



**HAL**  
open science

## Toward a typeface for the transcription of facial actions in sign languages

Adrien Contesse, Chloé Thomas, Claudia S. Bianchini, Claire Danet, Patrick Doan, Morgane Rébulard, Jean-François Dauphin, Léa Chèvrefils, Mathieu Réguer, Dominique Boutet

### ► To cite this version:

Adrien Contesse, Chloé Thomas, Claudia S. Bianchini, Claire Danet, Patrick Doan, et al.. Toward a typeface for the transcription of facial actions in sign languages. Workshop "SignNonManuals 2", May 2019, Graz, Austria. hal-02342442

**HAL Id: hal-02342442**

**<https://hal.science/hal-02342442v1>**

Submitted on 16 May 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



# typannot,

Toward a typeface for the transcription of facial actions in sign languages

Typannot is an interdisciplinary project led by linguists, designers, and developers, which aims to set up a complete transcription system for SL that includes every SL parameter: handshape, localisation, movement, facial actions.

**Authors:**  
Adrien Contesse,  
Chloé Thomas,  
Claudia S. Bianchini,  
Claire Danet,  
Patrick Doan,  
Margane Rébular,  
Jean-François Dauphin,  
Léa Chèvrefils,  
Mathieu Réguer,  
Dominique Boutet



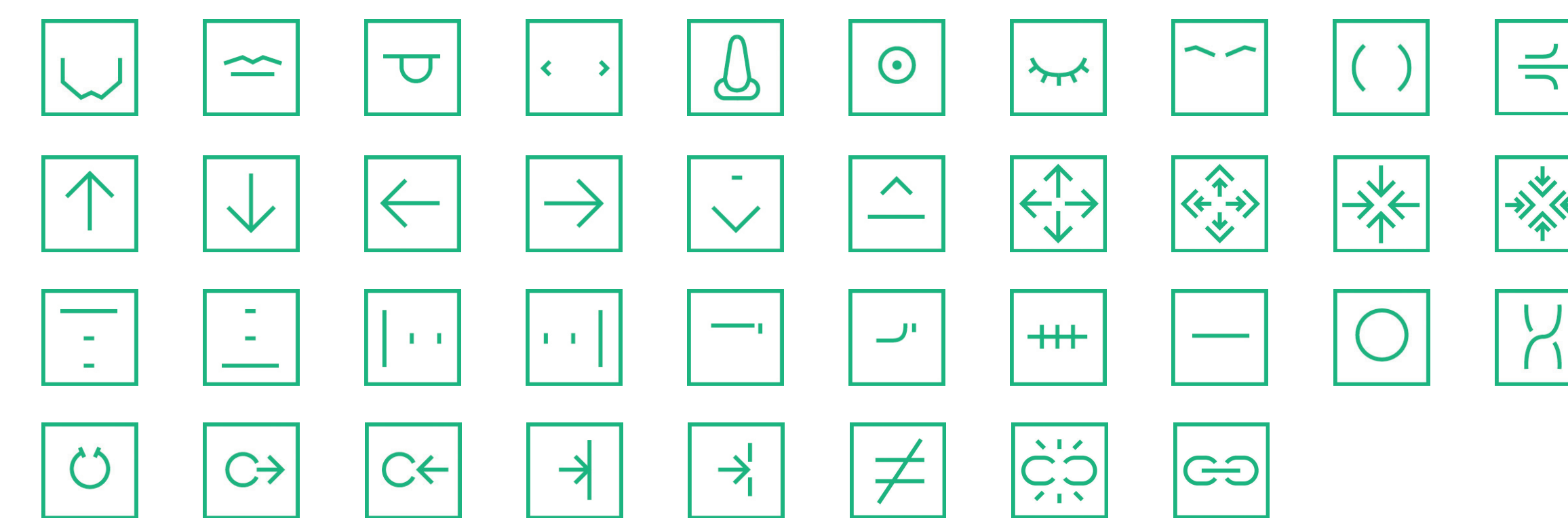
## Parts

All facial actions can be transcribed using only six active facial parts. Indeed some facial parts like the lips and nose are physically linked so that positions of the former induce positions of the latter.

## Formula

Typannot graphematic formula is based on a 3 dimensional grid. Indeed all the different configurations of facial actions can be described by its X, Y, Z axis positions. As a result, all facial actions be described and encoded using a restricted list of 39 qualifiers. This methodical decomposition of all facial components enables a precise and accurate transcription of a complex facial.

<b>1. Jaw</b> A. vertical vergence B. horizontal position C. depth	<b>2. Lips</b> A. vertical vergence B. link C. horizontal selection D. vertical selection E. vertical position F. depth	<b>3. Corners</b> A. horizontal vergence B. link C. horizontal selection D. vertical position E. horizontal position F. depth	<b>4. Tongue</b> A. depth B. horizontal position C. vertical position D. shape F. contact
<b>5. Eyelid</b> A. horizontal selection B. vertical vergence	<b>6. Eyeball</b> A. horizontal position B. vertical position	<b>7. Eyebrow</b> A. horizontal selection B. horizontal vergence C. vertical position	<b>8. Air</b> A. channel B. stream



## Generic glyphs

Each qualifier from the graphematic formula has its own symbolic "generic" glyph. These glyphs enable the transcription of any facial action using only a few glyphs which greatly reduces the amount of time needed to transcribe facial actions corpora.

## First mouth actions transcriptions

Lips converge Corner diverge left 	Lips fore up Corner converge 	Lips down Corner down 	Lips diverge Corner left up 

## Examples of facial action variations

Jaw diverge Lips diverge Corner diverge Eyeball right 	Jaw back Lips converge up Corner diverge Eyelid converge Eyebrow converge down 	Jaw diverge back Lips converge Corner converge Eyebrow down 	Jaw diverge Lips diverge Corner diverge Eyebrow up 



## Corpus transcription

An 18m 20s long facial action corpus of two deaf signers has been recorded using two different cameras. The first one, RGB HQ, is used to capture a high quality image and the second, infrared Kinect, is used to capture the depth. The latter was linked with Brekel Proface 2 (Leong et al. 2015), a 3D animation software that enables automatic recognition of facial actions. This corpus has been fully annotated using Typannot's generic glyphs. These annotations were then compared to the automatic recognition results given by Brekel Proface 2.

## Preliminary results

