Visible bodily action in disfluencies when learning to sign. A classroom study of non-native sign language*

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Abstract: In this paper, I examine the role of visible bodily action in a French Sign Language (FSL) classroom. With data from an authentic production exercise, I analyse how a novice signer communicates with her body to simultaneously produce utterances in FSL for a camera while maintaining a pedagogical interaction with her instructor. With frame-by-frame microanalyses of two examples, I use ELAN transcriptions and drawings to illustrate how the student deploys various aspects of visible bodily action to overcome her disfluencies and make progress in learning to sign. Although preliminary, my findings offer new insights to non-native signing in a classroom and highlight the role of multimodality in language learning.

Keywords: Sign language; gesture; disfluency.

Introduction

When people who are not Deaf begin to learn sign language, they face the challenge of communicating solely in the visual-gestural modality. This challenge ranges from forming complex manual signs that require more dexterity than most conversational gestures, to using everyday facial expressions to convey grammatical information. In lab studies of non-native signing, linguists have shown how hearing people transfer some aspects of "gestural skills" to help them acquire signs (TAUB et al., 2008). Other experimental studies have shown how gestures can be a "source of error"

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when novice signers produce their first signs (CHEN-PICHLER, 2011). In this brief paper, I will examine how a sign language student uses the body to communicate in the dynamic context of a sign language classroom.

By analyzing a video clip of a student learning French Sign Language (FSL), I will demonstrate how the student combines various instances of "visible bodily action as utterance" (cf. KENDON, 2004) to simultaneously produce FSL signs for a camera and maintain a pedagogical interaction with her instructor. More specifically, while producing lexical and grammatical signs for a camera with her hands, the student uses other aspects of visible bodily action as utterance – especially head positions, eye-gaze, and facial expressions – to initiate interaction and solicit help from her instructor. This multimodal communicative strategy occurs specifically during moments of disfluency i.e. when the student struggles with a difficult sign. Since head positions, facial expressions and eye-gaze patterns are integrated elements of fluent signing, using them to interact with the instructor whilst signing introduces additional disfluency to the sign stream. However, I will argue that her strategy of mixing different aspects of visible bodily action serves a key function in the language learning process. My frame-by-frame microanalysis of two such instances reveals that the student combines gestures and signs to simultaneously present signs while expressing uncertainty about her linguistic skills and appealing for help from her instructor – crucial moments in the second language learning process.

First, I present a concise literature review to introduce non-native signing and indicate the need for a classroom study of sign language. I will then describe my methods for the analysis of visible bodily action during moments of disfluency and present a frame-by-frame microanalysis of two examples of disfluent signing. Lastly, I will discuss how the student's communicative strategy sheds light on the relationship between gestures and signs and highlights the role of multimodality in language.

Review of literature

Several studies have examined how a person's experience with gestures affects how they use sign language. These studies portray gesture as a potential source of both skill and error that a speaker may transfer to sign. Chen-Pichler (2011) asked English speakers learning American Sign Language (ASL) to view video clips of individual signs then repeat them back immediately. Focusing on handshape, she found that subjects reproduced the sign more accurately if the handshape of the sign was identical to that of a conventional gesture or "emblem" they used in their hearing community (in this case, American English)[1]. Taub et al. (2008) identified "sign language-like gestural elements" in co-speech gesture and designed an experiment to examine whether or not those elements transferred to sign among a group of learners of ASL. The authors found that aspects of the ability to make clear iconic gestures and use the space in front of the body coherently could be transferred to a number of skills in signing (respectively, to classifier constructions and referential uses of signing space). Further-

1 When the gesture handshape was similar but not identical to the sign handshape, Chen-Pichler (2011) found that subjects also transferred handshapes in producing the sign. Since this led to "non-target like formational features" in the sign, Chen-Pichler argued that "negative transfer" was occurring from gesture to sign and coded the production as an "error" (a term she restricted specifically to the context of the experiment).

more, subjects who gestured more frequently and accurately when speaking faired better when learning aspects of sign.

In addition to manual aspects of signs, sign language learners must also learn to use facial expressions and eye-gaze patterns to express grammatical information correctly. For example, a signer must use conventionalised facial expressions to indicate whether a statement is intended as a question, a hypothesis or a negation; and specific types of verbs require signers to direct eye-gaze accurately to precise locations of their signing space. In a survey of perceptions of sign language pedagogy, teachers of ASL rated non-manual signals as one of the most difficult features for students of sign to learn (McKEE; McKEE, 1992).

Several experimental studies have shown that hearing people struggle to acquire these non-manual aspects of signing. McIntire e Reilly (1988) studied how hearing people perceive and produce facial behaviours in ASL. They found that while hearing students can understand grammatical facial behaviours, they reproduce them with difficulty. Experience with affective facial expressions during speech apparently "encourages" the learners to pay attention to facial expressions during signing, but this experience is insufficient to reproduce facial expressions for sign language linguistically. According to the authors, in order to use the face accurately in signing, "the language learner must analyze and process the [previous affective] knowledge into linguistically meaningful units" (McINTIRE; REILLY, 1988, p. 451). Using an eye-tracking device, Thompson et al. (2009) compared the eye-gaze patterns of different signing populations during sign production in ASL. While the eye-gaze patterns of native signers were governed by the grammatical structures they were signing, those of novice signers were "dispersed across all possible spatial locations, including the spatial locations of discourse referents, but also toward the addressee, and crucially to non-associated locations in space" (THOMPSON et al., 2009, p. 404). Since the English speakers looked primarily at the face of their interlocutor whilst speaking during a similar task (93% of the time in this study [THOMPSON et al., 2009, p. 404]), Thompson et al.'s (2009) findings suggest that novice signers knew they had to use eye-gaze linguistically, but simply did not know how at the beginner stage.

These studies have pointed out some of the difficulties that arise when sign language learners begin to adapt their gestures to a linguistic system during experimental tasks. However, they have not considered the role that a person's gestures may play when learners acquire sign language in a more natural setting, such as an authentic sign language classroom. In the classroom data I will present here, the irregularities associated with non-native signing are also present in the way the learner signs: her manual signs are not always accurate, her facial expressions are often incongruent with the meaning of her manual signs, and her eye-gaze is scattered. However, in the data, these irregularities occur specifically when the student begins to struggle with some aspect of her signing, such as when she struggles to form a complex sign correctly or when she is unsure of a certain grammatical structure. In these cases, the irregularities that occur are not simple traces of the signer's experience with gesture. The gestures are her meaningful attempts to initiate interaction with her instructor and appeal for help. This dynamic process allows the student to simultaneously perform signs, monitor her production of them, and receive feedback from her instructor – elements that all emerge as important in the learning process.

Methods

I collected data during a class in French Sign Language (FSL) at the advanced beginner level in France[2]. In the video recording, a student with novice signing skills produces ten utterances in FSL for the camera. During this common exercise in sign language pedagogy, the student's instructor (who is Deaf) is sitting next to the camera to elicit the utterances with picture stimuli; she provides the student with feedback when necessary (Figure 1).

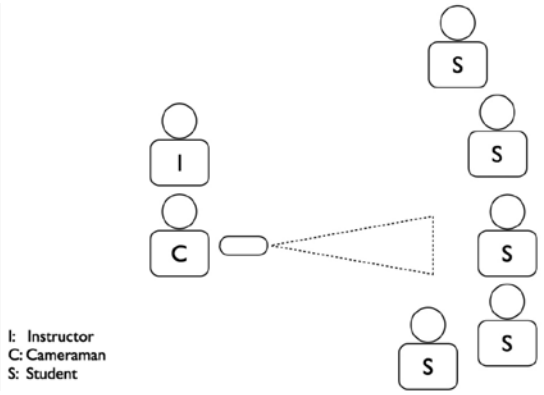

Figure 1 – Classroom set-up with camera

I imported the 2-minute video into ELAN annotation software and used Kendon's (2004) approach to "visible bodily action as utterance"[3]. This approach is based on the finding that expressive action of the body exhibits specific characteristics that mark those actions off as purposefully communicative to people co-present. When people observe others communicating, as Kendon (2004) reports, movements that they identify as "deliberate", "conscious", and "part of what a person is trying to say" display a set of kinesic characteristics:

> *Deliberately expressive movement was found to be movement that had a sharp boundary of onset and offset and that was an excursion, rather than resulting in any sustained change of position. For limb movements, deliberately expressive movements were those in which the limb was lifted away from the body and later returned to the same or a similar position from which it started. In the head, rotations or up-down movements were seen as deliberately expressive if the movement was repeated, or if they did not lead to the head being held in a new position, and if the movements were not done in coordination with eye movements* (KENDON, 2004, p. 12).

2 At the "advanced beginner" level, these students have learned individual vocabulary items for everyday subjects, such as greetings, occupations, transport, country names and nationalities, kinship terms, and sports. They have been taught sufficient grammar to order two or three signs correctly into a simple utterance, for example, by following the oversimplified rule that "the verb usually comes at the end". However, they have not yet received specific grammatical instruction or studied the different non-manual markers for grammar in FSL. Coincidently, I recorded the current data during their first grammar class, where they were learning to use negation, although this is irrelevant to the utterances I have selected to analyse.

3 ELAN software is an annotation tool designed for researchers working with video data (most notably, in sign language linguistics and gesture studies). In the ELAN graphical user interface, video(s) may be played at different speeds (including frame-by-frame). Analytical tiers can be created below the video feed for annotations of aspects of the video at each step of the video (such as action of the different articulators). ELAN can be downloaded free of charge from the website of the Max Planck Institute at http://tla.mpi.nl/tools/tla-tools/elan/.

Although Kendon was writing primarily about co-speech gestures, the "features of expressive action" he identified also characterize the visible bodily actions that constitute expression in sign languages. As Kendon (2008, p. 359) specifies, co-speech gestures and sign languages are both fabricated from visible bodily action as utterance, "but the *forms* and *functions* of these utterance actions are diverse and receive different kinds of elaborations" (cf. KENDON, 2004, ch. 15, italics orig.). By identifying all moments where the student purposefully used her body to communicate, I avoided *a priori* distinctions between gestures and signs, identifying all actions that appeared to communicate on the base of their "utterance-like" movement characteristics.

Next, I used Kita, Van Gijn e Van Der Hulst's (1998) method to code these actions into the different movement phases they exhibited. These phases include preparations, expressive phrases, and retractions. The "expressive phrase" of the action is "the semiotically active phase" (KITA; VAN GIJN; VAN DER HULST, 1998, p. 27), which may include a stroke or an independent hold (where a "hold constitutes an expressive phase by itself", KITA; VAN GIJN; VAN DER HULST, 1998, p. 27). Strokes may be "flanked" with holds; a "pre-stroke hold" occurs before the stroke and a "post-stroke hold" occurs after it. I also coded moments where the hands were at rest. In a separate tier, I filtered out all the different movement phases and included only the expressive phase (i.e. either a "stroke" or an "independent hold")[4].

To associate these phases with meaning, I used my own ethnographic information from the classroom, including knowledge about the signs the students had learned and notes about the types of sentences that the teacher was trying to elicit. A certified FSL interpreter helped me to confirm my categorization of the expressive phases as either lexical and grammatical aspects of FSL or attempts to communicate with other aspects of visible bodily actions. For actions that did not correspond to an element in French Sign Language, I described the form of the action and attempted to identify its function, bearing in mind distinctions between different types of gesture functions (cf. KENDON, 2004, ch. 9-13).

In additional tiers for head position, facial expression, and eye-gaze, I annotated the salient physical characteristics of each action. For the head, I coded position, e.g. straight, tilted, bowed forward, thrown backward; and identifiable gestures, e.g. head shake, head sweep, and head nod (cf. McCLAVE, 2000). For facial expression, I identified the salient articulators (eye-brows, cheeks, mouth), actions with those articulators (e.g. knitted brows, puffed cheeks, pout), and overall facial expression (e.g. inquisitive, confused, and neutral). For eye-gaze, I annotated where the student was looking, including the different people in the room (teacher, cameraman, classmates), the different directions in space (up, down, to the side, to the camera), and occasionally at the hand(s) making the signs. I also coded blinking and moments when the eyes were closed.

Results and analysis

In this section, I will use the ELAN transcript and drawings from the video to demonstrate how the student deployed different aspects of communicative bodily action during moments of disfluency.

In example 1, the student is trying to sign the utterance "When the bottle of water is empty, I drink Coca-Cola". She produces the sequence of signs "BOTTLE-

4 For an application of "movement phase analysis" to native signing, see McCleary and Leite's study of turn-taking in Brazilian Sign Language (McCLEARY; LEITE, to appear).

-WATER-EMPTY-I-DRINK-COCA-COCA-COCA"[5]. Since the sign for "Coca-Cola" is fingerspelled (i.e. C-O-C-A) and requires rapid internal movement between three different handshapes (i.e. from C to O to C to A), the student struggles to produce it accurately and her signing becomes disfluent. During this disfluency, she repeats the expressive phase of the sign three times (in this case a stroke), and with each repetition, she changes her head position, facial expression, and eye-gaze direction.

As the transcript with line drawings shows (Figure 2), when the student prepares to perform the stroke for the first time, her eye-gaze is at the camera, her head is tilted, and her facial expression is neutral (Drawing 1). During a pre-stroke hold, she switches eye-gaze from the camera to her instructor and performs the stroke twice. Half way through the first stroke she shifts her head position from tilted to straight and changes her facial expression from neutral to a frown. She maintains these features during the end of her first stroke and throughout her second stroke (Drawing 2). As she prepares to perform her third stroke, she tilts her head and changes her facial expression from a frown to a smile. She then directs her eye-gaze back at the camera and performs her final stroke, completing the expressive phase of her sign (Drawing 3).

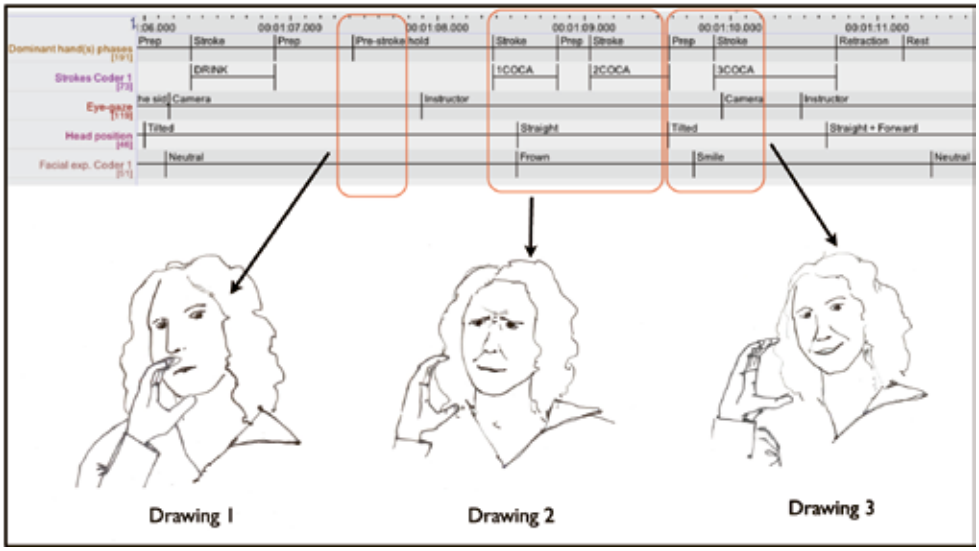

Figure 2 – ELAN transcript and drawings for Example 1

During this disfluency, the student embarks on a process of trial and error until she has performed the sign C-O-C-A accurately. As an essential part of this process, the student uses eye-gaze to interact with her instructor. Within this interaction, she uses a head tilt and a frown to indicate uncertainty about her signing and to solicit help from her instructor (cf. descriptions of the head tilt among French speakers in CALBRIS, 1990, p. 55-56). The student is not using

5 Glossing practices for signs highlight the complex relation between signed and spoken languages. Although some signs incorporate aspects of spoken languages into their form (such as letters), the meaning of the signs is not wedded to the oral language of the country were those signs emerge. However, since non-native learners of French Sign Language often do associate signs with French words, including the French glosses in footnotes might nonetheless be useful to some readers: "bouteille-eau-vide--je-boire-coca-coca-coca".

this head and facial action as a part of her signed utterance. If she were, first of all she would be producing non-manual question marking incorrectly for FSL (which requires a backwards head tilt; cf. CUXAC, 2000, p. 232). And secondly, she would be questioning whether or not she drinks Coca-Cola, which was not the case. The picture stimuli that the teacher used to elicit this utterance was geared towards eliciting "I drink Coca-Cola". The student is using these aspects of visible bodily action to simultaneously express uncertainty about her sign performance and solicit help from her instructor. Although a video of the instructor would have been useful data at this point, the student's progress in performing the sign throughout this sequence indicates that her teacher has responded to her request and offered a model of sign performance (note the increased accuracy of the C-handshape through the diagrams). The student uses a smile to acknowledge her instructor's help, while shifting eye-gaze back to the camera to indicate her disfluency is over.

In example 2, the student encounters problems whilst trying to sign "My uncle's job is a mechanic, people call him to tow away broken down cars"[6]. Specifically, when she attempts to express "people call him", her signing becomes disfluent. She is trying to perform the sequence of signs: PEOPLE-CALL-HIM[7]. This difficult sequence requires moving the sign CALL through space from a location associated with the subject PEOPLE to a location associated with the object HIM. In addition to this difficulty, the verb CALL requires the signer to direct eye-gaze during the expressive phase (in this case, a stroke) towards the location associated with the object (HIM). Facing this complexity, the student hesitates and begins to negotiate the problem with aspects of visible bodily action other than the signs she knows from FSL.

As the transcripts and diagrams in Figure 3 show, the student first signs PEOPLE slightly to the right of her signing space. As she prepares her hand for the sign CALL in the same location, her eye-gaze is directed towards this region of space and her facial expression is neutral (Drawing 1). Once she has finished preparing her sign, she performs a pre-stroke hold, raises her eye-gaze upwards, and begins to smile (Drawing 2). The student then shifts eye-gaze to her instructor and increases the intensity of her smile. During a further preparation and pre-stroke hold of the sign, she tilts her head slightly to one side and begins to mobilize her non-signing hand: she rotates the wrist from prone to supine and changes the handshape from a relaxed fist to an open hand with the palm held upward (Drawing 3). As she begins to perform the stroke of the sign CALL, she directs her eye-gaze back towards the camera, combines her smile with a frown, and maintains the palm up open hand formation in an independent hold (Drawing 4). Towards the end of the stroke of CALL she shifts her eye-gaze back to the instructor (Drawing 5). During a post-stroke hold of CALL, she relaxes her non-signing palm-up-open hand formation, returns her hand to her lap, straightens her head and adopts a neutral facial expression. Finally, she closes and opens her eyes (coded as "cl" in the transcript), shifting her eye-gaze from the instructor to either her signing hand or the location on her left that she is associating with the sign HIM (Drawing 6)[8].

6 Although this English sentence is quite complex, the student had been presented a basic sequence of pictures involving a person and a car being towed away. The fact she introduces kinship terms and professional occupations reflects her desire to include vocabulary from previous lessons.

7 The gloss of this expression in French is: PERSONNES-APPELER-LUI.

8 At the beginning of this utterance, when the student establishes the subject of her sentence by signing uncle-my, she does not initially associate this subject with a location in her signing space. Because she nevertheless then points to the left side of her space when signing the anaphoric reference him, she indicates her partial knowledge of sign language structure.

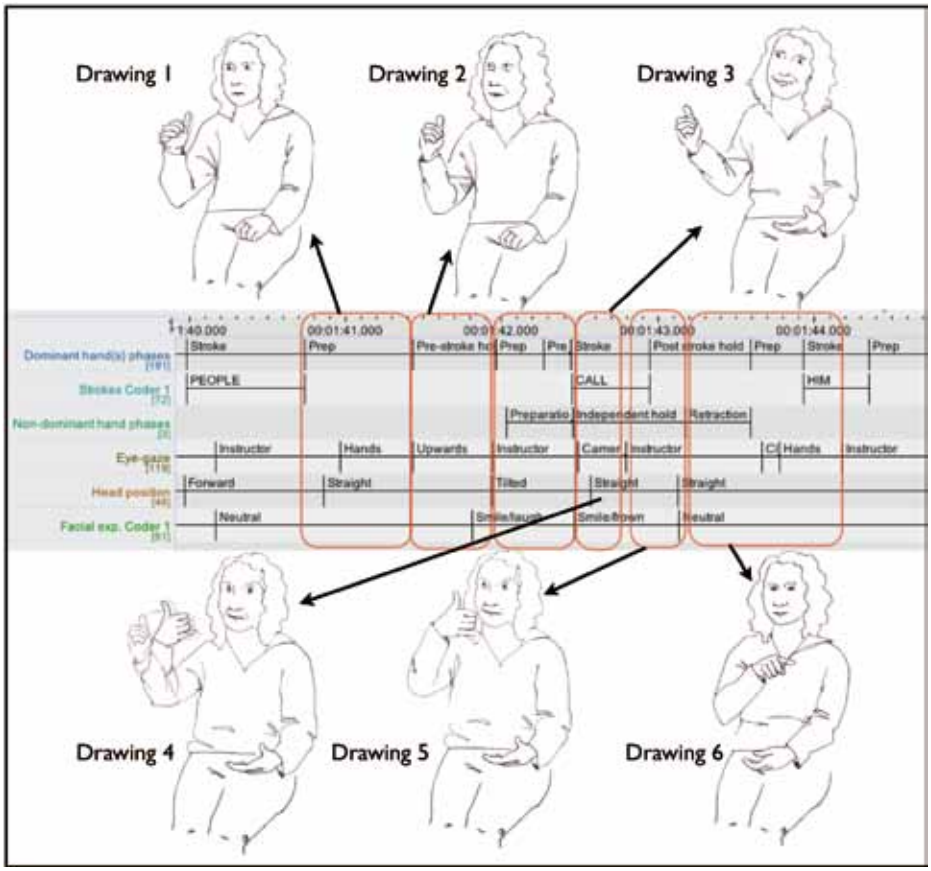

Figure 3 – ELAN transcript and framegrabs (example 2, with 6 drawings)

In this sequence, the student again combines aspects of visible bodily action to overcome a disfluency caused by a difficult sign. She directs her gaze away from the camera and orients her eye gaze upwards-right, possibly an indication that she is thinking and thereby hoping to buy herself more time[9]. When she then looks at her instructor, smiles, and performs a palm up action with her non-dominant hand, she initiates an interaction and expresses uncertainty about the sign she is about to perform. By enacting offering with her non-signing hand, she uses the palm up action as a gesture both to present a tentative framework through which she hopes her instructor will consider the sign and to invite her to jointly consider an object for inspection (cf. descriptions of this gesture by MÜLLER, 2004, and KENDON, 2004, p. 265-271)[10]. By alternating her eye-gaze between her instructor and the camera during the expressive phase of

9 Researchers have examined the relation between eye-gaze and thinking from social, cognitive, and cultural perspectives. There is general agreement that breaking eye contact during interaction (for example, by looking upwards) is a gesture commonly associated with "time out for thinking", although this practice does differ culturally (cf. McCARTHY et al., 2006). Signers of FSL may break eye-gaze and look upwards to mark hypotheticality (cf. the marker for "hypothèse mentale" described by CUXAC, 2000, p. 227). However, the students in the FSL classroom where I collected this data had not yet been introduced to grammatical markers, except for negation (cf. Footnote 1).

10 Müller (2004, p. 252) surveys previous descriptions of the "Palm Up Open Hand" gesture and conducts her own study to confirm that "The Palm Up Open is ubiquitously used when new arguments or examples are given and proposed for a joint perspective".

her manual action, she manages to produce the sign for the camera to record her signing skills (the aim of the production exercise) and maintain her interaction with the instructor (a crucial pedagogical moment). Once the expressive phase is finished and the difficult part of the sign is over, she relaxes her palm up gesture and returns her eye-gaze to the signing space.

The eye-gaze pattern in this clip is grammatically incorrect for the most part and the non-dominant hand action is not specified for the lexical sign CALL. Nevertheless, these features of visible bodily action help the student to perform the sign whilst qualifying it as tentative for the instructor. In this moment, the student uses her eye-gaze, facial expression and a manual action partly to produce a sign in FSL and partly to monitor her discourse, providing her instructor with important information about her knowledge of and confidence in signing.

DISCUSSION

Seeing co-speech gestures and linguistic signs as conflicting entities might be a fruitful way to analyse the data that researchers have collected in experimental settings. However, analysing the dynamic and volatile environment of a classroom requires a more flexible approach to how non-native signers use their bodies to communicate when learning to sign. In the current study, I hope to have shown how a student deals with disfluency in her sign production by deploying visible bodily action as utterance – both gestures and signs – to accomplish her task and engage her instructor in a pedagogical interaction. Since this multimodal strategy helps the student to negotiate a disfluency and complete the specific learning task, I suggest it serves a key function the learning process and therefore warrants further investigation.

By combining diverse aspects of visible bodily action, the student I have analysed here rises to the challenge of communicating solely in the visual-gestural modality. While gesture researchers have tended to isolate gestures and signs at opposite ends of a continuum (e.g. McNEILL, 2005, p. 5-12; EMMOREY, 2002, p. 161-168), this current study shows that, in the context of a non-native sign language classroom, a student of sign language can mobilize what she knows about signing and what she knows about gesture in ways that can allow them to work together multimodally to achieve her goals. Specifically, gestures here do not contrast with signs so much as complement them by functioning at a meta-discursive level in relation to them[11].

This preliminary study is based on a small data set and a limited number of examples. Future studies in this direction could seek to develop the method I have presented (e.g., by also filming the instructor) and compare a larger *corpus* of examples (e.g., by collecting instances of disfluency across several students). Reproducing this type of data should not be difficult: the production exercise and the classroom set-up that I have described are common in sign language pedagogy (at least in France but presumably elsewhere), and the disfluencies and interactions I have analysed abound in typical learning situations. While

11 Hoza (2011, p. 81) has demonstrated that fluent signers of ASL use certain signs that may also function at the meta-level of discourse structure and interaction. For example, the sign well (also performed with a palm up open hand formation) may "function as a pause, an indicator of a shift in discourse, a device to maintain coherence, and a turn-taking regulator." Hoza adds that "well plays a major role in the mitigation of face-threats". Furthermore, Hoza has identified several nonmanual expressions that also play a meta-discursive role when combined with signs (HOZA, 2008). Taking this together with the current study (and studies of gestures with pragmatic functions; KENDON, 2004; MÜLLER, 2004), it would seem that certain aspects of visible bodily action are specialized to operate at the level of interaction, leading to multimodal communication both in spoken and signed languages.

laboratory studies of sign language learning have helped identify irregularities in non-native signing, classroom studies are essential to understand how those irregularities function in the language learning process.

Finally, this paper highlights that language – whether spoken or signed – is fundamentally multimodal. Whether speaking or signing, people negotiate complex communication conditions by deploying different features of communicative bodily action simultaneously. The findings emphasise that one function of multimodality is to allow a sign language learner to divide levels of communication across modalities, such as by presenting a piece of discourse in one modality while monitoring it in another. Continuing to explore the role of multimodality in learning could help improve signed and spoken language pedagogy alike.

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HARRISON, S. Ação corporal visível em disfluências durante o aprendizado de língua de sinais. Um estudo em sala de aula de língua de sinais não nativa. *Todas as Letras*, São Paulo, v. 15, n. 1, p. 51-61, 2013.

Resumo: *Este artigo trata do papel da ação corporal visível em uma sala de aula de Língua de Sinais Francesa (LSF). A partir de dados de um exercício de produção autêntico, analiso como um sinalizador iniciante se comunica com seu corpo para produzir enunciados em LSF para uma câmera e, ao mesmo tempo, manter uma interação pedagógica com seu instrutor. Dois exemplos transcritos no ELAN acompanhados de desenhos ilustram a microanálise de como a aluna emprega a ação corporal visível para superar suas disfluências e progredir no aprendizado da sinalização. Embora preliminares, os achados trazem novas ideias sobre a sinalização não nativa em sala de aula e enfatizam o papel da multimodalidade no processo de aprendizado de língua.*

Palavras-chave: *linguagem de sinais; gestos; disfluência.*

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