swiss german NLP

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overview

swiss german

NOAH corpus

POS tagging

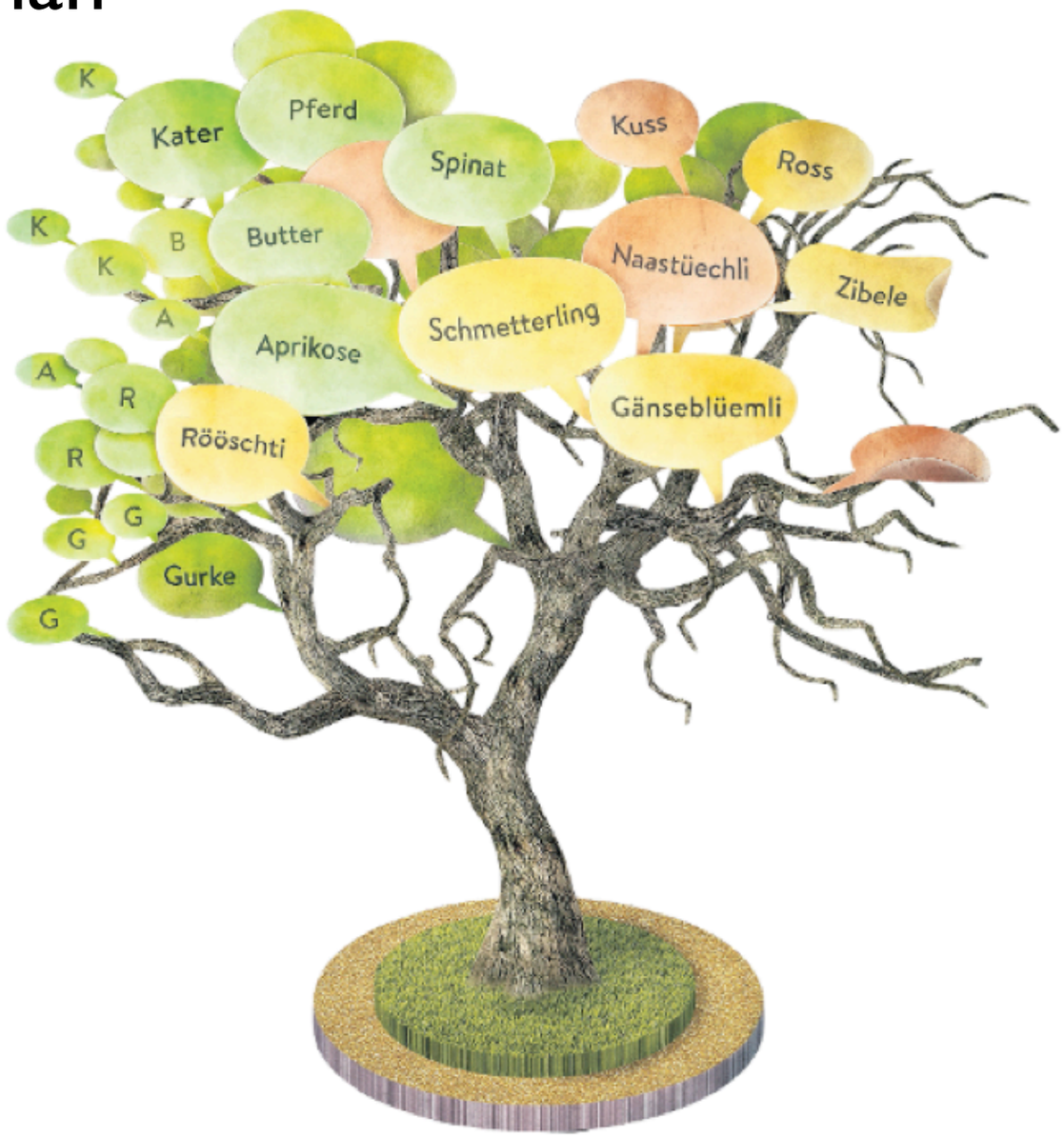
parsing

dialect identification

spoken swiss german

swiss german

- differences in every (linguistic) aspect
- dialects vs. standard german
- dialect vs. dialect



source: https://www.nzz.ch/nzzas/nzz-am-sonntag/richtig-krass-diese-sprache-ld.2615

swiss german

source: Kleiner Spachatlas der deutschen Schweiz: http://www.ksds.uzh.ch/de.html

lexical & morphological differences

GSW vs. **GSW**

en/es kafi

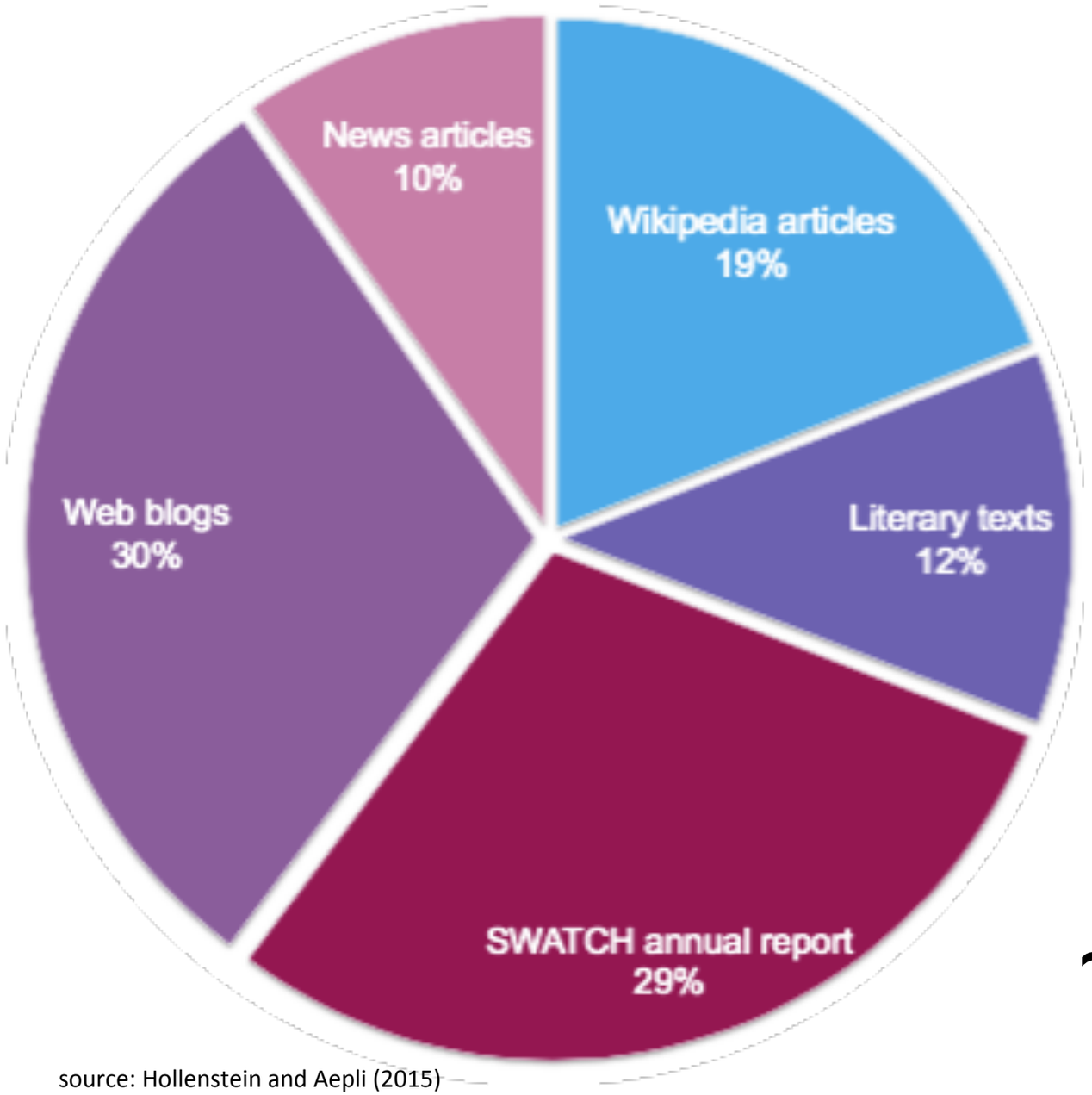
GSW vs. **DE**

die schnecke

de schnägg

NOAH corpus

... of written GSW



source: Hollenstein and Aepli (2015)

~116'000 tokens

POS annotated

POS tagging

- **STTS** 54 part-of-speech tags for standard DE
- **PTKINF** ich gòò ez **go** pòschte

source: Glaser (2003)

- **TAG+**

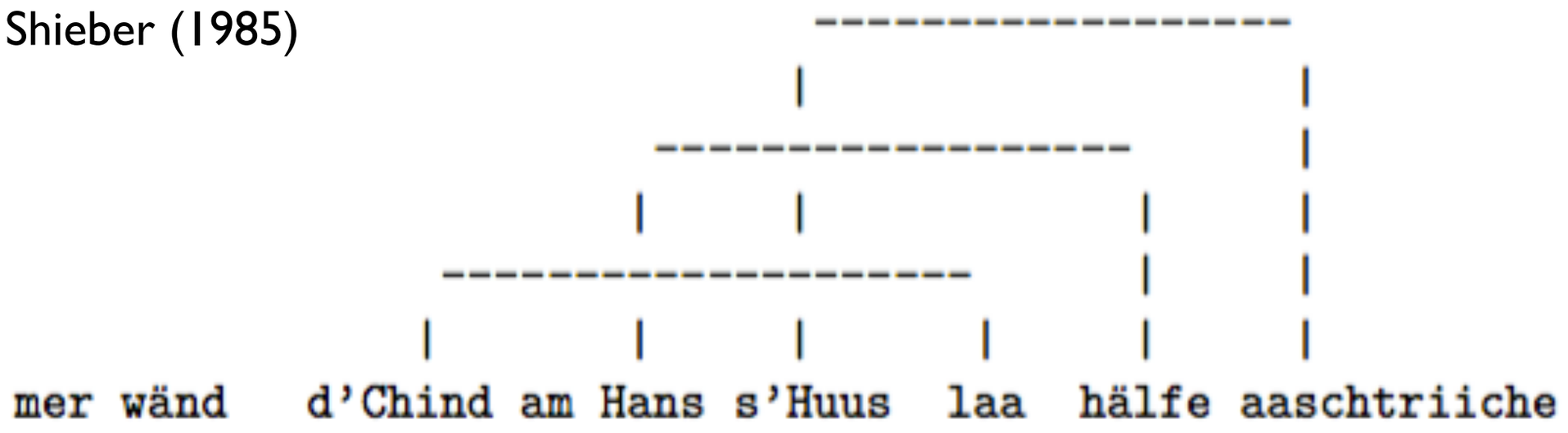
PoS tag	Swiss German	Standard German	English
VAFIN+	*isches*	ist es	is it
KOUS+	*dasme*	dass man	that one
VMFIN+	*chame*	kann man	can one
PTKZU+	*zflügä*	zu fliegen	to fly
ADV+	*deetobe*	dort oben	up there

source: Hollenstein and Aepli (2014)

parsing

a context-sensitive language (?)

Shieber (1985)



source: https://files.ifi.uzh.ch/cl/siclemat/lehre/hs09/ecl1/script/script.pdf

parsing

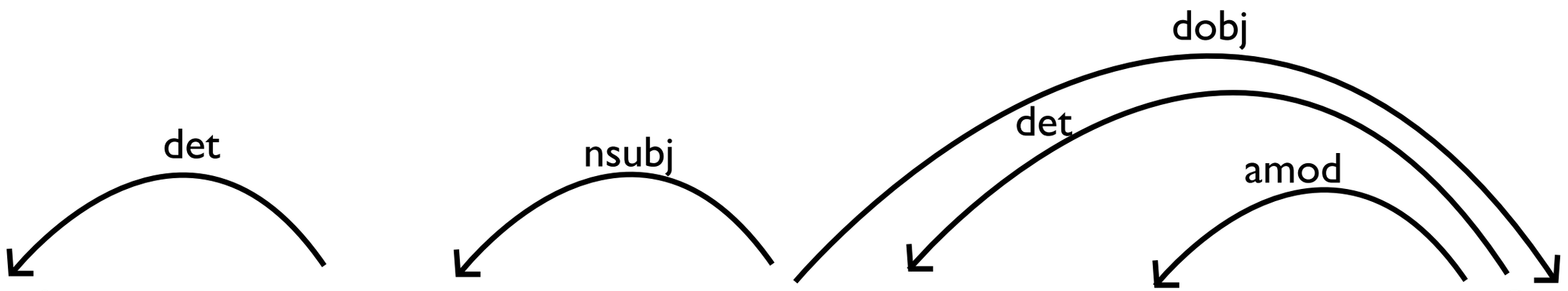
"BE"	Si **het** ne **la ga**, wü er ne gnue Gäud **het gha**, **für** es Billet **z**'löse.
"ZH"	Si **hät** ihn **gah lah**, wil er nöd gnueg Gäld **gha hät**, **zum** es Billet löse.
DE	Sie **liess** ihn gehen, weil er nicht genug Geld **hatte**, **um** ein Billet **zu kaufen**.
EN	She **let** him go because he **did** not **have** enough money **to** buy a ticket.

source: Hollenstein and Aepli (2014)

syntactic differences

- word ordering
- final clauses
- tenses
- cases
- overt subj.
- ...

parsing



goal universal dependencies for swiss german

approach annotation projection

dialect identification

source: www.dialaektaepp.ch

source: www.dindialaekt.ch

VarDial 2017 - Fourth Workshop on NLP for Similar Languages, Varieties and Dialects

April 3rd, 2017 - Co-located with EACL in Valencia, Spain

source: http://ttg.uni-saarland.de/vardial2017/

spoken swiss german

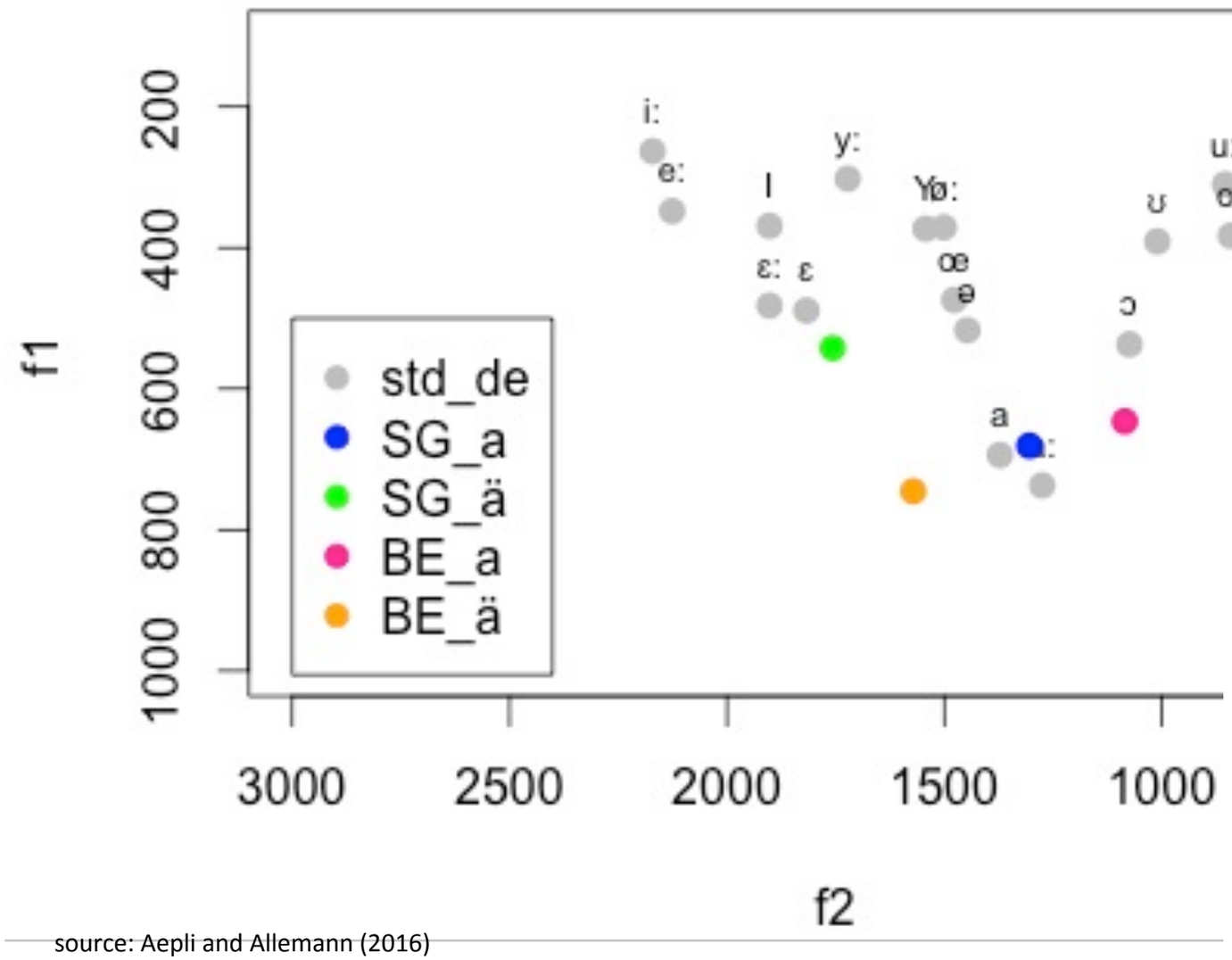
GSW vs. DE

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

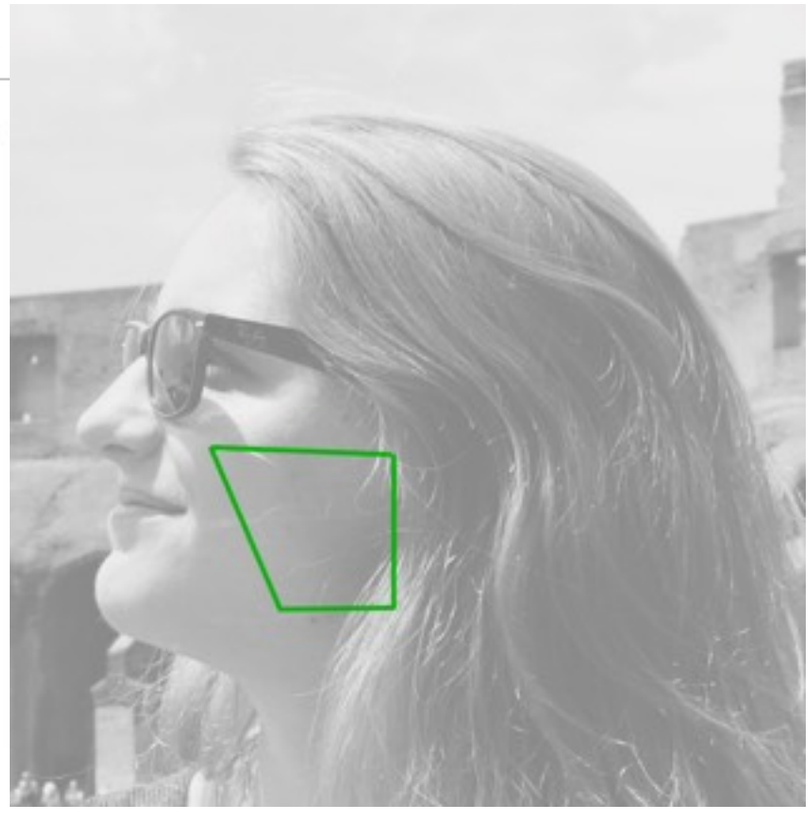
source: https://www.internationalphoneticassociation.org/sites/default/files/IPA_Kiel_2015.pdf

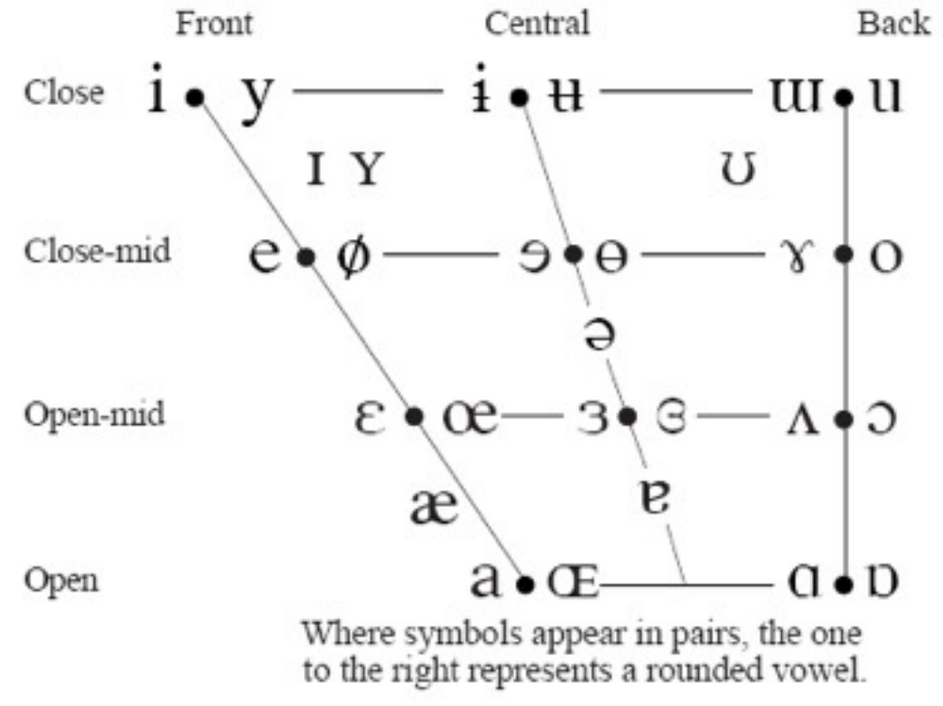
spoken swiss german

GSW vs. GSW



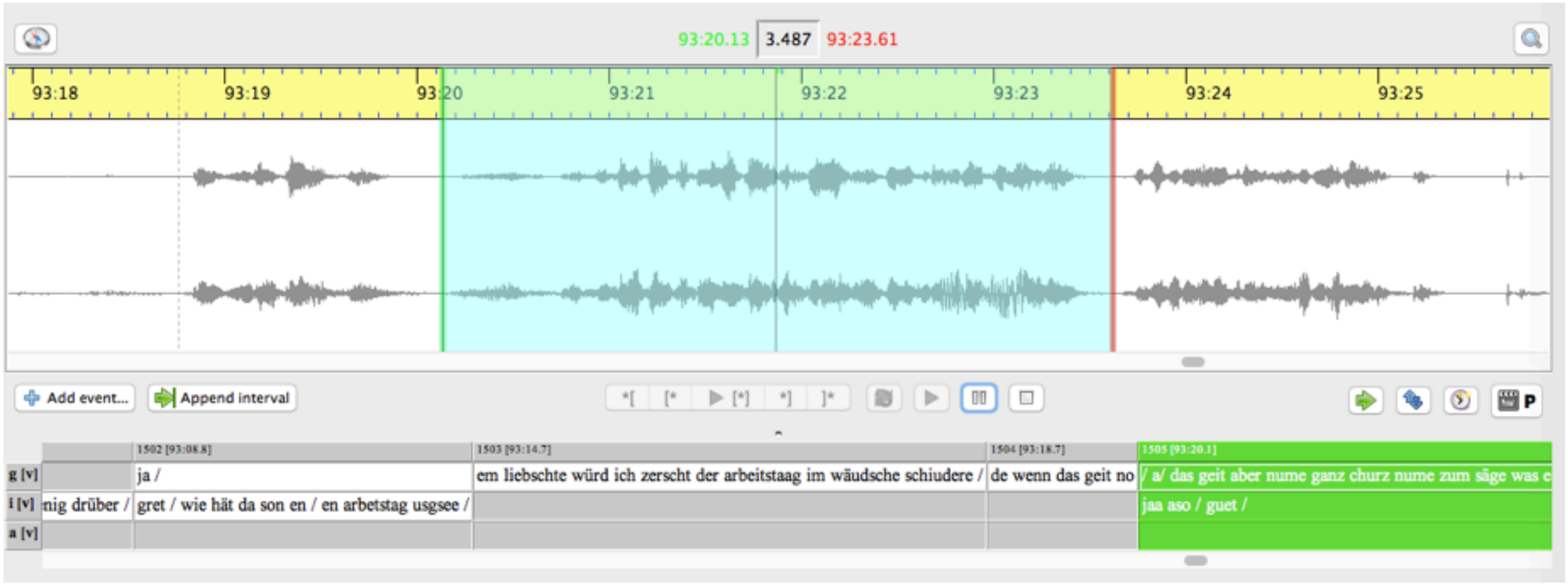
source: Aepli and Allemann (2016)





source: https://www.internationalphoneticassociation.org/sites/default/files/IPA_Kiel_2015.pdf

spoken swiss german



screenshot: transcription tool EXMARaLDA

ArchiMob corpus

53 transcribed videos, POS annotated, normalised

conclusions

- compilation of resources for GSW **dialect research**
- development of basic NLP tools for dialect research
- approaches **generalisable** to lower resourced languages
- **applications** in industry → conquer swiss market ;)

resources

- NOAH Corpus https://gitlab.cl.uzh.ch/noah/corpus
- ArchiMob Corpus http://www.spur.uzh.ch/en/departments/korpuslab/ArchiMob.html
- dindialaekt.ch https://www.dindialaekt.ch/tour-de-suisse/de

  → GSW - DE translation (“aufschreiben” > DE)
- VarDial 2017 http://ttg.uni-saarland.de/vardial2017/
- dialäkt äpp http://www.dialaektaepp.ch/
- ... for more, check out: https://gitlab.cl.uzh.ch/noah/corpus

literature

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Shieber, S. M. (1985). "Evidence Against the Context-freeness of Natural Language". Linguistics and Philosophy, 8:333–343.

... for more, check out: https://www.aclweb.org/anthology/W/W14/W14-5310.pdf

tankä :)