The Integration of Social-Haptic Communication in Deafblind Interpreting and Educational Settings
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Depiction Beyond Hand Touch in an Interpreter-Mediated Setting Using Tactile Norwegian Sign Language

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Abstract This paper presents data from Tactile Norwegian Sign Language (TNTS) focusing on signs that are realized on the body of the deafblind person ('tactile sign language haptices'). It answers the question of how depiction can be expressed on the body of a deafblind person beyond hand touch in an interpreter-mediated setting with a goal that is two-fold: i) provide a classification of TNTS haptices and their interaction with depiction; ii) present the case study of the TNTS haptice blow realized on the body of the deafblind person not through touch, but through air vibration in a flow of air out of the interpreter's mouth.

Keywords Tactile Norwegian Sign Language (TNTS). Interpreting. TNTS haptices. Depiction. Haptices beyond hand touch.

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1 Introduction

The World Federation of the Deafblind (2022) defines deafblindness as "a combined vision and hearing impairment of such severity that it is hard for the impaired senses to compensate for each other". Deafblind people can experience different degrees of deafness and blindness, which affect their preferred communication mode. This choice also depends on their language background (if they are primarily sign language users or users of a spoken language) and therefore also on their onset of deafness and blindness and its timing, and the severity of hearing and sight impairment. Their preferred communication mode can be affected as well by their development of communication skills, which depend on the opportunities they had to be exposed to the deafblind community and thereby on their access to language (Mesch 2001, 9-12; Raanes 2006, 22; Willoughby et al. 2018, 2). The different communication modes used by deafblind people involve tactile communication and research focusing on them is a growing field. The research field around the study of how tactile communication is characterized in its linguistic features, for example how tactile sign languages (TSLs) differ from visual sign languages (SLs), or the linguistic description of how TSTs are used in interpreting settings, is fairly recent. More work has been dedicated to the study and development of social-haptic communication, a system of signals primarily used to convey environmental information and the interlocutor's emotional feedback through touch. The terminology to describe social-haptic communication in linguistics terms has been developing since the work by Lahtinen (2008), who introduced the term 'haptices' to refer to the touch messages expressed on the body of the deafblind interlocutor and the term 'haptemes' to refer to the formational units of these tactile signals. For Tactile Norwegian Sign Language (TNTS), most work has been dedicated to the description of how deafblind people communicate and how social-haptic communication is used in interpreting settings (Raanes 2006; Berge, Raanes 2013; Raanes, Berge 2017; 2021).

Looking now at one of the aspects that characterize visual SLs, depiction is conveyed through SL modality specific constructions. Depiction is mainly used to demonstrate an event through the use of signs that visually represent meaning (Liddell 2003, 261). Its use in TSLs both by deafblind signers and TSLs interpreters is however understudied.

This paper aims to contribute to the description of the strategies used by interpreters to convey rendition, which are utterances that have a corresponding counterpart in the source language, from spoken Norwegian to TNTS, paying particular attention to depicting structures. The focus will be on signs that are realized by the interpreter on the body of the deafblind person while using

TNTS, which we will refer to as 'tactile sign language haptices' (TSL haptices) to distinguish them from the haptices used in social-haptic communication ('social-haptic communication haptices'). The goal of this paper is then two-fold: i) we provide a classification of haptices in TNTS and their interaction with depiction in an interpreter-mediated setting; ii) we then present the case study of the depicting haptice BLOW used in an interpreting setting, which gets realized on the body of the deafblind person not through touch, but through air vibration in a flow of air out of the interpreter's mouth. The overarching goal of this work is to answer to the question of how depiction can be expressed on the body of a deafblind person beyond hand touch in an interpreter-mediated setting using TNTS.

The data presented in this paper have been obtained from a larger data collection within the project *Signed Language Depiction as an Engine for Promoting Inclusion, Communication, and Translation (DEPICT)*, a four-year project funded by the Research Council of Norway. The main goal of the project is to investigate how depiction is used in different language environments where Norwegian Sign Language (NTS) is used. The data presented in this work are situated within the work package *Depiction in Deafblind Interpreting*, which focuses on the description and analysis of depictive strategies in the signing of deafblind individuals and interpreters who use TNTS.

This paper is organized as follows: we first introduce the different deafblind tactile communication modes presenting tactile sign language (TSL), social-haptic communication and protactile, in section 2; we also present the existing research on the use of tactile communication in interpreter-mediated settings (§ 2.1). Before focusing on the properties of TSL haptices, the signs realized on the body of the deafblind interlocutor while using a TSL, we will talk about depiction and some of its properties in visual SLs (§ 3). In section 3.1, we propose a model to categorize social-haptic haptices and the TSL haptices used in depicting structures in an interpreter-mediated setting, based on previous work on TNTS. In section 4, we present the methodology that was used for the data collection and annotation, and in section 5 we will explain the unique realization of the depicting TNTS haptice BLOW through the use of air vibration in a flow of air out of the interpreter's mouth. In section 6 we discuss the data presented and conclude.

2 Tactile Sign Language, Social-Haptic Communication and Protactile

Among the different communication modes used by the deafblind community, it is possible to find tactile sign language (TSL), social-haptic communication (SHC) and protactile. Depending on the degree of deafblindness, the timing and order of onset of impairment in both senses, the language background, the communicative skills and the light conditions in case of residual vision, a deafblind person might prefer to combine visual SL or spoken language with communication modes that involve touch perception, for example, social-haptic communication.

TSL is a tactile adaptation of a visual SL, and it is often used by people who already know a visual SL before losing their sight (Checchetto et al. 2018, 1). The main feature of TSLs is that language is perceived through touching the hands of the person signing (Mesch 2001, 3). Among the different adaptations of the visual SL, we find an important use of signs to express grammatical meaning that it is conveyed by non-manual markers such as facial expressions and body movement in the visual SL. This is the case of the use of the sign QUESTION to introduce an open question in tactile Italian Sign Language (LISt), while in the visual SL this aspect is expressed through the spreading of furrowed eyebrows over the signed sentence (Checchetto et al. 2018, 19). A similar case is found in Tactile American Sign Language (TASL) with the use of the sign RIGHT at the end of confirmation questions (Willoughby et al. 2018, 9).

Social-haptic communication, instead, is a system of brief tactile messages realized on the body of the deafblind person to convey environmental information, emotional feedback of the interlocutor(s) or directions, and they are also used to facilitate engagement in hobbies and leisure activities, and to describe other visual or auditory information such as art and music (Lahtinen, Palmer 2008, 9; Lahtinen et al. 2012, 269; Raanes, Berge 2017, 92-3). Some of the signals are an adaptation of visual SL signs to be produced on the body of the deafblind person, for example the sign for TEA in TNTS. Its moment is realized downwards on the deafblind person's upper arm by their interlocutor, producing a movement similar to the sign TEA, which in visual NTS is realized in the neutral signing space (Bjørge et al. 2013, 67). Other haptic signals are created ad-hoc by the deafblind community (Volpato et al. 2021, 29). Social-haptic communication can be used by both sighted and blind individuals in communication with a deafblind or sighted addressee and they are very often used in interpreting settings.

As for protactile, it has been developed by the deafblind movement 'pro-tactile' in the Seattle area in the U.S. with the aim of building and promoting interactional conventions through which deafblind

people are fully participating in society (Willoughby et al. 2018, 3). Protactile is a language, according to Edwards and Brentari (2020, 819). It is perceptible through touch, it is realized as often as possible on the body of the interlocutors, and environmental information is organized along tactile lines (Granda, Nuccio 2018, 4; Edwards, Brentari 2020, 821; Edwards, Brentari 2021, 3). Protactile requires the creation of new norms around intimacy and personal space given the high degree of touch involved (Willoughby et al. 2018, 3). Edward and Brentari (2020, 826-8) explain how, for example, to represent the shape of a lollipop, the interlocutor can use the whole forearm of their addressee instead of using shapes in the neutral signing space. The main characteristics of protactile are reciprocity, contact space, protactile perspective and tactile imagery (Granda, Nuccio 2018, 7-14), meaning that both interlocutors engage in actively using each other bodies to convey through touch information that are usually expressed in the neutral signing space in TSL (Van Der Mark 2023, 506). Protactile has been mostly used in conversations among deafblind people, but it has been developing its use also in interpreting settings, at least in the U.S. (Granda, Nuccio 2018, 2).

2.1 Use of Tactile Communication in Interpreter-Mediated Settings

As presented in the overview by Gabarró-López and Mesch (2020, 2-3), only a few studies have been conducted on how tactile communication is characterized in its linguistic features in interpreting settings. For Tactile American Sign Language (TASL), Frankel (2002) investigates how two deaf sighted interpreters convey negation from visual ASL to TASL. Metzger et al. (2004) focus on non-rendition, which are utterances that do not have a corresponding counterpart in the source language, in visual ASL, TASL and English. Another study is by Edwards (2012) who analyses the visit to a park in Seattle and focuses on the strong use of depicting structures employed to explain the different activities happening at the park. For TNTS, Berge and Raanes (2013) and Raanes and Berge (2017; 2021) look into the coordination and use of turn-taking in an interpreter-mediated meeting with five deafblind people and five respective hearing sighted interpreters, focusing on the social-haptic signals that were employed to ensure the communication flow. For Tactile Swedish Sign Language (TSTS), Gabarró-López and Mesch (2020) investigate rendition by two hearing sighted interpreters from Swedish to TSTS during a guided visit to a cathedral, focusing on how environmental information was conveyed through different haptic strategies such as locative points to show locations, drawing on the hand of the deafblind individuals to depict shapes, giving object to them so they

could study the shape and surface of objects, touching elements such as the pillars, the walls and the chairs with the hands, or also the floor surface with their feet. Similar work has been done by Raanes (2020) and Raanes and Berge (2021) to study how interpreters use haptic signals when describing environmental information in TNTS.

The data presented in this current study focus on yet another aspect of TNTS interpreting by looking at TNTS used in an interpreter-mediated lecture. The data focus on how depicting signs are adapted into depicting TNTS haptices on the body of the deafblind person, also exploring the realization of these signs not through hand touch but through air vibration in a flow of air from the interpreter's mouth, like the case of the TNTS haptice BLOW, which will be analysed in this study.

3 Depiction in Visual SLs

The expression of movement and the description of objects, animate referents and actions can be conveyed through the use of a diverse semiotic repertoire. One of the strategies used is depiction, which refers to the ability of some signs to visually represent meaning (Liddell 2003, 261), and which therefore involves the use of signs and grammatical structures with a high visual component. Depiction is mainly expressed through the use of depicting signs, constructed actions and constructed dialogues. Depicting signs are mostly verbs whose handshape allows to represent a moving referent specifying certain aspects of the action. It can indicate the specific movement of the legs, for example, or identify if the referent belongs to a certain category of animate or inanimate referents. Depicting signs can be used to represent a referent using a handshape that conveys the image of the whole referent or represent how the referent can be manipulated. They can also refer to lexical signs with a depicting/iconic component (we will refer to them as 'lexicalized depicting signs'). Constructed actions and constructed dialogues, instead, are complex structures used to report actions, thoughts, or utterances using the whole body of the signer, where the signer is 'taking the role' of the referent that performs them in the discourse (Liddell 2003, 157).

Due to their highly visual component, depicting structures are considered iconic. Perniss and Vigliocco (2014, 2) have defined iconicity as "any resemblance between certain properties of linguistic/communicative form and certain sensorimotor and/or affective properties of corresponding referents". To contribute to the debate related to the nature of iconic signs in visual SLs, Hodge and Ferrara (2022) propose a model where iconic signs are the results of the overlap between the main categories of signs in a visual SL **[fig. 1]**.

Hodge and Ferrara (2022) adopt the Semiological Approach and Cognitive Linguistics frameworks to SLs, which identify three main methods to create language: 'indicating', 'depicting' and 'describing' (Liddell 2003, 262; Clark 2016, 324). 'Indicating' refers to how people refer to time and space references using indexes, such as indexes with the function of pronouns or indexicals. 'Depicting' consists in depicting signs, constructed actions and constructed dialogues. 'Describing' is the class of signs that includes all conventionalized signs that are not depicting or indicating. In Hodge and Ferrara's (2022, 7) model in figure 1, the triangle represents an utterance in a visual SL and the three main sets are not meant to be closed, but semiotic categories with the potential of expressing iconicity. Hodge and Ferrara's (2022, 7) model wants to provide a more precise categorization of iconic signs, which can be reconceptualized in four possible overlapping of the sets 'indicating', 'depicting' and 'describing'. Looking at figure 1, iconicity in Hodge and Ferrara's (2022, 7) model can manifest in 'depicting and indicating signs' (ID), in 'depicting and describing signs' (DD), in 'depicting, indicating, and describing signs' (DID), and in 'depicting signs' alone (Depicting).

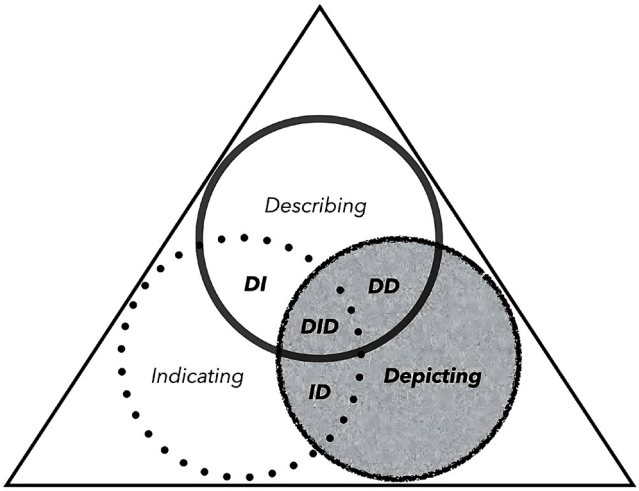

Figure 1 Hodge and Ferrara's (2022, 7) model for the categorization of iconic signs in visual SLs (image reused with permission)

Taking Hodge and Ferrara's (2022, 7) model for the description of visual SLs, in this paper we adapt this model to be able to better categorize haptices in TSLs in an interpreting setting. In order to do so, we will not enter the details of the nature of iconicity in visual SLs. The key aspect we will focus on is the area in the language

representation in figure 1 where depicting signs and lexicalized depicting signs overlap.

3.1 A Model for Depiction in TSL: Depicting TNTS Haptices

A clarification in the terminology that is used in this paper needs to be addressed. The tactile messages realized on the body of the deafblind interlocutor in social-haptic communication have been generally referred to as 'haptices' meaning 'touch messages' (Lahtinen, Palmer 2008, 8; Volpato 2023, 34), but also as 'haptic signals' and 'haptic signs' (Raanes, Berge 2017, 92; Gabarró-López, Mesch 2020, 3). 'TSL haptices' are instead signs used in a TSL discourse and realized on the body of the deafblind person by the interlocutor (Zorzi et al. 2025, 3). They are signs used in a TSL whose point of articulation moves from the neutral signing space or the body of the signer to the body of the addressee, the deafblind interlocutor. We will refer to this class of haptices as 'TSL haptices'. We can see an example of the TSL haptice TOUCH in TNTS in figure 2 produced by a hearing sighted interpreter on the body of the deafblind interlocutor.

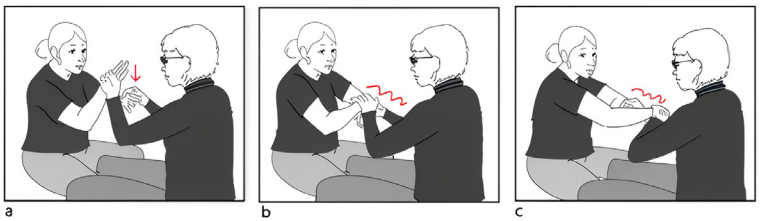

Figure 2 Realization of the TNTS haptice TOUCH on the body of the deafblind addressee (reused with permission from Zorzi et al. 2025, 3)

As we can see in figure 2, the TNTS haptice TOUCH is realized on the arm of the deafblind person. The haptice in figure 2 is used to express that a girl is touching a visitor's clothes to feel them and identify the person. Importantly, this example is produced under a constructed action, and this is an aspect that might help to identify depiction as one of the factors for the use of TNTS haptices by the interpreter on the body of the deafblind person.

In order to properly define TSL haptices, we propose to categorize them as a set of signs in TSL that overlaps with the set of haptic communication (any type of communication that involves the touch modality, including social-haptic communication). Given that our data consist mainly of depicting constructions and lexicalized

depicting signs, we will only look into TSLs haptices that are depicting. In figure 3, we can see that TSL and haptic communication, which includes social-haptic haptices, are two separate sets in tactile communication. This is due to the fact that social-haptic communication is made of signals that have been systematized and adapted ad-hoc to mainly convey environmental information. TSL, instead, is an adaptation of a full-fledge SL.[1] Thereby, it is important to distinguish the two categories, but at the same time, as we can see in figure 3, our model proposes that there is an overlapping between the two sets.[2] Taking into consideration only depicting signs, it is very common to find depicting features in the haptices used in social-haptic communication, for example, and it is possible to find TNTS signs that are realized in a haptic fashion, hence realizing depicting TNTS haptices. Therefore, in the A set, we can find depicting signs in TSL that are realized on the body of the deafblind interlocutor.

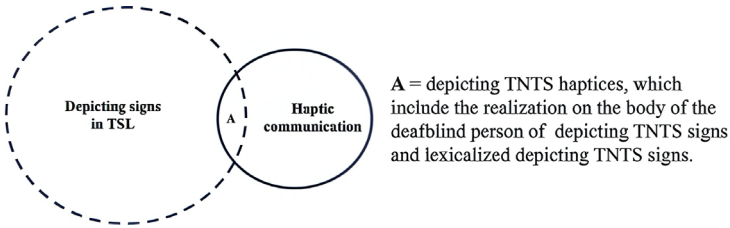

Figure 3 A model for depicting TSL haptices (A) in an interpreting setting (adaptation of the model in Zorzi et al. 2025, 16)

The depicting TNTS sign for TOUCH in figure 2 is then found in the intersection A where depicting signs in TSL and social-haptic communication overlap.

4 Methodology

The data presented in this study consist of a one-hour long lecture interpreted from spoken Norwegian to TNTS. The lecture was about some episodes in the life of the first known congenital deafblind person to learn to speak, Ragnild Kaata.

The interpreter who took part in the video recording is a hearing signer with more than 10 years of experience as an interpreter. The

1 Being an adaptation, though, as pointed out by Checchetto et al. (2018, 1), the status of natural language for a TSL can be questioned.

2 See Zorzi et al. (2025, 15-16) for a more extensive model of TNTS used in an interpreting setting.

deafblind person who was paired with the interpreter was born deaf and was exposed to visual NTS only when she started attending a deaf school. She became blind later in life after learning NTS and nowadays her preferred means of communication is TNTS. Two more participants took part in the study, but we will present data only from one pair of interpreter-deafblind person. As noted by Zorzi et al. (2025, 15), the acquaintance in the relationship between the interpreter and the deafblind person has an important impact on the use of TSL haptices. The two people whose data we present here know each other well. This allows the interpreter to have more comfortable access to the deafblind person's signing space and parts of the body such as hands, arms, and legs.

The data were annotated using the ELAN software (Lausberg, Sloetjes 2009).[3] One of the main aspects that was annotated consisted in detecting the strategies used by the interpreter to adapt NTS into TNTS, with attention to the use of depiction and how depicting structures were realized in the neutral signing space between the interpreter and the deafblind person or on the body of each of them. In this work, we only report the case study of the depicting TNTS haptice BLOW. For other depicting TNTS haptices, see Zorzi et al. (2025, 12-16).

5 Realization of TNTS Haptices Beyond Hand Touch: BLOW

Among the depicting TSL haptices found in the data, there was an interesting example of a TNTS haptice with a depicting/iconic component whose point of articulation is not realized using the hand of the interpreter touching the body of the deafblind person. The sign produced means 'blow (air)', and the interpreter uses air vibration in a flow of air from her mouth to realize the sign on the hand of the deafblind person, making the sign even more clearly understood by the deafblind person. The haptic component of this TNTS haptice is therefore realized not through hand touch, but through air vibration. We can see a representation of the realization of the depicting TNTS haptice BLOW in figure 4.

Importantly, the depicting TNTS haptice BLOW was realized under the depicting construction of constructed action (CA). In example (1), where several instances of the TNTS haptice BLOW are used, the interpreter is taking the role of both Ragnild Kaata and her teacher to explain the action of blowing air out of their mouths to move some paper balls. The citation form of the sign BLOW (air) in visual NTS

3 https://archive.mpi.nl/tla/elan. Max Planck Institute for Psycholinguistics, The Language Archive, Nijmegen, The Netherlands.

is realized by extending all the fingers of the hand moving from the mouth of the signer towards the addressee. As we can see in figure 4, the sign BLOW in our data is adapted into TNTS using a perceptual component of the sign: the air vibration from the mouth of the interpreter to the skin of the deafblind person. The point of articulation of the depicting TNTS haptice is realized by the air vibration from the mouth of the interpreter touching the skin of the hand of the deafblind person that is holding the dominant hand of the interpreter.

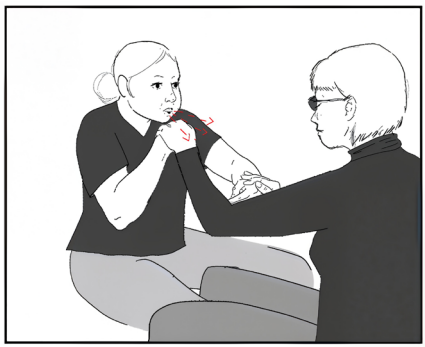

Figure 4
Realization of the depicting TNTS haptice BLOW on the hand of the deafblind person through air vibration in a flow of air from the interpreter's mouth (this image was created specifically for this work)

In example (1), we can see the context in which the TNTS haptice BLOW was used and the glossed example.[4]

(1) Context: Ragnild Kaata is learning with her teacher Elias how to speak using some exercises that involve modulating the flow of air out of her mouth blowing it on some paper balls.

[$_{CA}$ BLOW ROLL BLOW ROLL BLOW-STRONG TRAJECTORY-STRAIGHT TRAJECTORY-DOWN]. (TNTS)

'(They) blew on the paper balls making them roll forward on the table a few times; by blowing strongly on the paper balls they then made them roll off the table, so they fell on the floor'.

The use of CA in the example might be an important factor that influenced the adaptation of the verb BLOW as presented in example (1). Taking the role of the deafblind girl Ragnild Kaata and her teacher, the interpreter is demonstrating to the deafblind person how the action was done. The feedback provided by the deafblind person

4 The video of example (1) with glosses is available at the following link: `https://vimeo.com/911641013?share=copy`.

during the explanation of this event makes it clear that the content was well understood in this context. While the interpreter was signing example (1), the deafblind person commented with the sign FUN (fun). It is important to underline the key role of the feedback from the deafblind interlocutor when evaluating an interpreting strategy and its efficacy for the deafblind person to access the content of what is interpreted, especially when complex structures such as CAs are employed.

6 Discussion and Conclusion

In this paper, we have been contributing to the description of interpreting strategies used in TNTS in a lecture-interpreting setting. A particular focus has been put on the use of depicting structures, depicting signs and lexicalized depicting signs realized on the body of the deafblind person by their interpreter. We referred to them as 'depicting TNTS haptices': depicting TNTS signs and lexicalized depicting TNTS realized in a haptic fashion on the body of the deafblind person by the interpreter. In order to distinguish depicting TNTS haptices from haptices with depicting features used in (social)-haptic communication, the model in figure 3 provides a good clarification of the relation between these two categories. Depicting TNTS haptices belong to TNTS but show haptic features because they are realized on the body of the deafblind person and not on the neutral signing space or the body of the signer (the interpreter).

Interestingly, the depicting TNTS haptice BLOW **[fig. 4]** shows that the point of articulation of TNTS haptices with an iconic/depicting component does not necessarily need to be realized through hand touch. Air vibration in the airflow from the interpreter's mouth can convey the meaning in a more suitable way for sensory perception. It is important to underline that the citational form of BLOW in visual NTS does involve the extension of the fingers, and no component such as a flow of air out of the mouth is present in the lexical sign. The interpreter reshapes the sign BLOW only keeping the most salient and more easily perceivable component of the action: air vibration on the skin of the deafblind person. As far as we know, no research has included such variation of vibrative signals by air blowing as a signal of sensory input in the description of haptices. There is only one instance reported by Fuglesang (1995, 5) of a deafblind person in Norway who uses blowing air on the hand of the interlocutor to express the negative construction 'I do not agree'.

The example of the depicting TSL haptice BLOW presented in this article opens up the possibility of realizing a sensory input beyond hand touch in TSL. The use of props such as feathers or other objects to better explain the nature or use of some objects is well known

in tactile communication (Miles et al. 1999, 124). Their use is not part of the grammatical features of a TSL, though. They anyway underline the importance and potential of touch in its widest sense for deafblind people, including those who do not use tactile SL or other forms of tactile communication methods (see, for example, Watharow, Wayland 2022, 8-9).

The depicting TSL haptice BLOW is then the first description of an instance of a depicting TSL haptice realized using air vibration. It is important to underline that this reshaping of a visual sign into a tactile sign is found in an interpreting setting and the feedback from the deafblind person confirms that the content was clearly understood, therefore consolidating its use in the interaction. It would be crucial to understand if deafblind signers would also use it while communicating with each other.

The two attested examples of depicting TNTS haptices presented in this work (TOUCH and BLOW, figures 2 and 4 respectively) are found under the depicting construction of constructed actions. Depiction can then be one of the factors responsible for the use of (lexicalized) depicting TNTS haptices instead of TNTS (lexicalized) depicting signs. The same has been reported for depicting TNTS haptices in Zorzi et al. (2025, 8). Using depiction, the interpreter uses her body to impersonate the referent doing the action, and in this way, she makes the deafblind interlocutor actively part of the scene that is described.

The fact that the interpreter and the deafblind person in our data know each other well is another factor that allows this high level of integration of the signing space of the interpreter with the signing space of the deafblind person. As presented by Willoughby et al. (2018, 3) and Van Der Mark (2023, 510), the active interaction in the discourse of the two interlocutors and the high degree of intimacy between the two people are two main characteristics of protactile. A frequent use of depicting structures is also another one (Edwards, Brentari 2020, 835). Example (1), where we find the use of the depicting TNTS haptice BLOW under constructed action, is a case where the interpreter merges her signing space into the body of the deafblind person through the use of depiction. The choice of the interpreter to reshape the sign BLOW into the depicting TNTS haptice realized through air vibration may be analysed as an instance of protactile in interpreting, even though very little research is available on this aspect. Especially in the U.S., protactile is more commonly used between deafblind interlocutors, but it has been starting to be integrated in interpreting settings as well. It is necessary to remark, though, that in an interpreting setting, even though the hearing interpreter and the deafblind person may know each other well, there is still a difference in the role of the two participants in the interaction. More research is needed to better understand the use of protactile in interpreting settings, especially in countries

like Norway where protactile itself has not been actively developing in the deafblind community with the same awareness that it has been happening in larger communities of deafblind individuals, as in regions of the U.S.

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