

Unicodices

Edge cases in SwiftUI **Text** and **Speech**

Ryan Lintott - Vancouver Xcoders - 2021-10-28

Ryan Lintott

@ryanlintott

- Based in Toronto
- 3D animation, film, interactive installations, Unity, pipeline development, consulting
- iOS + SwiftUI since March 2020
- Stayed at a farm last week





Old English Wordhord

Medieval word of the day

Two smartphones displaying the Wordhord app interface.

Smartphone on the left (Sunday, May 2, 2021):

- Word:** wlitig-fæst
- Definition:** adj: beauteous, glorious.
- Image:** A medieval manuscript illustration showing four figures in a library setting, reading from scrolls. The text below the image is from Yves de Saint-Denis, France, 14th century.
- Text below image:** Yves de Saint-Denis. France, 14th century. Bibliothèque nationale de France, Département des Manuscrits, Français 2090, f. 12v. [gallica.bnf.fr]
- Tags:** education + knowledge, hord highlights, places

Smartphone on the right (Monday, December 21, 2020):

- Word:** heolstor
- Definition:** m/n.n: darkness, obscurity (also fig.); place of concealment, hiding-place, hidden recess.
- Image:** A medieval manuscript illustration of a figure, likely St. Jerome, kneeling in a dark, rocky landscape under a starry sky.
- Text below image:** Les Histoires Roger. France, 13th century. Bibliothèque nationale de France, Département des Manuscrits, Français 20125, f. 2v. [gallica.bnf.fr]
- Tag:** places

Old English

550 - 1150 AD

- Spoken in medieval England
- Most famous work in Old English is Beowulf
- Not a supported language on iOS devices

lufu

LUH-vuh

f.n: love; warm affection, attachment; strong feeling, passion.



unāsecgendlīc

UN-ah-SEDGE-end-leech

adj: beyond the powers of language to describe, indescribable; not proper to tell, not to be told.



æplian

wk.v: to make into the form of apples.

Language Frameworks

1. SwiftUI Text
2. AVSpeechSynthesis

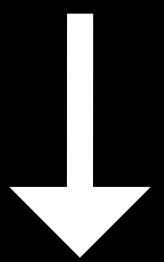
Text



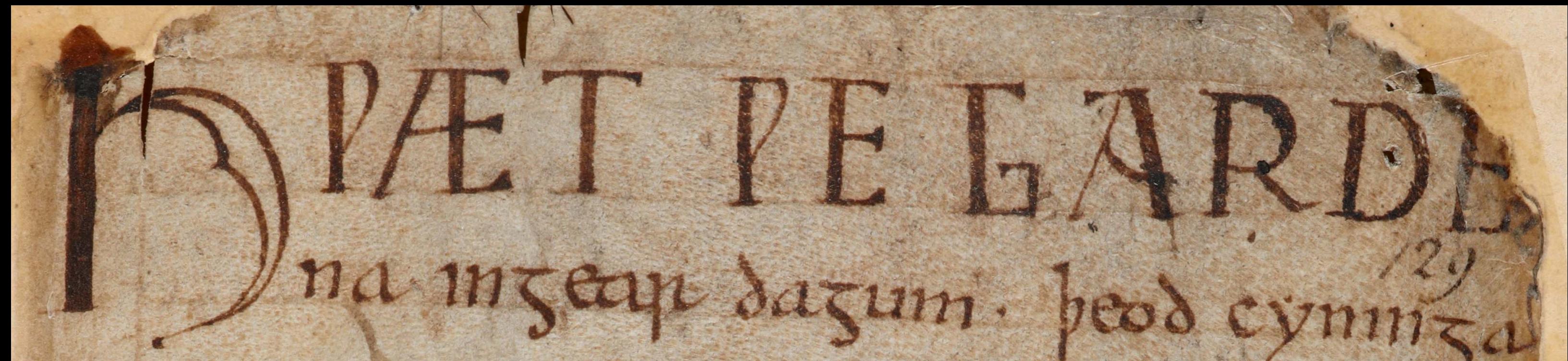
PRÆT PEGARD

na in geari dagum. þeod cymn²⁹sa
þrum se Frisonon huða æfelinzas elle
Fremedon. Ofc scýlds scepmis scaþes
þreatum monezū mæghum meodo secl³⁰a
of ceah & se ðe egn siððan swa

Codices



Unicode



"HƿAET! PE GARDE
na in geardagum, þeod cymmisca"

String

```
Text("Ēalā, Woruld")
```

+

Font

```
.font(.title)
```

↓

Pixels

Ēalā, Woruld

(Text Xcode Demo)



Speech

String

+

Voice

↓

Audio

"Ēalā, Woruld"

AVSpeechSynthesisVoice



(Speech Xcode Demo)

Global Variable



AVSpeechSynthesisIPANotationAttribute

A string that contains International Phonetic Alphabet (IPA) symbols the speech synthesizer uses to control pronunciation of certain words or phrases.

Declaration

```
let AVSpeechSynthesisIPANotationAttribute: String
```

Discussion

For example, the speech synthesizer uses an AVSpeechSynthesisIPANotation Attribute instance to control pronunciation of a proper name.

IPA

International **Phonetic Alphabet**



IPA Transcription Styles

English

"tenth"

Phonemic

"tɛnθ"

Phonetic

"t^hɛnθ"

IPA Transcription Styles

Old English

"æ-lāte"

Wordhord

"' æ:-, læ:-tə"

Apple

?

(OEVoice Demo)

JuniusVF-Regular JuniusVF.ttf (UnicodeFull)

File Edit Element Tools Hints Encoding View Metrics CID MM Window Help

344 (0x158) U+0158 "Rcaron" LATIN CAPITAL LETTER R WITH CARON

á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ð	ñ	ò	ó	ô	ö	÷	ø	ù
ú	û	ü	ý	b	ÿ	Ā	ā	Ā	ā	Ā	ā	ā	ā	č	ć	ć	ć	ć	ć	đ	đ	đ
ú	û	ü	ý	b	ÿ	Ā	ā	Ā	ā	Ā	ā	ā	ā	Ć	ć	ć	ć	ć	ć	đ	đ	đ
ē	Ě	ě	É	é	Ě	ě	Ě	ě	Ě	ě	Ě	ě	ě	Ć	ć	ć	ć	ć	ć	đ	đ	đ
ē	Ě	ě	É	é	Ě	ě	Ě	ě	Ě	ě	Ě	ě	ě	Ć	ć	ć	ć	ć	ć	đ	đ	đ
ī	Ǐ	ǐ	Í	í	Ǐ	ǐ	Ǐ	ǐ	Ǐ	ǐ	Ǐ	ǐ	ǐ	Ḱ	ḱ	ḱ	ḱ	ḱ	ḱ	ṱ	ṱ	ṱ
ń	Ṅ	ń	Ṅ	ń	Ṅ	ń	Ṅ	ń	Ṅ	ń	Ṅ	ń	ń	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
N	n	N	N	n	N	n	N	n	N	n	N	n	n	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
ś	ś	ś	ś	ś	ś	ś	ś	ś	ś	ś	ś	ś	ś	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
š	š	š	š	š	š	š	š	š	š	š	š	š	š	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
S	s	S	S	s	S	s	S	s	S	s	S	s	s	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
ŷ	Ŷ	ž	Ž	ž	Ŷ	ž	Ŷ	ž	Ŷ	ž	Ŷ	ž	ž	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
ɛ	F	f	G	Y	h	Y	h	Y	h	Y	h	h	h	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
Σ	ł	ł	T	ł	T	ł	T	ł	T	ł	T	ł	ł	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ	Ṅ
†	!	DŽ	DŽ	dž	LJ	LJ																
†	!	DŽDždžLJLJ																				

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2020)

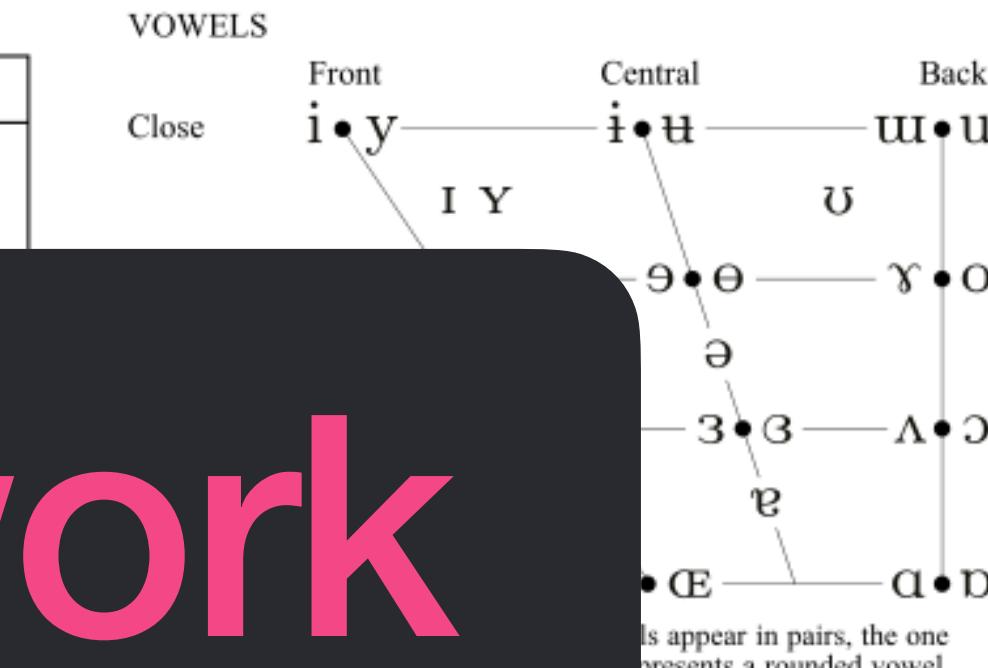
CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		t d	c j	k g	q g		?
Nasal	m	mj		n		n	jn	ŋ	ŋ	N	
Trill	B			r						R	
Tap or Flap		v		r		r					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	s z	ç j	x γ	χ ʁ	h ɦ	h ɦ
Lateral fricative				ɬ ɭ							
Approximant		v		ɹ		ɹ	ɻ	ɻ	ɻ	ɻ	
Lateral approximant				ɬ ɭ		ɬ ɭ	ɻ ɻ	ɻ ɻ	ɻ ɻ	ɻ ɻ	L

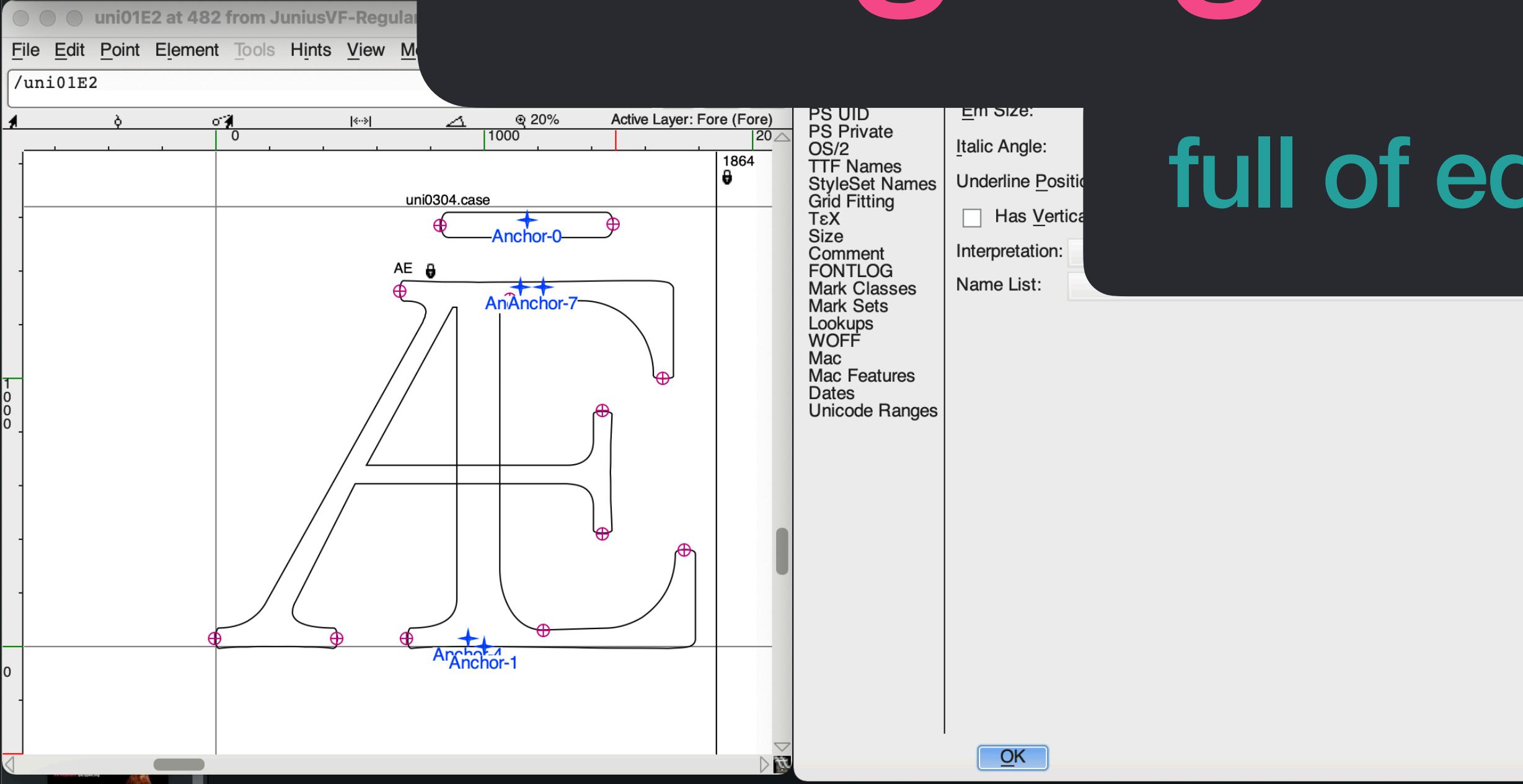
Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
ʘ Bilabial Dental	ɓ Bilabial Dental/alveolar	', Examples: p' Bilabial



Language is a framework full of edge cases...



Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.

ts kp

Breathy voiced	b a	Dental	t d
Voiced	s t	Creaky voiced	b a
h Aspirated	tʰ dʰ	Linguolabial	t d
More rounded	χ	Labialized	tʷ dʷ
Less rounded	χ	Palatalized	tʲ dʲ
Advanced	u	Velarized	tˠ dˠ
Retracted	e	Pharyngealized	tˤ dˤ
Centralized	œ	~ Velarized or pharyngealized	ħ
Mid-centralized	ě	Raised	e (黠 = voiced alveolar fricative)
Syllabic	n	Lowered	e (β = voiced bilabial approximant)
Non-syllabic	ɛ	Advanced Tongue Root	e
Rhoticity	ɾ ɾ̄	Retracted Tongue Root	e

Secondary stress	e:
Long	e:
Half-long	ē:
Extra-short	ē
Minor (foot) group	
Major (intonation) group	
Syllable break	.xi.aekt
Linking (absence of a break)	
TONES AND WORD ACCENTS	
LEVEL	CONTOUR
Extra high	ě or /
High	é or \
Mid	é or 1
Low	ě or 1
Extra low	ě or 1
Downstep	↓
Upstep	↑
	Global rise ↗
	Global fall ↘

Thank You!

Unicodices: Edge cases in SwiftUI **Text** and **Speech**

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Twitter: [@ryanlintott](#)

Code: [github.com/ryanlintott/Unicodices](#)

Wordhord: [oldenglishwordhord.com/app](#)

IPA Keyboard: [ipa.typeit.org](#)

