

# Transcription systems as input to coding systems: SignWriting & SignTyp

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# Transcription and coding systems: Purposes

- Transcription system: Record language samples unambiguously and rapidly
- Coding system: Analyze transcribed material for research purposes

## Desirable characteristics

### Transcription system

### Coding system

Most critical  
general  
requirements

Fast to write

Easy to understand

Computer friendly

Computer friendly

Symbol  
density

**Synthetic:**  
**Most signs  
transcribed with very  
few symbols**

**Analytic:**  
**Most signs coded  
with many symbols  
– one for each  
characteristic of  
interest**

# Problem

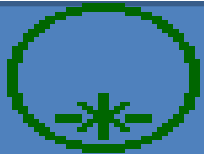
- The desirable characteristics of each system are different. Most importantly, a system either uses many symbols or few symbols – it cannot be optimized to do both.
- A transcription system is not a (good) coding system. A coding system is not a (good) transcription system.

# Solution

- Use SignWriting as transcription system
  - Compact, easy to learn, easy to remember, easy to write
  - Synthetic: each symbol represents many characteristics of a sign
    - Average sign has about 5 glyphs (symbols)
  - Knowledgeable users world-wide for many languages
- Use SignTyp as coding system
  - Conversion from SignWriting is a one time process
  - Easy to understand
    - “Symbols” in SignTyp are English words that describe a characteristic
      - Example: the fist handshape is coded as “closed”
  - Analytic: each symbol represents one characteristic of a sign
    - A completely analyzed sign can have more than 300 symbols/records

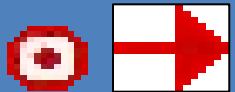
# SignWriting Structure

Symbols (glyphs) combine as a graphic cluster



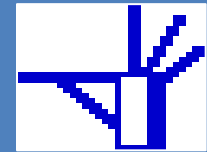
## Location & Expression

hand touches lips,  
mouth pursed



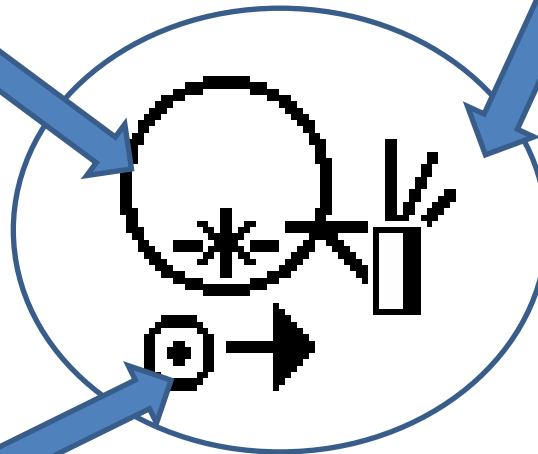
## Movement

hand brushes across lips  
from left to right



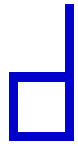
## Handshape & Orientation

Right hand,  
index and  
thumb touching,  
palm facing left,  
hand pointing  
out



ASL "fast, abstain"

# SignWriting Examples



Right Index hand  
Palm faces  
reader

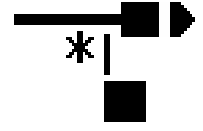
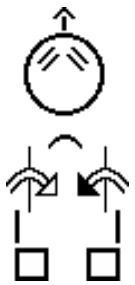
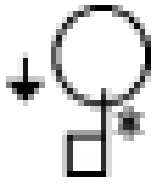
Right index  
hand faces  
left

Right index  
hand faces  
away from  
reader

Right index  
hand face  
upward

Right  
index hand  
points  
forward

Right index  
hand face  
down



Red

Success

Go

Happen

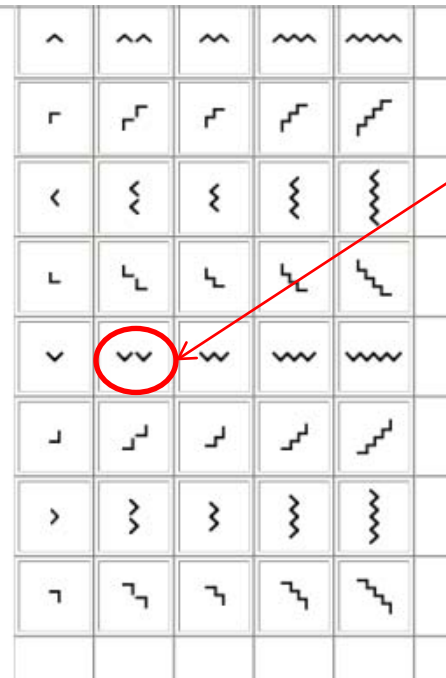
Each of you

Time

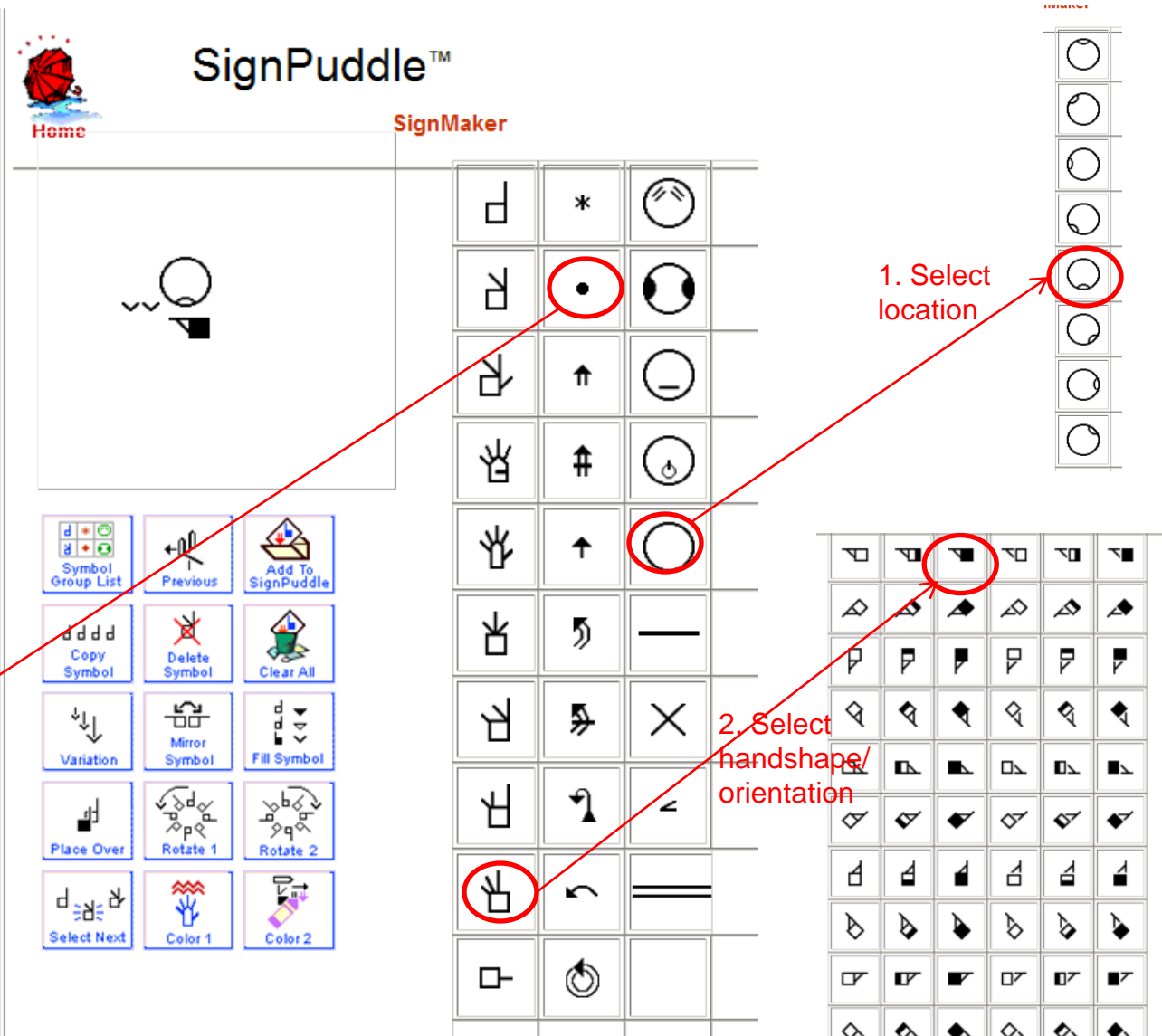
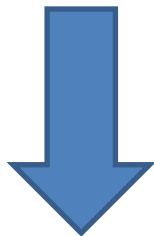
# 1. From video to SignWriting



BIRD in ASL



3. Select repeated movement



Home SignMaker

1. Select location

2. Select handshape/orientation

3. Select repeated movement

Symbol Group List Previous Add To SignPuddle

Copy Symbol Delete Symbol Clear All

Variation Mirror Symbol Fill Symbol

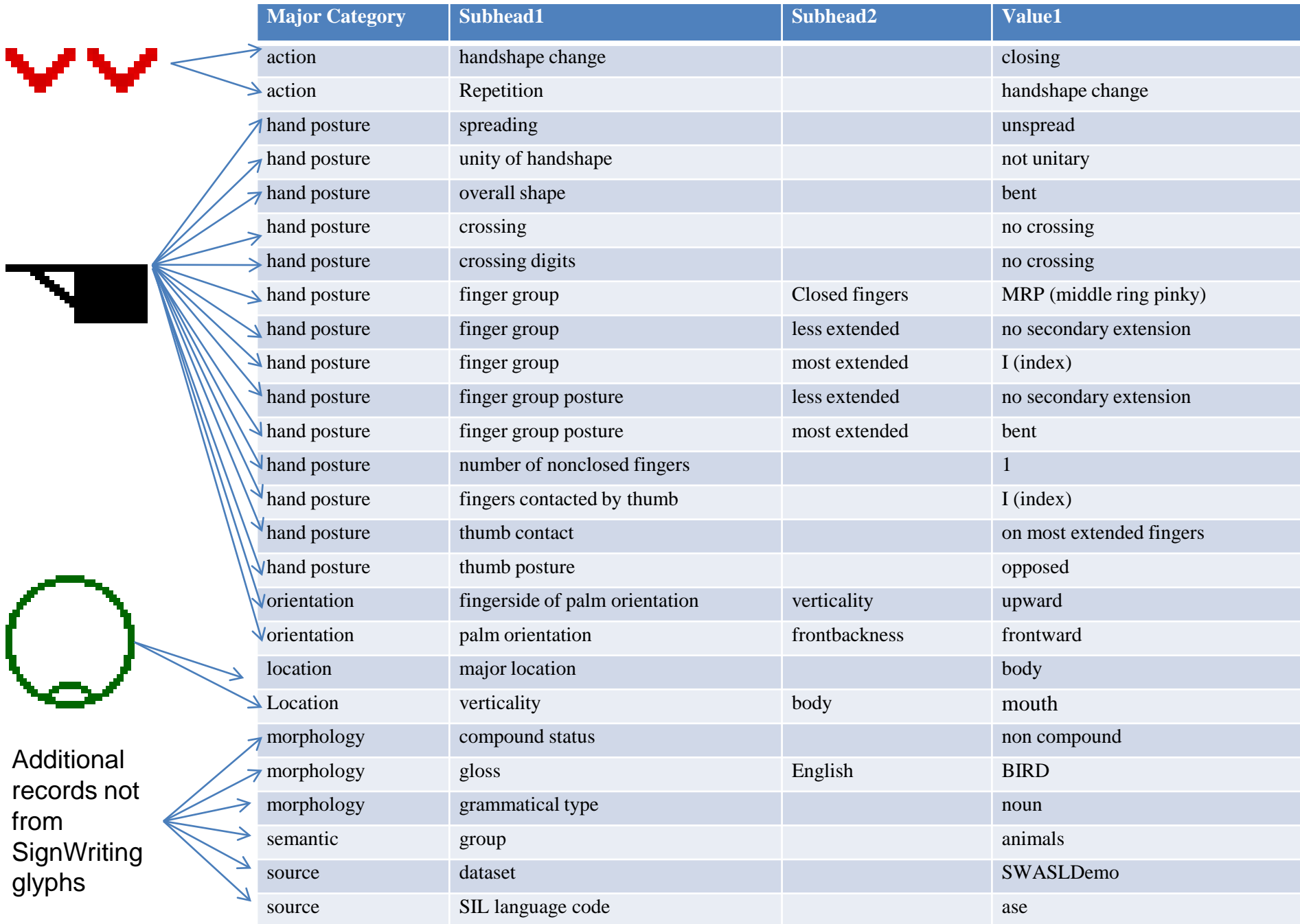
Place Over Rotate 1 Rotate 2

Select Next Color 1 Color 2

Select glyphs (symbols) from glyph menus and move them to the writing space. Only three glyphs are needed to write BIRD.



# 2. Generate SignTyp Records from SignWriting



# SignWriting and SignTyp working together: finger groups and postures

- This research project compares signs from 18 datasets (14 distinct signed languages).
  - 11,956 signs from preexisting sources already in SignTyp
  - 15,684 signs added from SignPuddles
- SignPuddles are found on the SignWriting web site. Usually, there is one SignPuddle for each language. They are an unedited, wiki-type space where anyone can write a sign.
- Like any open web space, errors of various kinds can be expected. However, the data we downloaded seems to have good general agreement with edited material from the other sources in SignTyp.

# Sample Research question

What is the relationship between  
finger posture and finger groups?

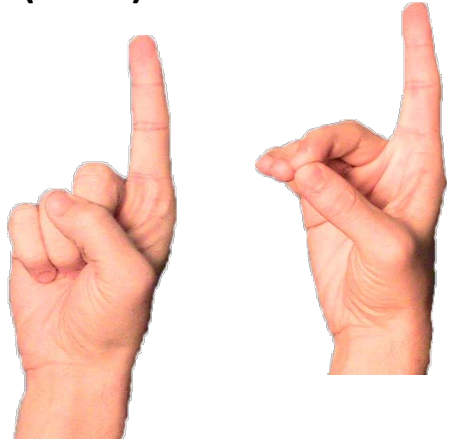
# SignTyp language sets

SIL codes	Sign language	Dataset	Signs	Handshapes		
				Strong	Weak	Total
aed	Argentine	SignPuddle	649	737	285	1022
ase	American	Hara/Stokoe	1890	2013	1218	3231
ase	Old American	Long	1549	1545	849	2394
ase	American	Rozelle	656	799	475	1274
ase	American	SignPuddle	7376	10928	4193	15121
bzs	Brazilian	SignPuddle	392	442	152	594
cse	Czech	SignPuddle	1671	2370	1370	3740
dse	Netherlands	SignPhon	3080	539	151	690
fse	Old Finnish	Rozelle	609	1497	514	2011
fse	Finnish	Rozelle	354	1729	605	2334
jsl	Japanese	Hara	2516	2673	1098	3771
kvk	Korean	Rozelle	614	1242	546	1788
mdl	Maltese	SignPuddle	350	2613	1721	4334
nncs	Nicaraguan	SignPuddle	895	840	430	1270
nsl	Norwegian	SignPuddle	1361	856	376	1232
nzs	New Zealand	SignPuddle	688	731	378	1109
pso	Polish	SignPuddle	2091	476	197	673
psp	Philippine	SignPuddle	899	3676	1431	5107
<b>Total</b>			<b>27640</b>	<b>35706</b>	<b>15989</b>	<b>51695</b>

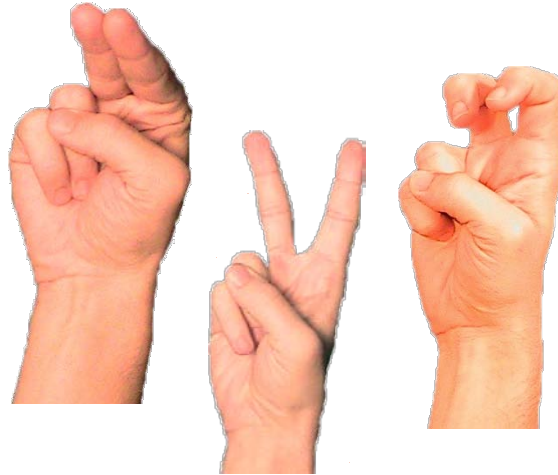
# Finger group examples

(for most extended fingers)

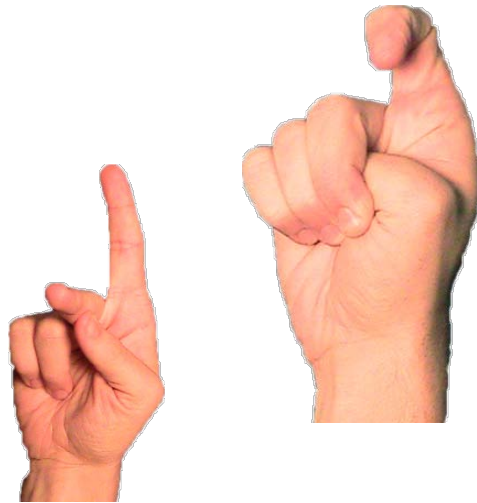
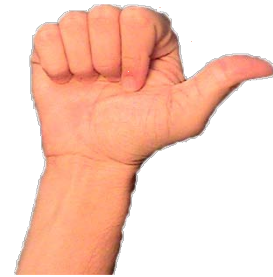
**I (index)**



**IM (index & middle)**



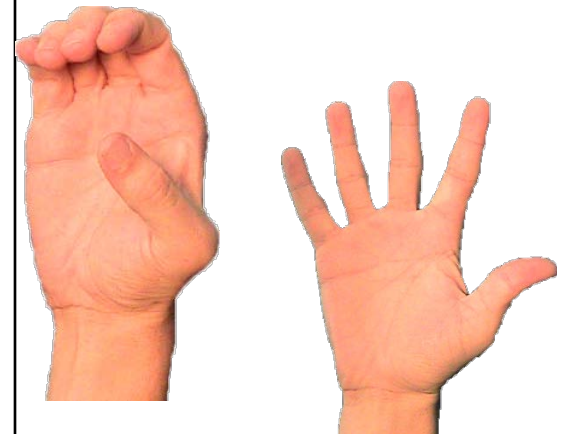
**no extended fingers**



**MRP (middle ring & pinky)**



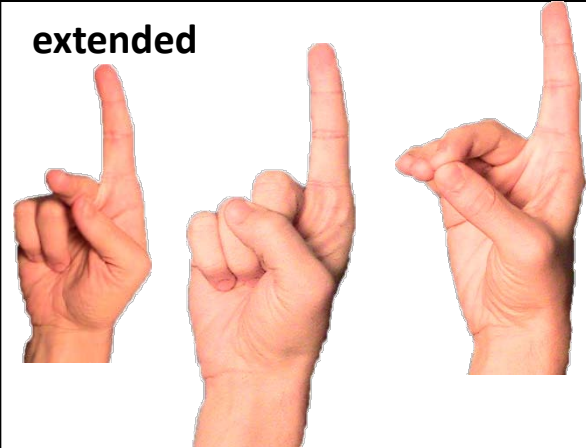
**IMRP (all four fingers)**



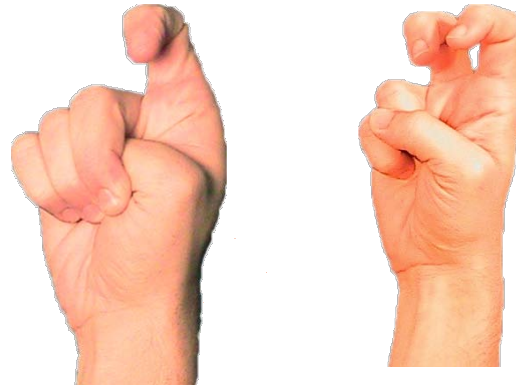
# Finger posture examples

(for most extended fingers)

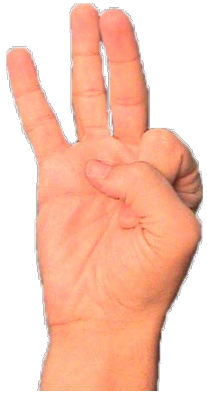
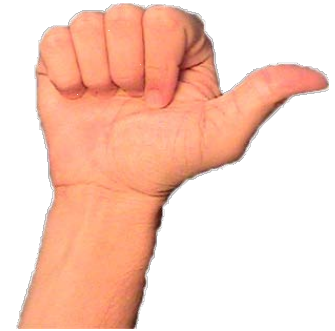
**extended**



**hooked**



**closed**










**curved**



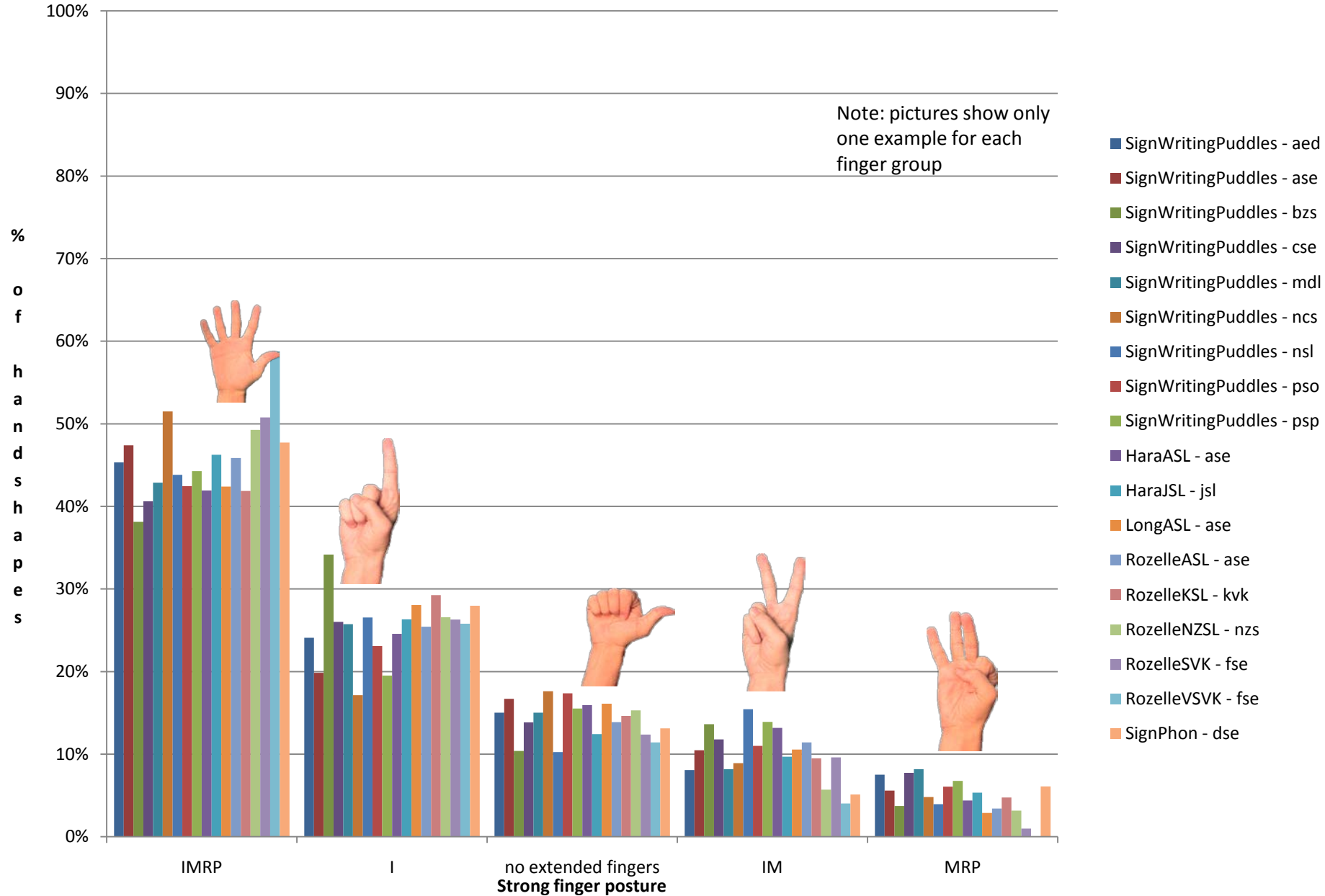
**bent**



# Examples of coded handshape characteristics in SignTyp

Sign Writing glyph	Most extended fingers	2 <sup>nd</sup> most extended fingers	Closed fingers	Posture of most extended fingers	Posture of 2 <sup>nd</sup> most extended fingers
	IMRP	–	–	Extended	–
	–	–	IMRP	–	–
	I	MRP	–	Extended	Curved
	IM	–	RP	Bent	–
	I	M	RP	Extended	Bent
	IM	–	RP	Hooked	–
	MRP	I	–	extended	Bent

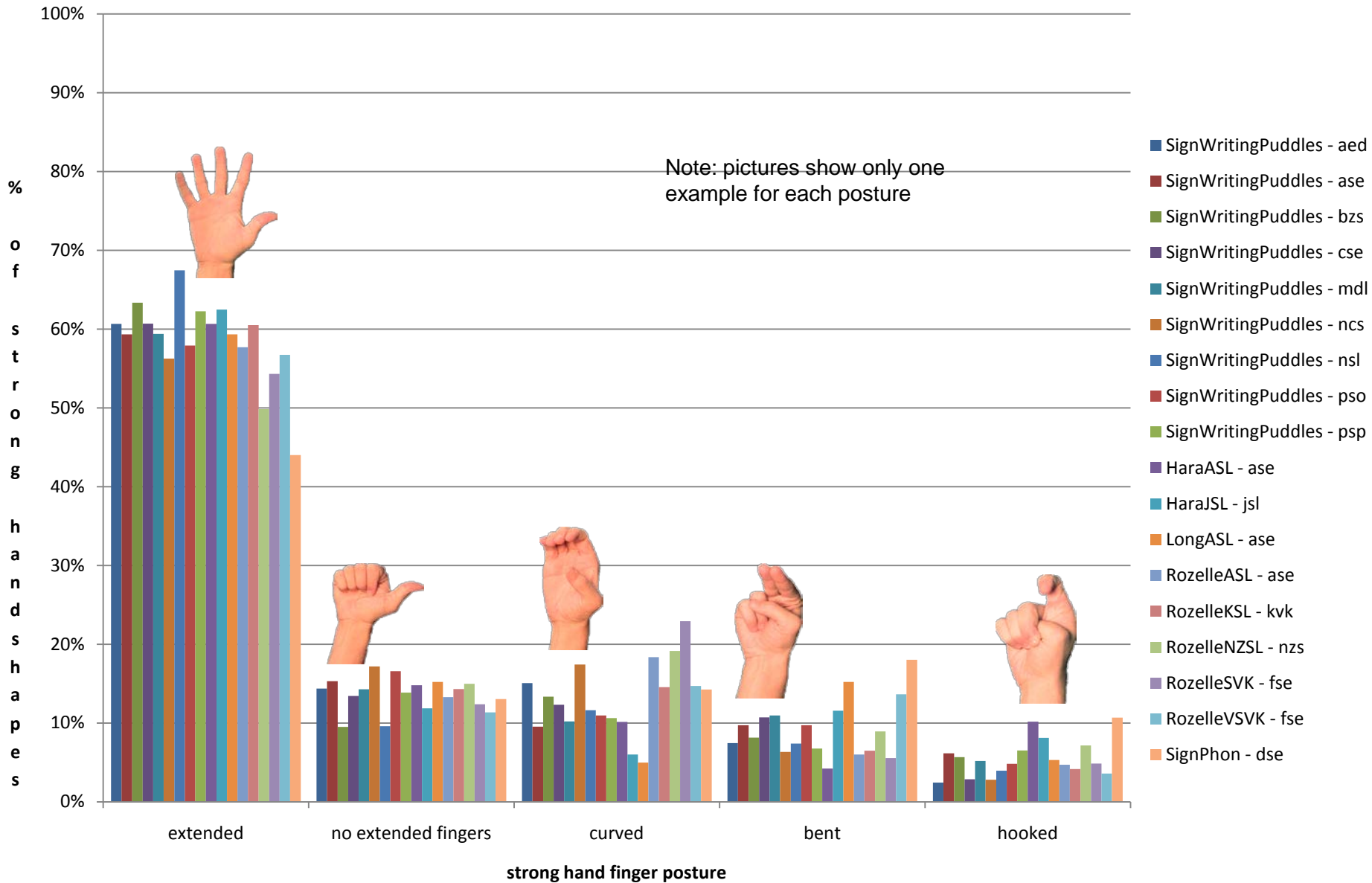
# Most common finger groups (strong hand)



All sources agree that IMRP is the most common finger group by a wide margin.

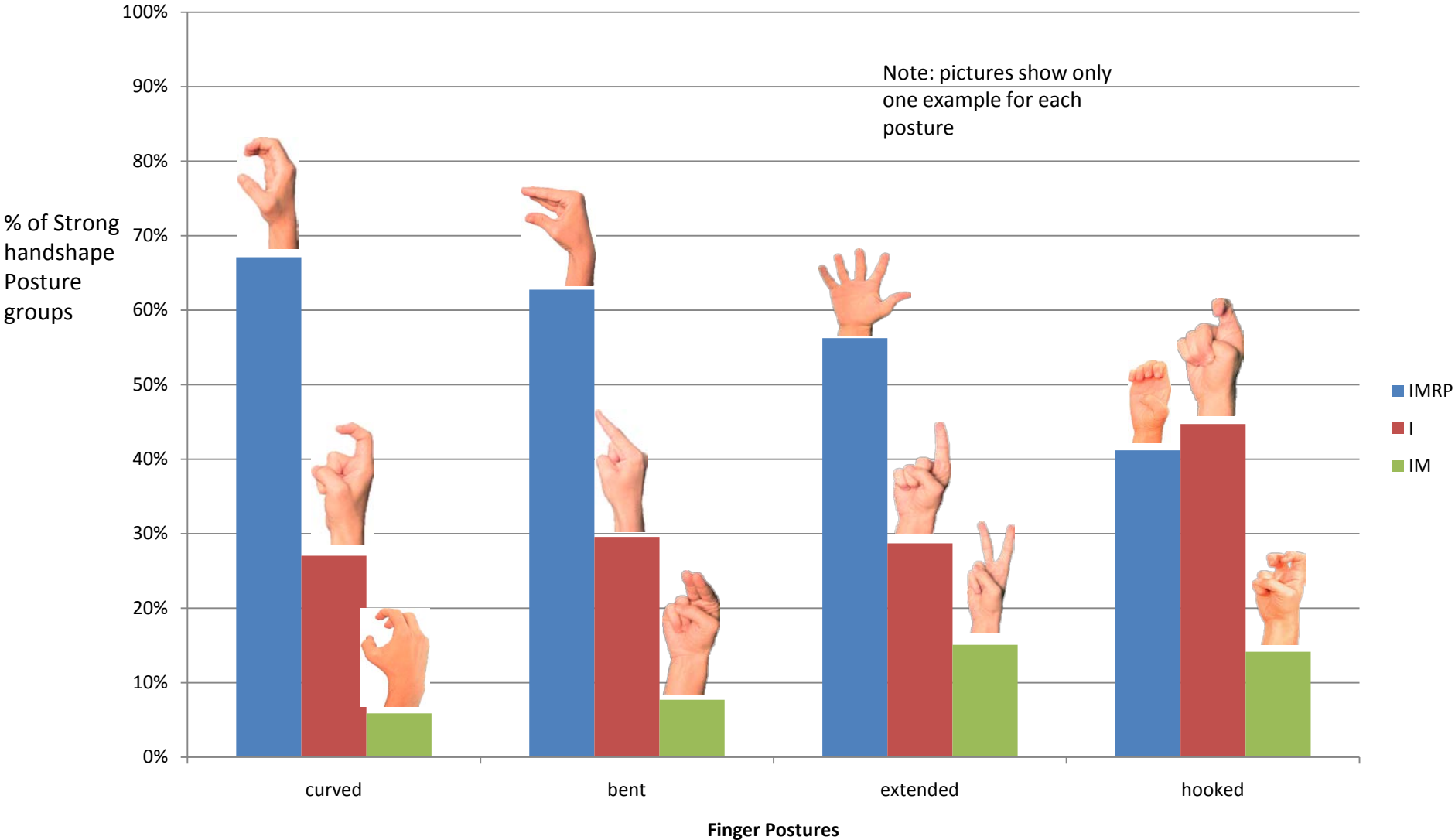


# Posture of most extended fingers (strong hand)



Extended posture is by far the most common.  
 Hooked posture is the least common.

# Posture and most common finger group for most extended fingers (strong hand)



A single finger group is the most common only for a hooked posture. For all other postures, the most common group is all fingers. A curved posture has the strongest preference for an all-finger group.

# Conclusions

- The analysis shows:
  - the extended posture is preferred
  - For all fingers to have the same posture is preferred in general. BUT hooked postures have an unexpected preference for only one finger to be hooked instead of all fingers to be hooked. All other postures strongly prefer all fingers to have the same posture.
- SignWriting and SignTyp together provide an easy method to enter signs and an easy way to understand and analyze the data. Many other characteristics of signs remain to be discovered...

# Acknowledgements

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- Photos by Adam Frost from SignWriting Symbol Lessons: [www.signwriting.org/lessons/iswa](http://www.signwriting.org/lessons/iswa)
- Illustrations courtesy of SignWriting.org including illustrations from entries in SignPuddle Online: [www.SignPuddle.org](http://www.SignPuddle.org)