFB, when there is no sign, no item, no facial or corporal expression which gives information about time, the discourse is considered as unmarked. Criteria to distinguish between present tense and unmarked time have to be discovered and described. A first approach will be proposed in Section 4.

3. Analysis of LSFB data

Beside the inventory of the elements involved in temporal marking, it seems relevant to focus on how those elements combine to organise temporal references in different types of discourse (viz. monologic narratives *vs.* conversations in this research). Within the LSFB data, I noted that two features (i.e., eyegaze and hands) are related to each other in such a way that, together, they anchor the temporal landmark.

3.1. The data

The corpus used in the present study is composed of various data. A first set of videos was recorded in June 2010. In that set, there are two distinct parts. The first part[4] is composed of four signers interviewed by a deaf informant on personal topics (job, studies, etc.) and filmed with three cameras (one facing each speaker and a wide view of both). The second part deals with the same four signers who are looking at a powerpoint presentation consisting of pictures, videos and schemata related to temporal information (schedule, short cartoons, etc.). They are asked to sign what they see[5].

Figure 19. First part of the videos with a deaf interviewer.

Figure 20. Second part with the powerpoint presentation.

A second set of videos was recorded in November 2011. Fourteen signers participated in this data collection setting. They talked in pairs, responding to two series of 21 questions (about various subjects such as history, culture, current affairs, personal activities and hobbies...) submitted in LSFB (signed by a native signer) on a screen next to one of the signers (they changed position after the first series of questions). Thanks to this setting (absence of the hearing researcher, no powerpoint presentation on a screen, questions signed by a native signer and the variety of the topics) those data are much more spontaneous than the data of the second part of 2010 and the dialogues between the two informants are less formal.

Figure 21. Arrangement of November 2011 recording.

In addition to those two principal sets, colleagues from the University of Namur have been kind enough to allow me access to their previous videos recordings (only one camera facing the signer) which consist of four version of the same cartoon ("Illusion") signed by four different people[6] and six interviews (for six different signers) about their personal and professional lives[7].

Figure 22. Cartoon "Illusion".

Figure 23. Interview.

3.2. Analyses

A first sample of the data (called *sample 1*) has been analysed consisting of 4 hours and 25 minutes of videos including conversations and narratives, involving 7 signers (aged from 27 to 60), taken from both corpora (4 signers from the 2010 corpus and 3 signers from the 2011 corpus). The question that led the research focused on how temporal references are expressed and organised in discourse. Temporal information such as dates, periods and events are expressed in various ways. The goal is to bring to the foreground how they are encoded and how they are linked to one another. During the analysis it became clear that a combination of the behaviour of the eyegaze and the hands reveals elements relevant to a description of temporal references. The focus is on the role of eyegaze and this role is observed through two distinct structures noted in the corpus. The first one, which has not yet been described in the literature, is a comparative structure of two moments in time in which the repetition of an element produces a bracketing effect. The second one is the pointing sign hold. This structure is better known but has not yet been thoroughly studied with respect to temporal information and has not been studied at all in LSFB. The two structures have been chosen because of their recurrence in the data.

3.2.1. *Comparison of two moments in time*

In various sequences, comparisons between two moments or periods of time have been noted as illustrated in Figure 24. Eleven occurrences of this construction (signed by four different signers) have been found in *sample 1*.

BEFORE$_1$ NOW   BEFORE$_2$

Figure 24. Comparison between two periods (LSFB2010 BS c1.00.18.31.730 – c1.00.18.55.428)

Here are the glosses and the translation of the whole sequence (which is too long to be illustrated with screenshots):

BEGINNING **BEFORE₁** INTERNET NOT YET BEFORE₁ 1994 UNTIL 2000 PERIOD MORE GROUP PROFESSIONAL DOWNLOAD NO BUY PART YOU WANT ME COPY GIVE BUT YOU BUY WHAT YOU GIVE ME EXCHANGE TRY EXCHANGE COMMUNICATION THINK SAME BUY NO FREE EXCHANGE **NOW** MORE AND MORE INTERNET DOWNLOAD EXCHANGE NO DOWNLOAD ALL SIGNING FEWER AND FEWER MEET SOMETIMES SIGNING A BIT THAT'S ALL **BEFORE₂** MORE YOU HAVE WHAT EXCHANGE SIGNING MORE

'At the beginning, before the Internet, that is to say before a period situated between 1994 and 2000, it used to be groups of professionals. We didn't download (the software) but we bought some. You want me to give you a copy? Ok, but what did you buy? You give me yours and I give you mine. There was exchange and communication. We thought the same. We didn't want to buy but exchanged for free. Now, we download more and more. We can download everything so there is no more exchange. So the signing (about software) is increasingly rare. You meet someone sometimes and you sign a bit but not a lot. Before, we signed more thanks to the exchanges.'

In the example shown here, the signer compares how people shared information about computer programs before and after the spread of the Internet that is to say (according to the signer) before and after 2000. To explain the differences, the signer begins by giving dates. His explanation is divided into three parts. First, he starts with dates associated with the sign BEFORE₁ (i.e., the period between 1994 and 2000; cf. also endnote 1) which is the second sign of the sequence indicating that the comments he makes are related to the period before the advent of the Internet. Then, the sign NOW is quickly realised and followed by information about actual practices regarding computer programs. The lexical sign is brief but is salient enough to mark the distinction between the two moments. And finally, the speaker goes back to the previous period in order to repeat how the situation was before 2000. This third part is introduced by the sign BEFORE₂. Each of the three parts contains a lexical time marker. In this case: BEFORE₁, NOW and BEFORE₂.

The use of this type of structure "embraciates" information. The bracketing consists of a repetition of an element A (or a sequence of elements) which flank another sequence of elements B (for a related topic, see Meurant 2010). For temporal constructions, it is the first time that this kind of repetition (A-B-A) is described. The particularity in the present example is that the repeated element has two distinct forms: BEFORE₁ and BEFORE₂. Both signs are used to talk about the period before 1994–2000 but they have different implications in terms of reference point and enunciation. The sign BEFORE₁ is produced using both hands. The weak hand holds and anchors the refer-

ence point which is given directly after this sign (1994 UNTIL 2000 PERIOD) while the dominant hand moves backwards on the arm to indicate the next information is relative to the period that precedes the point of reference, namely before 2000. The sign BEFORE$_1$ cannot be used alone, i.e., without an explicit lexicalised point of reference, otherwise it is impossible to grasp which moment or period the signer is talking about. It is part of a constituent composed by at least BEFORE$_1$ and a lexical sign. But the explicit element is sometimes given before and sometimes following BEFORE$_1$. Hitherto, a preference for a specific order or syntactic differences between the two possibilities has not been found. The sign BEFORE$_2$ is articulated only by the dominant hand. It is characterised by a backwards movement over the shoulder. Unlike BEFORE$_1$, BEFORE$_2$ can be used alone, without any lexical item.

Furthermore, the eyegaze behaviour provides an insight into the two signs BEFORE. In the first case, the manual articulation of BEFORE$_1$ is associated with a gaze cut off from the addressee and resting on the hands (see pictures above), and more precisely on the point associated with the reference (1994–2000) indicated by the contact point of the two hands. In this sequence constructed with BEFORE$_1$, the eyegaze strengthens the reference (given explicitly by the dates) anchored in the signing space by the hands.

Then, after having explained what happened before 1994–2000, the signer describes the current situation. The sign NOW introduces comments about a period between 2000 (transition moment) and now. This period is linked with a kind of general present and so associated with the time of speaking. And in this case, it co-occurs with an eyegaze oriented towards the addressee during the articulation of NOW.

Finally, the signer uses BEFORE$_2$ in the third part of the structure with the eyegaze on the addressee, contrary to the first sequence (with BEFORE$_1$). Also, there is no manual sign connected to BEFORE$_2$. At that moment, the reference point (which has just been defined) is the general present equivalent to the time of speaking. The speaker repeats briefly how the situation was before the transition moment i.e. before a period commencing in 2000 and which continues now in the present. The repetition (A-B-A) therefore occurs at a semantic level: the signer mentions what the situation was like before 1994–2000 twice, but he introduces the two occurrences by means of two different signs with the same semantic meaning.

A second, very similar example has been found in the videos of another signer.

FASHION   CHANGE

'Fashion has changed.'

BEFORE₂   TELEVISION   *A* BIG *FORM*

'Before, the television was large.'

NOW   TELEVISION   FLAT (SCREEN)

'Now, the television has a flat screen.'

BEFORE₂   CHANGE

'Before, it was different.'

Figure 25. Comparison between two periods (LSFB2010 LMU c1.00.16.55.279 – c1.00.17.06.908)

The signer compares television set designs at two moments in time. She explains that before, the televisions were big and bulky but now the screens are smaller and thin. The repetition of "before" produces a bracketing effect. In this case, contrary to the previous example, she uses the same sign BEFORE$_2$ twice. This sign is not linked to any date or any lexical item. There is no precise information about the time the signer refers to. As said for the previous example (Figure 24), the signs BEFORE$_2$ does not need to be correlated with an explicit reference point. Here, the signer simply refers to a contrast between the present and the past. She uses the same signs BEFORE$_2$ but in this example, the passive hand participates in the anchoring of the reference and there is a slight difference between the two occurrences. The first time, the passive hand is an index handshape which can be regarded as a spreading of the lexical sign TELEVISION which precedes BEFORE$_2$. The second time, the same spreading phenomenon occurs. This time, the handshape of the passive hand is similar to the handshape used to represent the flat screen of modern televisions.

With respect to eyegaze, the same observation can be made on the basis of this second example. The sign BEFORE$_2$ does not require a gaze on the hands because it is not linked to any lexical item articulated by the hands in signing space and the reference point is the time of the dialogue so the gaze is oriented to the addressee.

Analyses of this kind of sequences by means of the observation of eyegaze and hands combined give a new approach to the study of temporal expressions and time lines. In the examples discussed above, temporal reference signs are articulated on lines 1 and 3. BEFORE$_1$ is linked to line 3 while BEFORE$_2$ and NOW are articulated on line 1. The role of eye gaze in temporal marking is focused on as it provides an anchoring of the reference point. When oriented to the interlocutor, it signifies that the temporal landmark is the time of speaking (even if, as in the first example, the present has to be understood as a large period i.e. from 2000 to now). Line 1 is called a deictic line (Engberg-Pedersen 1993) and indeed the deictic function of the signs articulated on this line is endorsed by the eye gaze. Line 3 does not require this kind of eyegaze, on the contrary, temporal signs on this line are articulated together with an interruption of the gaze on the addresse. Signs of line 1, combined with a gaze on the addressee activate a landmark determined by the time of the utterance while signs articulated on line 3 supported by a gaze (even briefly) cut off from the addressee and oriented on the hand(s) activate a landmark determined explicitly in the discourse and which can be any time, past, present or future. Clearly, eyegaze behaviour is significant.

3.2.2. *Temporal landmarks as pointing sign holds: a buoy*

The data show another structure involved in temporal marking, i.e. the pointing sign holds. This type of pointing has been described as a "buoy" by Vogt-Svendsen and Bergman (2007). The definition of buoys is based on Liddell:

> "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. Since they maintain a physical presence that helps guide the discourse as it proceeds I am calling them *buoys*. Some buoys appear only briefly whereas others may be maintained during a significant stretch of signing." (Liddell 2003: 223)

Liddell presents four different types of buoys: list buoys, theme buoys, fragment buoys and pointer buoys (for more about this topic, see Liddell 2003 p. 223–260). Vogt-Svendsen and Bergman (2007) add yet another type of buoy, i.e., the point buoy, and maintain that "buoys typically represent discourse entities and, as such, can be pointed at, and have verbs and pronouns directed towards them. The POINTER buoy (an extended index finger), however, is special in that it *points* towards an entity, rather than represents it." (Svendsen and Bergman 2007: 217)

Articulated by the weak hand, it can be realised with two different handshape: a flat hand or an extended index finger. In the temporal context, the point buoy indicates a landmark and the signs that follow are situated in relation to it.

The same type of pointing signs has been identified in the LSFB data. Once again, it is the correlation between eyegaze and hands which guide the analysis and the description of this pointer buoy in LSFB.

In the next example, the signer explains the schedule presented in Figure 26.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4 2pm: dentist	5	6	7
8	9	10	11	12	13 10am: hairdresser	14
15 Holidays	16 Holidays	17 Holidays	18 Holidays	19 Holidays	20 Holidays	21 Holidays
22	23	24	25	26	27	28
29	30 Friend's birthday	31				

Figure 26. March schedule.

The only instruction given to the signer is "explain what you see". We do not know whether March is in the present, the past or the future. The signer can choose the point of reference. One signer begins her explanation with the week off in the middle and she situates the other events in relation to that week. She decides to imagine a context and she adds a comment before starting the explanation. "You want an appointment in March? Wait..." and then she develops the schedule. Therefore, the point of reference she gives is the break week. She establishes that landmark with two pointing signs produced simultaneously by both hands pointing at the same locus and she maintains one of them with the passive hand. The buoy is held during almost the whole description. She interrupts the hold one time because of the articulation of the sign HOLIDAYS[8] which is most often signed with both hands and she stops at the end of the description, for the last event (March 30th: birthday) when she signs DATE, which also requires both hands.

R DOUBLE POINTING ONE WEEK HOLIDAY 15 (TO) 21 MARCH
L pointing----------------------------   ---------------------------------------

'I have got a break week from March 15th to 21st.'

R HOLIDAY PERIOD FROM TO 4 (before this date) BUSY DENTIST
L --

'March 4th is "busy", I go to the dentist.'

R 13 (after this date) HAIRDRESSER APPOINTMENT 10.00
L pointing----------------------handshape APPOINTMENT ---------

'March 13th at 10.00, I have an appointment at the hairdresser's.'

R 30 NEGATION DATE BIRTHDAY FRIEND
L ---

'March 30th, that's a friend's birthday.'

Figure 27. Pointing sign hold (LSFB2010 LMU 00.14.49.851 – 00.15.11.340)

Every times the signer gives a new date, she stops looking at the addressee and looks at her dominant hand and therefore at the area associated with the date mentioned. In the meantime, she maintains her passive hand as a pointing sign. This hold refers to the first date (the break week between March 15th and 21st) which is the reference point for the whole sequence. This pointing does not refer to a short and precise moment. It is not only a day but a whole week. As in the example above, the reference time is a period (more or less long as the case may be: a couple of years or a week) and not a given point in time.

The first appointment the signer describes is on March 4th and to situate it, she moves her right hand with handshape "4" backwards and to the left of the pointing hand. The dominant hand signs the new temporal information while the other hand maintains the reference point. As such she mirrors the representation of the elements on the screen. The same process occurs for the second appointment but in this case, the dominant hand articulates the sign "13" and moves forwards to the right of the pointing hand and is held there to indicate the situation of 13 in relation to 4 and the holiday which is still the reference point maintained on her weak hand. However, the handshape of the weak hand changes while producing the sign APPOINTMENT to two extended fingers (index and middle finger). The third date (March 30th) is also signed by the right hand but the left hand no longer engages in pointing, but there is a manual spreading (see Sáfár and Crasborn, this volume) of the sign APPOINTMENT (which at the same time might be related to a pointing sign because of the similar handshape and because the signer maintains the handshape while her right hand articulates the date MARCH 30TH).

With respect to time lines, this sequence can be regarded as a mixture of two aspects. On the one hand, the beginning of the sequence can be situated on time line 2. From the first sign DOUBLE POINTING to DENTIST (corresponding to the first eleven pictures), elements seem to be articulated on this sequence line (Engberg-Pedersen 1993). On the other hand, when she signs 13 (after this date) HAIRDRESSER, she maintains the buoy, which is still referring to the holidays (from 15th to 21st), but following the chronological order of line 2, March 13th is not situated on the right of the landmark. It is anterior to the reference point and not posterior to it, so it should be situated on the left, but this is not what we observe in the video. This can be explained by the fact that the signer is influenced by the calendar she sees on the screen (see Figure 26). On the picture, 13th is on the right side of 4th. This position determines the movement oriented to the right. The previous date she mentions is 4th and it is relative to this date that she situates 13th, adhering to the "plan" timeline. The last date (30th) she gives is again located on line 2. The signer articulates the

sign 30 forwards and downwards, in an area situated on the right (Figure 15, first picture of the last row). So, this sequence shows mixed uses of line 2 and the plan and not only of the plan as one might have expected for the whole description of the schedule. We also see that, again contrary to expectations, she does not follow the chronological order despite the fact that she sees all the elements on the screen. There is no apparent reason for mixing the dates but she does. She chooses a reference point (the holidays) and she situates the other events before and after regarding to this reference point.

However, the point of reference is given by the combination of the eyegaze and the hands. In this sequence, it corresponds to a moment defined explicitly in the discourse and not to the time of speaking. During the pointing sign, the eyegaze is directed from the interlocutor onto the passive hand. Interruptions of the gaze on the addressee occur every time a new date is introduced when pointing anchors the reference point.

A second example illustrates the same process. The March schedule is submitted to another signer. She explains the same events but in a different order. However, a pointer buoy occurs here as well.

R/L   TUESDAY   POINTING   MUST   GO

'Next Tuesday, I have to go to the dentist at 14.00.'

R/L   DENTIST   14.00   WHY

R pointing------------------------------------- TWO   WEEKS   FUTURE
L point---

'Because two weeks later,

R   I   GO   HOLIDAYS
L   ---------------------------

'I go on holidays.'

Figure 28. Pointing sign hold (LSFB2010 DM c1. 00.19.39.710 – 00.19.45.102)

A pointing sign occurs at the beginning of the example, directly after TUESDAY. In LSFB, it is a way to signify the proximity of the date, i.e. the next Tuesday.

There is no hold at this moment. Then the signer gives details about the event linked to the date (i.e., the appointment with the dentist). Next, another event happens two weeks later. She comes back to the first date represented by the index handshape with both hands pointing at the same locus (third row, first picture) and maintains that locus with the pointer buoy while the active hand gives new temporal information: first, the passive hand is fixed while the active hand moves forward in order to situate the two dates relative to one another and then the pointing is still held while the active hand continues to articulate three signs that express new temporal information (TWO WEEKS FUTURE). When she signs the pointer buoy, her gaze is oriented on the hands because this new reference requires the support of the eyegaze. The eye contact with the addressee is interrupted and the reference point is not the time of speaking.

4.   Unmarked time *versus* present time

Through the analysed data, it appears that the ambiguity between "present tense" and "unmarked time" is due to the fact that both occur in a context in which there is no explicit temporal marking (explicit marking would be any manual items such as lexical signs or pointing and other manual handshapes which can also be used for pointing). But the absence of explicit marking does not necessarily imply the present time by default. When there is no morphological or syntactic element that warrants a temporal interpretation, the reference time is either undefined or it has to be understood from the context and/or from the semantics of non-temporal lexical signs. Such analysis can be suggested for all the narratives described in Section 2.7 (70 minutes of 21 sequences, 8 signers). All those cartoons (see endnote 3) are signed by all the informants without any explicit marking and the time of the story is not defined. That is why they are considered as temporally unmarked sequences (but they do follow the chronological order of events). Moreover, in the conversational data from the analysed sample, there are a number of sequences in which time is also unmarked. A part of the conversation between two informants (in th corpus of November 2011 SD and SdH 01.39.13.599 to 01.46.34.290 that is more than 6 minutes) concerns holidays and good or bad memories about travelling. In this sequence, one of the signers talks about a good memory (01.40.26.154 – 01.43.35.750) and about a bad one (01.43.39.624 – 01.44.30.300). During those 4 minutes, the signer produces no explicit temporal marking: no lexical item, no pointing, nothing that could be analysed as temporal anchoring. But in those cases, it seems

impossible to consider the reference point as the present time. There is no misunderstanding between the interlocutors. They are talking about memories so they obviously talk about the past. The context and the sign MEMORY which appears in the question of the first signer seem to give sufficient information about the temporal reference point. This is an example of unmarked time which cannot be associated with the present time.

5. Conclusions

In this paper, issues with respect to temporal expression have been focused on. First, at the level of discourse, the role of eyegaze has been underlined through two different structures involved in the marking of temporal information. On the one hand, the semantic repetition of a period (or moment) which implies an embraciating construction in three parts (A-B-A). On the other hand, there are buoys functioning as anchors by comparison to which new temporal points are situated.

The analyses confirm that the description of the time lines system does not provide all the elements involved in temporal marking. In fact, the anchoring of a reference point also depends on where the gaze is oriented to when the hand(s) articulate(s) temporal signs or maintain(s) pointer buoys. When the point of reference is the time of utterance, the eye gaze is oriented to the addressee while the hands articulate the temporal sign (e.g., NOW in the first extract) But the present can be a longer period including the current moment of discourse (e.g., in the same example, "now" refers to the period between 2000 and now). On the contrary, when the reference is linked to a point defined in the discourse and which is not concomitant with the time of speaking, the eyegaze is briefly cut off from the addressee and oriented towards the hands (as in BEFORE1 in 3.2.1.), or towards the hand which is signing the new temporal information (as in MARCH 4ᵀᴴ in 3.2.2.).

Parallel to those statements and analyses, some points still need to be thoroughly investigated: among other things, the notion of adverb, the definition of aspect and the relationship between temporal and aspectual marking. This is the direction I expect my doctoral research to take next.

Acknowledgments

Notes

1. I use the gloss BEFORE1 (in contrast with BEFORE2) because in LSFB, different signs are glossed by the same French word "avant". (Meurant and Sinte, 2013)
2. This marker (FINISH) has already been studied by Meurant (2008) and analyzed as a morphological component of the verb.
3. There are 4 different versions of the cartoon "Illusion" (the cartoon lasts 11.30 min), 4 of the cartoon "For the birds" (03.23 min), 4 of "Knick Knack" (02.00 min), 4 of "The pink lollipop attack" (04.41 min) and 5 short cartoons of "Wall-e" (02.30 min).
4. The data collection system of this corpus is based on the Creagest Project (2007–2012). See Balvet et al, 2010.
5. This part of the recorded data presents a major problem. The power point presentation influences the orientation of the signers' eyegazes. They need to look at it before and during signing. A part of those videos are therefore not usable. Besides, the fact that the interviewer is a hearing researcher influences the answers of the signers who are tempted to adapt their signing in function of their non-native interlocutor, whether they do so consciously or not. For at least both reasons, new data has been collected in a more appropriate manner resulting in the November 2011 corpus.
6. i.e., video recorded in the context of the research group on LSFB for bilingual teachers in 2004.
7. i.e., the corpus composed for the dictionary of LSFB project funded by "Le prix Clinique de Bel Oeil".
8. There is a second instance of HOLIDAY (first picture, second row) in which the passive hand is not involved.

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