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**Language and Congenital Deafblindness**

**by**

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# “Co-Creating Communication With Persons With Congenital Deafblindness”

*Theory and Practice*

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## Language and congenital deafblindness.

### Jacques Souriau and Kari Schjoll Brede

First, I would like to thank Kari-Anne Selvik for her introduction to two essential perspectives regarding language use and language development: the usage-based theory of language development (TOMASELLO 2003) and the real space blends (LIDDELL, S.K. 2000) - very visible in visual sign languages. These two approaches are very helpful for understanding how Congenitally Deafblind people can be supported in exploring further their cognitive mastering of life. These theories contrast with a vision of language as an object which would exist only in the form of a neurological module in the brain of an individual and in the form of system of concepts and rules (lexicon and grammar) in the culture. According to this approach, children are born with a ready-made system (a module for language) which would only have to download the elements that are specific to the mother tongue. This approach does not consider enough the following aspects:

- The contribution of the child as an active learner
- the scaffolding role of the partners
- in real communication, phonemes, words and grammar are not the only elements that contribute to meaning making: gestures, emotional expressions and actions (DONALD, M. 2001- McNEILL, D. 2000) do not only add elements to the words, they also show how the words have to be construed in the actual conversation.
- In all languages, many exceptions show that the origin of the rules is not the result of a fixed mechanism belonging only to language. Rules result rather from the general processes of form/meaning associations leading to dominant rules but also to forms of usage which keep their link to the conditions of their first elaboration ((TOMASELLO 2003).

According to a usage-based theory of language, concepts and grammatical rules emerge from the accumulation of transactions in conversations where partners co-construct and discover regularities (or patterns) that they can store and use again. In games and conversations with adults, children discover other people’s intentions, other people’s perspectives and at the same time, verbal expressions which map onto them. These exchanges are essentially dialogical since in the conversation the world is presented to the child not as a “thing” out there, but as the perspective of the other on that thing. In these shared activities, the partners grope to share perspectives and stabilise them at least temporarily. Verbal utterances map onto them. Children are progressively able to imitate them and to memorise them. Then, they can use them again, in another similar context. At the beginning, these utterances are neither words

nor phrases. They are just verbal blocks that will later on lead to higher level cognitive/linguistic entities resulting from testing them against new situations and other blocks<sup>1</sup>.

In other words, in games and conversations, partners (for instance child and adult) try to share their perspectives using for that elements that were previously stored in their minds (like verbal expressions and other types of knowledge) and body activities (mimetics) that take their forms from the actual physical and human context. Words and gestures are not two separate and redundant systems: the word says how the gestures relate to the shared reality and vice versa<sup>2</sup>. Progressively, children recognise patterns and regularities

- inside the utterances
- in the way they map onto the shared realities
- and how they work pragmatically.

Words and grammatical rules emerge from these patterns that are recognised, categorised and computed in the same way as any other types of activity. The end product is that children speak the language of their community, as well as they eat and make the food of their culture and share (and discuss) the same moral values. They master a system that can be seen as both frozen and flexible: - frozen because the linguistic forms are kept similar over long stretches of time within a small or a big community – but flexible because these forms change over time (new words appear, other ones fade away, etc.). Moreover, people use them, in their conversations, in a very creative and flexible way, to such extent that the core, standard, canonical form/meaning relations are very often distorted in real life (BAKHTINE, M. 1929).

This is good news for the congenitally deafblind people and their partners. If language competency would result only from plugging in the language of the culture to a specific brain module, CDB would have to meet many obstacles:

- maybe the brain is not equipped with a proper module for language
- the language of the culture would be difficult to find : there is no stable deafblind language around and the senses that allow access to the perception of visual or oral languages are either weak or not available.

Fortunately, there is a possibility to help with language development if partners are able to detect and negotiate their intentions and perspectives as well as to co-author or co-construct patterns that can be recognised, remembered and used. In simpler words, partners of the CDB should be able to detect the CDB person intentions or perspectives and/or to make her own intentions and perspectives accessible and relevant for the CDB person. This is what games and conversations are about. This is possible because partners are bodily accessible to each other. During these exchanges, patterns of activity can emerge that denote these shared realities.

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<sup>1</sup> The grandson of the author, when he was 16 month old, used to say “mind the step”, each time he met a small step. This expression was globally linked to a specific situation. It is difficult to identify the function of it each time he used it. It could be a reminder to be careful; it could be also (and in a parallel way), a pure pleasure to express his mastering of the expression in the right context. One could foresee that, in the future, the words “mind “ and “step” will acquire a function closer to the culture when “mind the step” will be contrasted with “mind the fire” or “climb the step”.

<sup>2</sup> The grandson of the author points at a place where there are newspapers and pens on a table and asks: “What is this?”. Grand-Dad, seeing the pointed place from his own perspective, answers: “This is a newspaper!” The child waits a bit and says: “It is a table”. His utterance tells how the space he pointed at was construed from his own perspective. There is no redundancy between the pointing gesture and the utterance.

### **Contributions of the partners:**

When CDB persons are in the process of developing their communicative competencies, the partners can help them to detect, master and memorise these patterns by using cognitive tricks like:

- **Repeating**: it gives the possibility to process the information and to single out the regularities.
- **Dramatising** (being mimetic, theatrical, musical and narrative) draws on
  - o very basic cognitive patterns that pre-exist to the actual topic of an exchange like the musicality and narrativity of the minds (HAUGE, T & HALLAN TØNSBERG, G 1996); TREVARTHEN C. (2002)
  - o the power of the body to feed the brain with recognisable and reproducible experiences.
  - o The power of the emotional involvement to attract the attention.
- **Surprising**: it consists in presenting an expression or an action which contrasts with the one which is expected. It helps bringing to consciousness how a given pattern looks like, and also how it looks different. Surprise is both a cognitive and an emotional experience that contributes to the processes of categorisation (an experience is perceived as not belonging to a well-known type of pattern) and analysis of components (by shedding light on the elements which do not match with the pattern).

### **Contribution of the CDB person:**

CDB persons, like any human being, try to make sense of the world. It is an activity of exploration which is dialectically related to security: 1- the more you are secure, the more you can explore the world and try making sense of it; 2- exploring the world leads to a better overview of things, animate entities, human beings, feelings and patterns of human communication, which increases security.

This activity is not always directly visible to the partners for at least two reasons: 1- the bodily expressions accessible to the eye or to the tactile sense of the partner can be very different from the culturally dominant ones (and therefore not easy to detect and understand); 2- it could be also the case that some activities of the mind are not accessible to the senses of the partner because they are not clearly reflected in the body movements and attitudes (for instance, the direction of the attention).

However, partners can use the perceivable expressions of the CDB persons to detect their activities, intentions and perspectives and expand on them. Sometimes they are almost directly accessible (for instance showing something); sometimes, they can only be inferred from other expressions.

### **Fluency in communication:**

Therefore, language competency (in the CDB person and in the partner) should not be evaluated against a totally external standard (like the quantity of signs) but as a more global competency that could be called “fluency” in communication (BREDE, K. S. 2008). A partner should be able to

- detect the perspective of the CDB person
- make accessible her own perspective

- use form/meaning patterns that map onto the situation : they can be taken from previously negotiated forms or co-constructed for the present use and for future occasions. These negotiated forms can result of patterns presented by the CDB person; they can also be drawn from a linguistic system already established by the community (for instance sign languages).

This happens within the framework proposed by Tomasello (2003):

## 26 Constructing a Language

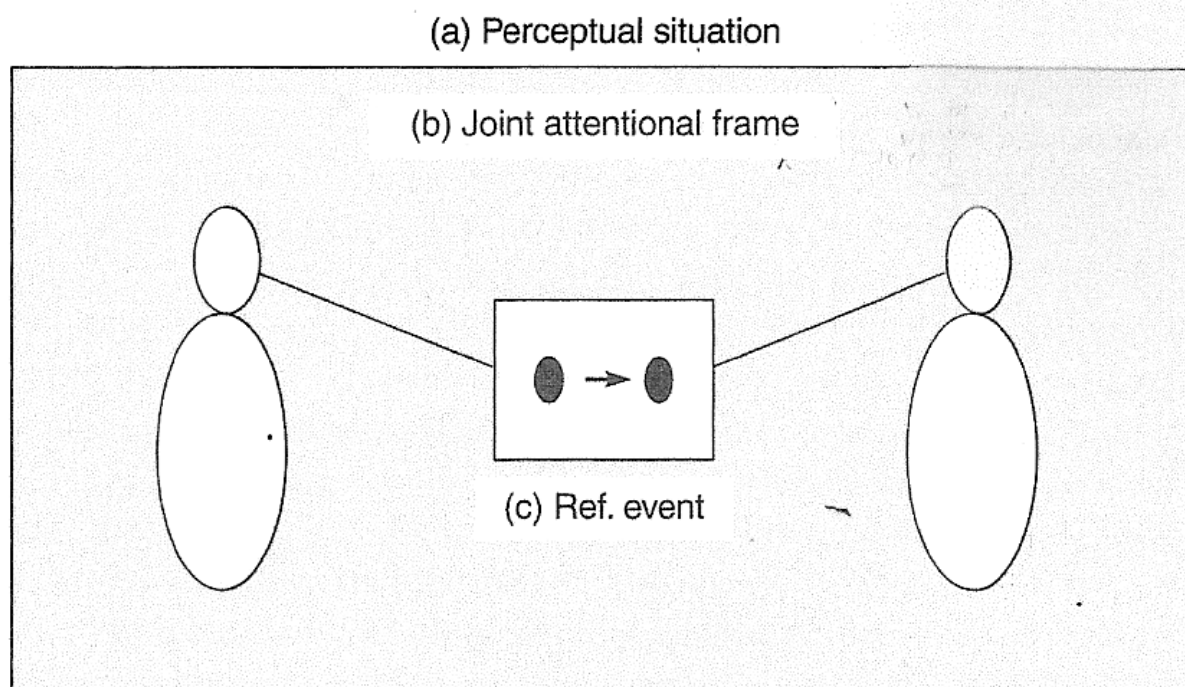


Figure 2.1. The basic adult-child communicative situation: (a) the perceptual situation (not relevant to utterance); (b) the joint attentional frame (immediate relevance); and (c) the event being referred to linguistically.

### Why trying to teach or to learn symbolic and linguistic forms?

We often observe that, when they reach the point where a symbolic form is fully shared and negotiated with a partner, congenitally deafblind persons show their joy and excitement. It is even more the case when there is no direct practical effect other than the pleasure to feel that both partners achieved the sharing of perspective. However, it is more than an experience of togetherness. Actually, it takes a lot of energy, on both sides, to co-construct and make available a form resulting from an effort of schematisation. But when this is achieved, the congenitally deafblind person owns more than before: he has now a tool that help recalling past experiences (the symbol works like a tag available to the congenitally deafblind person

and the others) and to explore further the world by evaluating new experiences against the ones that have been negotiated before. Shared symbolic forms change the world: they stabilise, structure and expand (for instance through the process of metaphorisation) the knowledge of the world; Thanks to them, one can transport the world wherever: with a good set of maps, pictures, tags, one can be anywhere anytime.

Among symbolic forms, linguistic forms provide are even more efficient because they take advantage of the capacity of the brain for computation and manipulating sophisticated form/meaning pairs. Grammar and lexicon can describe complex shared realities and make them available to oneself and to the other. They are able to construct models of the reality that take into account various perspectives in a coordinated way. They do not only represent the complexities of the world; they also create new worlds. To some extent, they free human beings from the constraints of the reality (you can dream, imagine and find new kinds of schematisation etc....). As Dunbar states it (Dunbar R.I.M. 1996), human beings spend 65% of conversations talking about social matters (gossip and comments on relationships and tastes). This is more than more sophisticated version of monkeys delousing each other, it is a way to expand and stabilise the various ways of construing human experiences, and more precisely the ones that relate to human relationships.

## **Contrasting visual and tactile construals of events.**

### **Vision in visual sign languages**

All socially established sign languages are based on visual parameters: they produce visual schematisations of mental realities using various tricks aiming at representing how these realities are construed during verbal exchanges. These visual constructions rely on the visual processing of the world in various ways:

- they can map on the strict laws of visual perspective: for instance, in FSL (French Sign Language), the action of leaving is often expressed by the following sign : thumb and index are separated and then join each other while the hand moves in the direction of where to the character is leaving. This sign can be analysed as a projection in the hand space of a typical visual experience where something which goes away is perceived as smaller and smaller as well as upper and upper. The structure of this sign works only because the two partners of the exchange share a common sense knowledge which could be phrased as: “when things go away, they look smaller and smaller, as well as upper and upper”. This knowledge is not emerging from the conversation itself; this form/meaning link was established beforehand, through the permanent experience of the world<sup>3</sup>. However, it is to be discussed whether this common sense knowledge results only from the direct individual experience of the world or if the influence of the culture is necessary to make this knowledge explicit, usable and recognisable.

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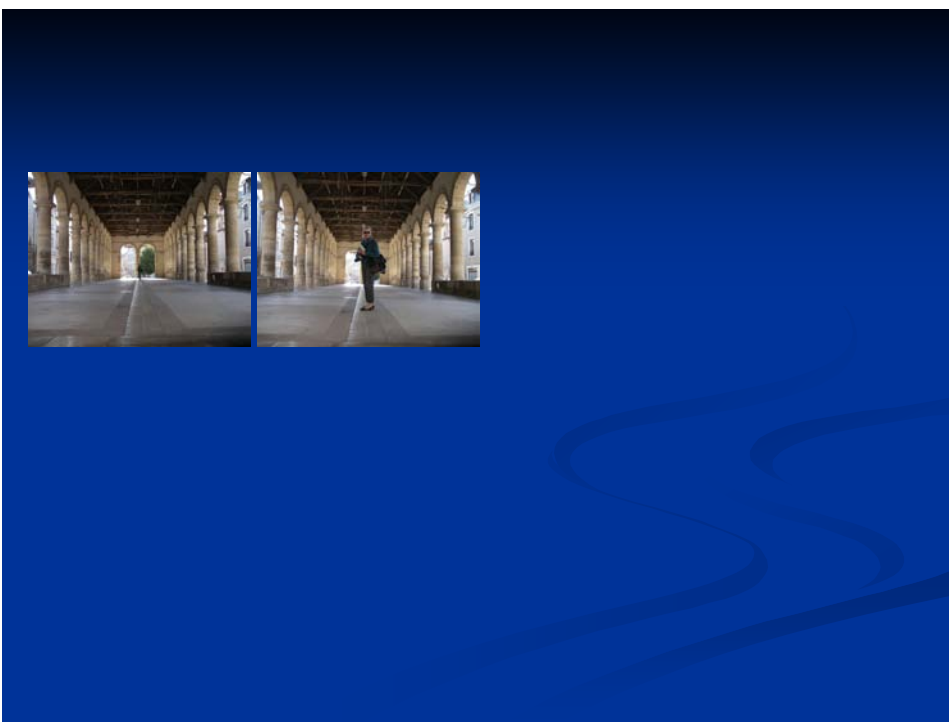
<sup>3</sup> Besides, at the very moment when they sign, signers are not aware of the motivation for the form of the sign, unless they are engaged in a metalinguistic conversation.



[http://ufr6.univ-paris8.fr/desshandi/supl/projets/site\\_lsf/dico\\_lsf/recherche.php](http://ufr6.univ-paris8.fr/desshandi/supl/projets/site_lsf/dico_lsf/recherche.php)

This form/meaning pair results from an entrenched real space blend that could be described in the following way:

- In the event space, the components are the perceived size of a person who is close, the perceived size of the same person when he/she is remote, the intermediary perceived sizes of the person when leaving.
- The components of the event space are projected in the real space in front of the signer.
- In the real space blend, the hand of the signer makes manifest the process of /leaving/ (which is referred to) by drawing the event space component in the real space.



- The form of the expression maps also on aspects of the event space that are not entrenched : for instance, the sign /leaving/ (above described) will be articulated where the character is supposed to leave; this place is determined by the general presentation of the event in the conversation. The form/meaning link is relevant only while the temporary real space blend is kept alive during this conversation.
- The modality<sup>4</sup> and aspect<sup>5</sup> of the core action (/leaving/) is also presented through visually accessible forms: for instance, a fast and sharp departure will be expressed by a very fast production of the sign. By contrast, if the process of leaving is slow, the gesture will be also slowly produced. This form/meaning link is not emerging from the conversation, it is a very iconic mapping: the speed of the sign tells the speed of the the action represented. Besides, in visual sign languages, the form/meaning link can be distributed in two or more places: for instance, to express that somebody is leaving slowly, you could have several simultaneous expressions:
  - o the form, movement and location of the hand as described above.
  - o a face expression with half closed eyes: this expression is based on the fact that when something goes away, it is smaller and smaller; therefore, you have to focus more to keep perceiving it. At this level, the action of /leaving/ is presented in two characters: the one who is leaving, and the one who is looking the first one leaving. The form/meaning link in this expression depends on the conversation. Without the context of the conversation, it is impossible to know what aspect is foregrounded: the first character, the second one or the action itself.
  - o the mouth lets out air as long as the hand movement is performed; this last expression requires that the partners in the conversation share an entrenched metaphor : time is flow. In this case, the intensity and duration of the air flow tells about the speed of the leaving<sup>6</sup>.
  - o A face expression expressing sadness. The form/meaning link is based on a quasi biological shared knowledge which allows any human individual to recognise internal emotions from face expressions (DARWIN, C. 1872/1998).

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4 In linguistics, modality a grammatical category that expresses the status of a proposition. Certainty, probability, desirability, and obligation are all examples of modality. In most languages it is shown through auxiliary verbs (called modal verbs), grammatical particles, or by inflection of the verb (see grammatical mood).

5 In linguistics, the **grammatical aspect** of a verb defines the temporal flow (or lack thereof) in the described event or state. For example, in English the difference between *I swim* and *I am swimming* is a difference of aspect. The most fundamental aspectual distinction, represented in many languages, is between perfective aspect and imperfective aspect.

6 As [contemporary physicist Julian Barbour] puts it, time does not really flow, it is the brain that "plays a movie" for us: [http://www.hunfi.hu/nyiri/Nyiri\\_Bristol\\_Film\\_and\\_Time.pdf](http://www.hunfi.hu/nyiri/Nyiri_Bristol_Film_and_Time.pdf)



These simultaneous expressions merge in a unique form/meaning entity presented to a viewer potentially able to grasp it. However, the meaning of it is impossible to determine without other elements that the viewer knows but not us (like the ones described in the six-spacer (LARSEN, F. A. 2003): base space, memory space, relevance space and reference space). This global expression could be translated in various ways depending on these elements that we do not know (we have to admit here that the face represents the person who speaks and the hand the person who leaves) :

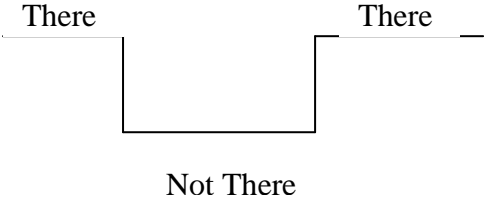
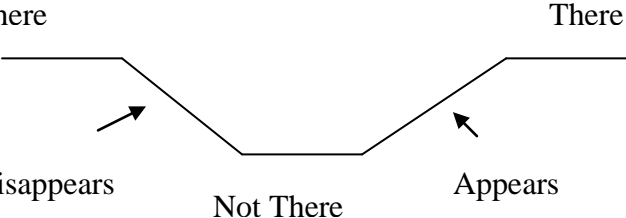
- “I was so sorry that he went away and left me”: in this case, the signer foregrounds his own feelings.
- 
- or “he was so sad to be obliged to leave” : here, the signer foregrounds the leaving person’s feelings.
- 
- Or “they were so sad that he had to leave”; in this case the signer foregrounds other characters.

In this example, the foregrounded elements derive from how, in the conversation, the setting, the characters and the plot were presented. Most of the components require a visual experience (but not all: the air flow has a very tactile character). They are either deaf specific (the sign of leaving) or general (face expressions of emotions, time is flow). Besides, they are either close to the physical knowledge of the world (perspective laws) or more metaphoric (time is a flow).

### **The world from a tactile perspective as contrasted to the visual one**

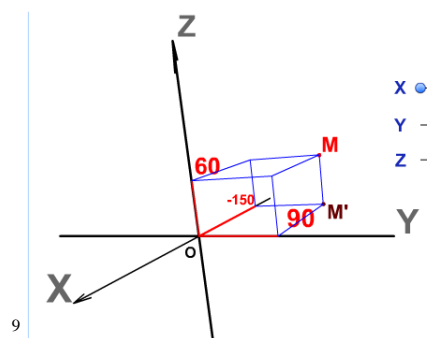
Tactile-kinaesthetic perception and visual perception of events are very different. These differences have an effect on how the world is perceived and experienced (at the level of the event space), and also on how it is mapped onto the real space (which is also tactile-kinesthetic). In broad terms, for a sighted person, the world can be mapped onto a cinema screen (holographic screen would be a better expression since the signing space is tri-dimensional), whereas for a deafblind person, it can be mapped only onto a tri-dimensional screen more difficult to define since it contains the skin plane and bodily components (movement, muscle tone, pressure etc.) that are not easily accessible to vision (and video-recording).

The following grid is an attempt to summarise how tactile-kinaesthetic and visual perspective are contrasted:

Tactile-kinaesthetic	Visual
More sequential <sup>7</sup>	More simultaneous
Tactile-kinaesthetic. Skin plane <sup>8</sup> . Example of Aline and the “play marbles” video.	Visual Cartesian coordinates <sup>9</sup> + tactile kinaesthetic. Visual plane.
Limited space (hand reach)	Wider perceptive space (visual - and auditory reach)
Less continuity <sup>10</sup> <i>Example of something appearing and disappearing.</i> 	More continuity 
Skin: primary space of security. closest space for protection of the body (tactile defensiveness)	Visual field: secondary space of security. Remoter space of protection of the body (critical distance) <sup>11</sup>
sensory receptor and agent for exploration	sensory receptor and agent for exploration
Very little anticipation	more anticipation

<sup>7</sup> Riita Lahtinen work aims (among other things) at putting more simultaneity in a very sequential system of processes. For instance, how to say something without interrupting (sign /coffee/ on the shoulder – drawing on the back etc..

<sup>8</sup> [Plane \(mathematics\)](#), theoretical surface which has infinite width and length, zero thickness, and zero curvature. Riita attempts to project Cartesian coordinates on the skin (for instance by drawing the map of a table on the back of the DB person).



<sup>10</sup> “leaving” when you are DB is a very fast (ON/OFF) process. It is more difficult to make it progressive. You are there or not there, but not something in between. However, communication and language contribute to keep something present in spite of its disappearing.

<sup>11</sup> **Heini Hediger** (1908-1992) : flight distance and critical distance define how react animals of different species when they meet.

## Tactile and visual sign languages

For congenitally deafblind people, the problem of access to language is not only determined by the physical conditions (tactile vs visual) that control tactile processes of schematisation and perception. Socio-linguistic parameters must also be taken into account. Congenitally deafblind people do not live in a world of deafblind people. There is no stable language of the deafblind transmitted over generations. They find around them people attempting to communicate with them and who very often try to adapt for them pre-existing languages; among them, sign languages of the deaf play a prominent role. Let us examine two typical types of contact between visual signing and tactile signing.

- **Situation 1 : Direct transfer with adaptations by native deaf speakers.**

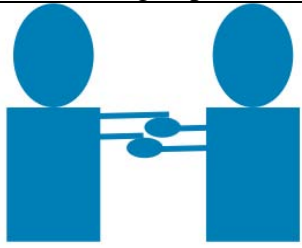
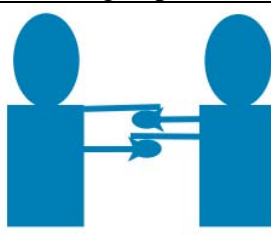
**Adaptations are marginal and the driving force is the native visual sign language.** (SCHWARTZ 2004, MESCH 2001, COLINS & PETRONIO 1998).

This situation is typical of deaf people becoming blind. Most of the times, they were native and fluent users of the Visual Sign Language of their community.



Changes concern :

- Grammar. For instance, modalities have to be expressed differently. Negations or questions cannot the form of a face expression. They have to be signed explicitly by the hands.
- Dialogue management: it concerns hand position (monologue vs dialogue positions, turn taking (achieved by a change in hand positions) and feed back (ex: tapping instead of nodding) and information about the context.

Monologue position	Dialogue position
 <p style="text-align: right; margin-right: 10px;">12</p>	

- Phonology: location<sup>13</sup> can differ; hand shape differs very little.

<sup>12</sup> Pictures taken from Michelle Radin, Special Education Service Agency - Alaska  
[http://www.sesa.org/?option=com\\_content&view=article&id=481%3Atactile-american-sign-language&Itemid=86](http://www.sesa.org/?option=com_content&view=article&id=481%3Atactile-american-sign-language&Itemid=86)

<sup>13</sup> SCHWARTZ, S. (2004) : When a signer produces a sign touching his own body, he leans toward the DB person in order to limit the distance and facilitate.

Adaptations differ according whether the conversation partner is sighted or not. If he is sighted, face expressions of the DB person can take on a linguistic function. Concerning guiding and interpreting, haptic communication covers much more than the classical core linguistic studies (LAHTINEN 1999).

- ***Situation 2: Transfer through an intermediate group (hearing people).***

It concerns mainly CDB persons. They are in contact with sign language users who are sighted and not deaf, therefore not fluent native users of a visual sign language. The fluency of these partners in VSL ranges from very low to very high. In the following schema, we hypothesize that in most of the cases, sighted partners of the CDB 1- master somehow the vocabulary, 2- do not much use sign language grammar – they tend to keep being guided by their native oral grammar (They would frequently speak while signing). In other words:

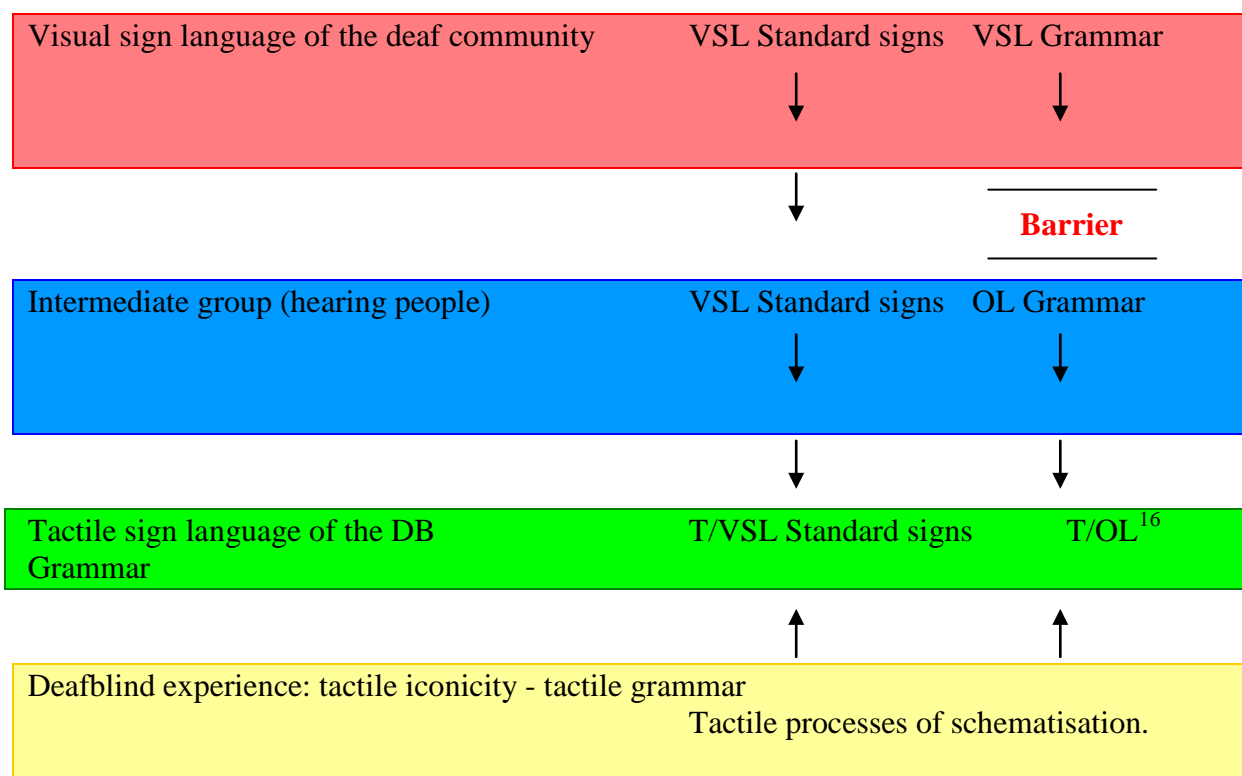
- standard signs (and more precisely hand shapes) are more easily transferred to the tactile form of communication. Sometimes they are exactly the same as in VSL, sometimes they are transformed in order to be easily perceived or performed by the CDB person). These transformations concern often the hand shape and the articulation space.
- whereas the grammar<sup>14</sup> is closer to oral speech or could be described as pidgin-like<sup>15</sup>.

However, there can be a big difference between the production of the sighted-hearing partner and that of the CDB person. The CDB person has often to face very specific constraints that influence his production: motoric difficulties and pragmatic constraints can lead to hand shapes that differ significantly from the typical ones and articulation places that are unusual and variable. Therefore, the same utterance can seem very different when produced by a CDB person and by his partner to a external observer. But this visual difference (to an external observer), is not necessarily perceived by a CDB person whose tactile-kinaesthetic perception and production of the utterance can perfectly match.

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<sup>14</sup> In VSL, the articulation point is defined according to how the visual space is construed by the partners. In T/VSL, the articulation point is defined by the tactile-kinaesthetic structure of the action of the CDB person (including the production of signs, the attention to the partner and the action on the world itself).

<sup>15</sup> The grammar differs according the type of schematisation. For a visual person, /cutting tree/ in one sign (merging /tree/ and /cutting/), It reflects the iconicity of the event. For a CDB, it could happen that the event is perceived on totally different premises and rather as a list of components (because the global image of the tree cutting is not accessible, and the narrative of it was transferred by non native signing speakers using rather a pidgin). The outcome is a sentence with two standard signs for cutting and tree, which would not happen in visual sign languages.



A very important aspect of this situation is the way the language utterances are performed can vary a lot according to individual permanent sensori-motor conditions and/or here and now (on line) constraints on enunciation. Deaf signers produce their signs in a very precise **signing space**. This signing space is different for congenitally deafblind persons. Either their total lack of vision requires it to be totally tactile or, in the case of residual vision, it can be situated in unusual and changing portions of the visual/tactile space. The **shapes of the sign** can look very awkward (from the point of view of the viewer) because of motoric problems, but also in relation to the difficulty to grasp a visually constructed sign when you have a very low vision or no vision at all. There can also be **very local and transitory constraints** that require a total reorganisation of the communicative space: one hand can be busy with exploring, or the deafblind person needs to lie on her back to be more comfortable etc... All these individual and sometimes very ephemeral peculiarities result either from obstacles impeding the standard implementation of a sign (as regards space and shape) or from a very **fast and expert coordination of sub-spaces** (location and form of the sign, space of exploration, space of emotional contact with the partner). You can end up with signs whose shape and location are transformed as a result of a blend between the “standard” features of the sign and the motoric constraints from a stereotypy difficult to refrain. In this case, the partner has to recognise the sign “in” the stereotypy. You can also have situations where the contact with the partner is secured through the legs and the sign being performed next to the part of the body which is involved in the content (ex: signing HURT next to the belly). In this case, the congenitally deafblind person uses his own body in the fastest and most efficient way; he tries to adjust his speed of communication to his speed of thinking. Of course, the best people at grasping these expressions are the closest to the individual culture of the child and the best signers.

<sup>16</sup> Tactile and oral grammars share the constraint of sequentiality.

### **The processes of schematisation and categorisation (contrasting activity).**

When developing language, congenitally deafblind people, like other human beings, develop their mastering of the dialectic link between categories of life experiences and symbolic systems. Building concepts requires the possibility to identify patterns and regularities in life. Conversely, grasping and mastering symbolic forms help stabilising and manipulating these categories.

When observing congenitally deafblind people in conversations with their partners, one can see that they “work at” or “play with” these two aspects of the process of symbolisation: categorising the world events and co-constructing symbolic forms (signs).

Co-constructing a category includes two cognitive activities

- mastering and rehearsing the components of the activity in the process of being categorised.
- Contrasting it with other categories that are already established or in progress.

Let us illustrate this with the example of Paul, a 2-year-old hearing and sighted child. He is very interested in the sounds of motors. Probably because sometimes it is nice (like the sound of Mum’s car), sometimes it is a bit frightening (like big trucks passing by). When he detects the sound of a motor in the distance, he utters: “it’s a car”, or “it’s a motorbike”, or “it’s not a truck”, etc. It is possible to infer from these utterances, that he in his mind a representation of a category of entities (let us call it the category of “means of transportation with noisy engines”) that he cannot name but recognise without any difficulty. At the same time, he is able to contrast the sub-categories belonging to this group (car vs truck vs motorbike). This is made possible because adults co-author with him joint attentional frames where these categories are relevant. The words that are negotiated at this occasion allow him to build up a symbolic system where a set of events mutually contrasted (/car/, /truck/,/motorbike/) are linked to a set of words that are also mutually contrasted (“car”, “truck”, “motorbike”). It is interesting to discuss about the role of the words in this situation. The fact that Paul likes to share and try these words whenever he hears the sound of a motor proves that it is for him a joyful cognitive activity. We could hypothesize that what motivates him is the pleasure to master a domain of reality in the same way as the persons he likes do. In this example, Paul first labelled all the sounds of engines with the word “car”, but then, the adults, within joint attentional frames, drew his attention to different types of sounds by bringing in new labels. In other words, when an experience is singled out, it can be given a name; this form/meaning pair works as a prototype. Then, adults can bring in new names that will help differentiating various instances of a category where the prototype is only one of them. In this example, the semiotic value of “car” changes from being a prototype to being just an instance. We see here a dialectic process where experience of the world and linguistic elements support each other in building up more and more detailed and culturally shared experiences of the world. It is interesting to observe that the super-ordinate category (means of transportation with a noisy engine) does need to be named for the process of schematisation to take place. The author observed that, in FSL, it is frequent that names for animals (dogs, cats etc.), vegetables (beans, potatoes, etc.) and other types of entities are easily and frequently used. But, when you ask a deaf person what is the word for super-ordinate categories like “animal” or “vegetables”, you observe an hesitation in the answer; very often, the standard sign is not frequently used; or there are different signs for different regions or generations;

and, most interestingly, the concept of “vegetable” will be signed as a list of vegetables (“beans+carrots”). This example shows that naming an entity reinforces the process of categorisation by focusing on both the similarity and the difference (“it is not a car, it is a motorbike”), but at the same time, that the super-ordinate category does not need to be named until it takes on a functional value at a later stage.

In the following grid, we will see that in the transactions between children and adults, reality (as construed in joint attentional frames) takes on semiotic values at two levels:

- the first one is the cultural one: we both live in a world where it is functionally useful to differentiate entities like
  - o big noisy things that go fast and frighten you(/trucks/),
  - o small things that are also noisy, not so fast but unstable and that look like Dad’s one (motorbike),
  - o and things like the one Mom goes out when she is just back home (/car/).
- The second one is more precisely linguistic: the culturally differentiated entities are given labels (words) that can be used to tag these entities in conversations, but will also be recognisable in other utterances than the ones in which they were first singled out in the seminal joint attentional frames. For instance, the word “truck” which was first extracted from utterances like “this is a truck!” or “look at the truck!” will be recognised in utterances like “there is a truck parked next to the house”, which makes possible to foreground the concept of /parking/.

Physical plane	Cultural semioticity.	Linguistic semioticity
	Conceptual system in the culture. <ul style="list-style-type: none"> <li>- Metonymic link (the sound belongs to the experience)</li> <li>- contrast within a system<sup>17</sup></li> <li>- flexibility of the extension of the concept</li> </ul>	Linguistic system in the culture <ul style="list-style-type: none"> <li>- metonymic link to the experience (label)</li> <li>- potential for mimetic production</li> <li>- contrast in the linguistic system</li> <li>- mapping with the cultural system</li> <li>- flexibility in the extension of the concept</li> <li>- potential for metaphorisation</li> </ul>
Sound 1	/Car/	“car”
Sound 2	/Truck/	“Truck”
Sound 3	/Motorbike/	“motorbike”

This process is not different for congenitally deafblind people. We will illustrate this by two examples drawn from Kari S. Brede’s Master thesis at the University of Groningen in 2008. These two examples show how Fredrik started to develop, acquire – or rather create language. Fredrik was born September 2002. He is a boy with congenitally deafblindness, totally deaf

<sup>17</sup> It would be interesting to see whether Fredrik is not thinking in terms of contrast between two types of experiences (subway and another thing I do not remember). So making sense of his world by establishing solid and well delimited knowledge spaces on which other activities could be mapped or contrasted with....

and blind. Fredrik was cochlear implanted on his left ear at the age of 28 months. It is not clear how much he hears, but he is fond of sounds and music. Tactile modality is by now the natural way for a language. He is in Skådalen School for deafblind in Norway, and his primary teacher Wibecke Larsen is in the pictures and the video with him.

The two signs developed very differently.

The sign /UNDERGROUND/ was a planned story. The concept of going by the underground, was a well known scenario in Fredrik's weeks in school. He liked that event very much, and it was the chosen context for presenting a new conventional sign – changed to a tactile modality in a way he accepted. Presenting this sign in a well-known scenario, made it possible for Fredrik to recall the memory in another context containing elements from the underground context. The co-presence of the teacher made it possible for her to see and react to the new gesture in Fredrik's utterances. Through negotiations the gesture establish and became a sign.

The second sign about being sorry – the CRY-SORRY manner of feeling bad, was co-created over time. It was possible to trace the first gesture back in time, in older videos, to observe the gesture arisen from a BET, pointing to an inner state. Then the gesture is later observed used more consciously, and imitated and answered by the teacher. The partners answered also by using the conventional sign CRY. This happened in several occasions, over a long period of time. Then we observe a new gesture, probably grown out of the combination of his own gesture and the conventional sign: a sign from the culture and his own gesture pointing to an inner state *blend*. The result is a new sign, through use and negotiation of this gesture. The CRY-SORRY sign has a more consistent meaning than the meaning of the origin of the gesture.

An interesting outcome of this process is that he now can use these signs to start a conversation about the underground or CRY-SORRY. In a quiet “sit-and-talk“ situation, he can talk about being sorry also when he is happy. He has the focus on talking, and he can talk about the sign, which is a much more complicated task than telling he is sorry. This shows that very early in his linguistic development, Fredrik is interested in exploring the function of his first negotiated signs. He probably enjoys the power of his words on other people and reflect on that in a kind of meta linguistic activity. His attention is not only on the experience, but mainly on the effect of using words in a dialogue.



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