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## Annotating sign language using a dedicated glyph system (the project Typannot)

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Annotating  
sign language  
using a dedicated  
glyph system.

**Background**

The problems about the existing systems: on one hand, we have glyphic systems (Hamnosys, Sign Writing) that are difficult to read or to write, on the other hand, we have phonological systems that are too linear.

**Purpose of this project**

Design a typeface for the annotation of SL respectful of the phonology of SL, of design rules, readable at several levels (parameter, sign), writeable, searchable (in ELAN framework) and allowing a gestural annotation.

**Why Eccarius & Brentari?**

The corpus of Eccarius & Brentari (2008) covers 237 handshapes of 9 SL (Hong Kong, Japanese, British, Swedish, Israeli, Danish, German, Swiss German and American) and its level of selection represents the most economical way.

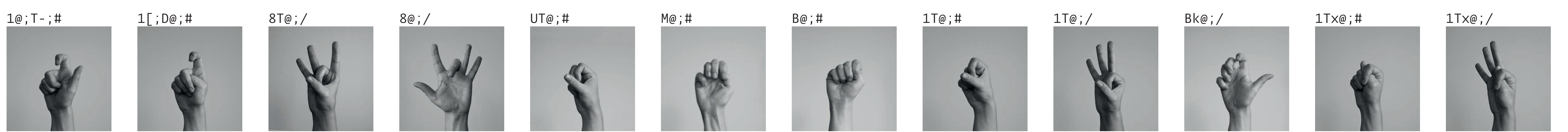
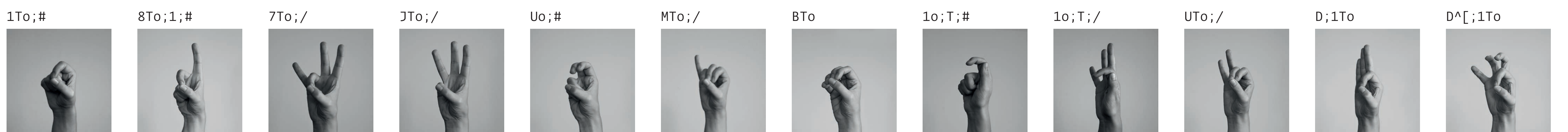
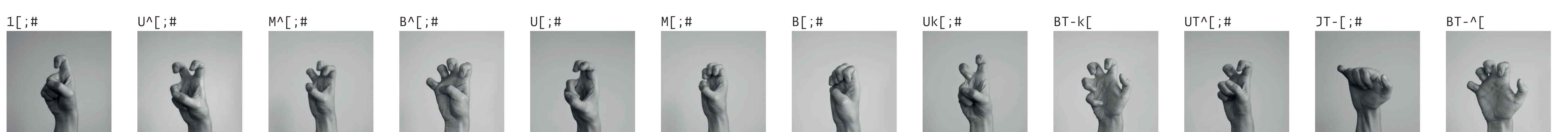
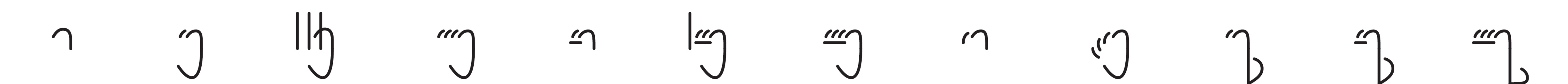
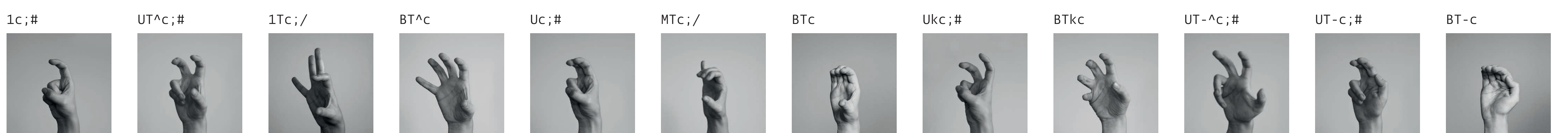
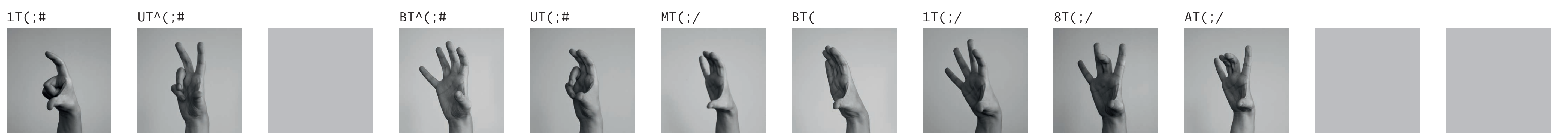
multi-lingual sign language graphematic system table							
ECCARIUS & BRENTARI CONFIGURATIONS	FINGERS				THUMBS		
	^ Spread				T Opposed	T- Unopposed	
	1	2	3	4	2	3	4
/ Extended							
< Flat opened	i	ii	iii	iiii	—	—	—
> Flat closed	.	—	—	—	—	—	—
( Curved open wide	∪	∪∪	∪∪∪	∪∪∪∪	—	—	—
c Curved open narrow	∩	∩∩	∩∩∩	∩∩∩∩	—	—	—
[ Bent	∩	∩∩	∩∩∩	∩∩∩∩	—	—	—
o Curved closed	∪	—	—	—	∪	∪	∪
@ Closed	.	—	—	—	∪	∪	∪

Finger position & selection	Finger contact	Handshape organisation

237 handshapes of 9 sl

(Hong Kong, Japanese, British, Swedish, Israeli, Danish, German, Swiss German and American)

1;#	U^;#	M^;#	B^;#	U;#	M;#	B;#	Uk;#	BTk	Ux;#	Ux;T-;#	BT^x
							∪	∩	∩	∩	∩
	1T>;#	UT>;#	1>;/	U>;#	M>;#	B>;#	DT>;/	BT->	MTx;#	BTx	1Tx;#
.	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩
1c;#	UT^c;#	1Tc;/	BT^c	Uc;#	Mtc;/	Btc	Ukc;#	BTkc	UT^c;#	UT-c;#	BT-c
∩	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩
∩	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩	∩





# Abstracts

www.icsla2015.nl

## **Annotating sign language using a dedicated glyph system (the project Typannot)**

Boutet, Doan, Danet, Bianchini, Renulard & Gogueli

Few systems are able to annotate sign language (SL) : Stokoe Notation System, HamNoSys, SignWriting, BTS. Either they are based on symbols representing SL specific parameters — difficult to write, or they are based on linear alpha numerical arbitrary encodings. The question of annotation is widely debated and remains an essential requirement for linguistic analysis whether in the form of ID-gloss or shape description. Typannot aims at giving better typographic tools by creating a dedicated glyph system that allows users to annotate the SL parameters in an iconic way thanks to the expertise of linguists, type designers and a roboticist.

We will present the concepts and the rules behind our glyphic system and show how we are able to design 237 handshapes glyphs allowing their annotation in 10 SL (based on Eccarius & Brentari 2008). The components and the rules are limited, organized in order to maximize the system economy and learning curve, both in writing and reading (G. Noordzij 2006).

This glyphic system can annotate the other manual parameters allowing combination of handshapes, movements and location. The orientation can be deduced from information inscribed in each glyphic unit. The design of this typeface is based at least on a graphematic description of a panel of 240 signs (Bickford 2005) for 4 SL. Those three graphematic levels once unified in a common writing space should open new perspectives in researching a writing system aimed at the deaf community. This typographic system will reach a phonological level of representation in order to qualify as a viable transcription of SL.

A low-cost motion capture system (Weichert et al 2013) will be used to enrich the glyphs adding more information than configuration as speed, acceleration and orientation. We are also considering the latest font format (OpenType) to allow dynamic font features like contextual glyph replacement.

### **References**

Eccarius, Petra, et Diane Brentari. « Handshape coding made easier; A theoretically based notation for phonological transcription ». *Signe Language & Linguistics* 11, n° 1 (2008): 69-101.

Bickford, J. Albert. *The signed languages of Eastern Europe*. Citeseer, 2005.  
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Weichert, Frank, Daniel Bachmann, Bartholomäus Rudak, et Denis Fisseler. « Analysis of the Accuracy and Robustness of the Leap Motion Controller ». *Sensors* 13, n° 5 (14 mai 2013): 6380-93. doi:10.3390/s130506380.