L2/25-156

Unicode request for old-style IPA pitch and tonetic stress marks

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This request is for spacing accent marks and arrows that have been used as tone marks. They may be used as part of IPA phonetic transcription but are also used to mark prosody onto normal orthographic text, as illustrated in the figures.

Characters

˾ 1DFC2 INVERTED BREVE.

˶ 1DFC3 DOUBLE GRAVE ACCENT.

˗ 1DFC4 MODIFIER LETTER MIDDLE MACRON.

˴ 1DFC5 MODIFIER LETTER MIDDLE ACUTE ACCENT.

˳ 1DFC6 MODIFIER LETTER SOUTH EAST ARROW.

˵ 1DFC7 MODIFIER LETTER LOW NORTH EAST ARROW.

Properties

The mid-height letters are named per U+02F4 MODIFIER LETTER MIDDLE GRAVE ACCENT.

1DFC2;INVERTED BREVE;Sk;0;ON;<compat> 0020 0311;;;;N;SPACING INVERTED BREVE;;;;
1DFC3;DOUBLE GRAVE ACCENT;Sk;0;ON;<compat> 0020 030F;;;;N;SPACING DOUBLE GRAVE;;;;
1DFC4;MODIFIER LETTER MIDDLE MACRON;Sk;0;ON;;;;;N;;;;;
1DFC5;MODIFIER LETTER MIDDLE ACUTE ACCENT;Sk;0;ON;;;;;N;;;;;
1DFC6;MODIFIER LETTER SOUTH EAST ARROW;Sk;0;ON;;;;;N;;;;;
1DFC7;MODIFIER LETTER LOW NORTH EAST ARROW;Sk;0;ON;;;;;N;;;;;

Annotations

The distinction between the middle macron and the modifier minus sign is explained under ‘background’ and illustrated in the figures. The modifier arrows are distinct from the full-height arrows with global scope in IPA and Lithuanian dialectology.

02D7 MODIFIER LETTER MINUS SIGN

→ 1DFC4 modifier letter middle macron

1DFC4 MODIFIER LETTER MIDDLE MACRON

→ 02D7 modifier letter minus sign

1DFC6 MODIFIER LETTER SOUTH EAST ARROW

→ 2197 ↘ south east arrow

→ 2B4F ⬊ short backslanted south arrow

1DFC7 MODIFIER LETTER LOW NORTH EAST ARROW

→ 2197 ↗ north east arrow

→ 2B4E ⬀ short slanted north arrow

Chart

1DF00 **Latin Extended-G** **1DFFF**

	1DF0	1DF1	1DF2	1DF3	1DF4	1DF5	1DF6	1DF7	1DF8	1DF9	1DFA	1DFB	1DFC	1DFD	1DFE	1DFF
0	fŋ	ʞ	ʤ	ɡ	Ⱥ	ɟ	ω	ȷ	Ⱥ					ɣ	ʤ	ɭ
1	ϱ	ƚ	ʤ	ɣ	a	V	ʌ	j	E					ᴘ	ʤ	ȵ
2	ɔ	ʤ	ʦ	ɧ	ə	v	ʃh	Ɵ	w̡				⁀	ƀ	ʃ	ȶ
3	ꓘ	ɉ	ʨ	ɸ	ᴇ	ɷ	th	ɵ	ɲ				ʺ	đ	ʃ	ψ
4	ᴌ	ŋ	tθ	ʠ	ɛ	χ	jh	ɷ	ɍ				–	ǥ	ʧ	ω
5	ɮ	ɻ	ɗ	ʁ	ɠ	ɏ	wh	ɷ	ɭ				ˊ	ł	ʧ	ɖ
6	ꝁ	ɿ	ɿ	ʞ	ħ	ʡ	ᴢ	Ʊ	ç				↘	ł	ʒ	ɧ
7	ɑɪ	ʧ	ɲ	ɾ	ɦ	ɹ	ɮ	ɷ	X				↗	ɟ	ʒ	ŋ
8	ɭ	ʓ	ɤ	ʦ	ᴋ	ɔ	A	Ꟶ	x̶				≤	ɥ	ᴅ	ş
9	ƒ	ʤ	ʂ	ɥ	k	ʉ	ą	ɵ	ɳ				≥	ɉ	ᴀ	ʐ
A	ǃ	ᶖ	ƭ	ʕ	M̶	a	Ⱥ	Ų					≤	ᵿ	ᴇ	ɕ
B	ƒ	ϱ	ʤ	β	m̶	ȡ	ɞ	ų					≥	w	ɿ	ƙ
C	ƒ	ʧ	ʧ	θ	ɱ	ɛɛ	Є	Ɯ					ᴡ	η	ɩ	ꞵ
D	ʇ	ç	ɖ	χ	N̶	ie	є	ɯ					ɹ	ɼ	ɥ	ɖ
E	ʖ	ʂ	ʥ	ɥ	n̶	oi	ŧ	Ŋ					ɔ	ȸ	ɥ	ƒ
F	ɕ	dð	ð	w	ŋ̶	ou	ʝ	ŋ					ʉ	φ	ȡ	ƒ

Background

Before the 1989 Kiel Convention, which formalized the current Chao tone letters, the IPA had somewhat different conventions for marking pitch and tone. The primary system was similar to the Chao letters but lacked the vertical stave. Thus high, mid and low level tone were ⟨˗a -a ₋a⟩, equivalent to modern ⟨a˥ a˧ a˩⟩; falling-tone ⟨ˋa ˧a ˨a⟩ and rising-tone ⟨ˊa ˨a ˧a⟩ were equivalent to modern ⟨a˥˩ a˧˥ a˩˧⟩ and ⟨a˦˨ a˧˩ a˩˦⟩.

(The pre-Kiel convention for placement of tone marks was before the syllable or word, as is still the case for stress marks. The current convention allows Chao tone letters to be placed either before or after the syllable or word, sometimes with a difference in meaning – for example, placed before to indicate prosodic intonation in the illustration of Portuguese in the *Handbook of the IPA*, and placed after to indicate lexical tone in the illustration of Cantonese – but they are most commonly placed after, as in the preceding paragraph.)

The old-style tone marks belong to the same graphic family as the IPA stress marks U+02C8 ⟨ˈ⟩ and U+02CC ⟨ˌ⟩, and harmonize with them as simple lines. Unicode does not treat staveless old-style tone marks such as ⟨ˋ⟩ as distinct characters from staved Chao tone letters such as ⟨˦˥⟩. Instead, an Open Type *character variant* option may be used to modify the appearance of the Chao characters. In the serif Gentium and sans-serif Andika fonts, for example, selecting cv92=1 sets “tone contour staves” to “hidden,” and that is the remedy used to typeset the old-style tone marks in these paragraphs. See **Figure 1** for an example of text that would be best digitized as Chao tone letters with the stave suppressed.

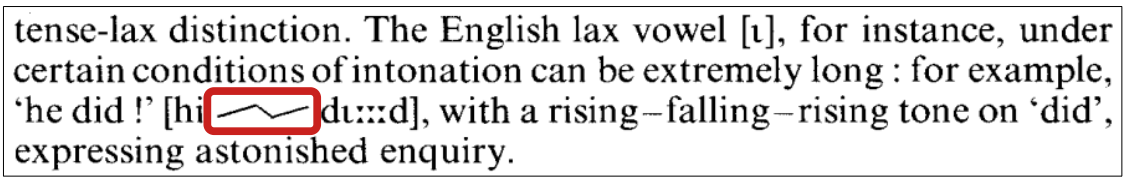

tense-lax distinction. The English lax vowel [ɪ], for instance, under certain conditions of intonation can be extremely long : for example, ‘he did !’ [hi ~ dɪːːd], with a rising–falling–rising tone on ‘did’, expressing astonished enquiry.

Figure 1. Catford (1977: 205). Complex pitch lines such as this one in [hi ~dɪːːd] are best handled as Chao tone letters with the stave suppressed, an Open Type option available in some IPA fonts.

Graphic substitutes for the high and low rising and falling tones, when fonts with a stave-suppressing option are not available, include the “raised” and “low” omission brackets, U+2E0C ⟨˴⟩, 2E0D ⟨˵⟩, 2E1C ⟨˷⟩ and 2E1D ⟨˶⟩. Unicode does not have mid omission brackets *⟨˷⟩, *⟨˶⟩, though mid rising may be approximated instead with an oblique hyphen, U+2E5D ⟨⸗⟩. Because this is a matter of font support and such transcriptions are more properly encoded with the Chao tone letters already supplied by Unicode, we do not request mid brackets as a hack for tone marks.

Simple geometric lines are not the only way that pitch is marked in old-style IPA. Quite commonly, tone marks were typeset instead with spacing accent marks – macron, acute, grave, circumflex and caron – placed at three distinct heights in the letter space. Most of the possibilities are already supported by Unicode. The middle macron ⟨-⟩ and middle acute ⟨ˊ⟩ are missing, however, and we request them here.

In addition, there are several somewhat idiosyncratic but widespread old-style tonetic *stress* marks: marks used for the pitch specifically of stressed syllables. There are several gaps in their Unicode coverage. We illustrate the marks with the classic exposition by O'Connor & Arnold (1973). Cruttenden (1997) and Carley & Mees (2021) show old-style tone marking has continued since the 1989 Kiel convention. Similar examples could be multiplied from other publishers.

Tone marks typeset as spacing accent marks

Among the spacing accent marks used to indicate pitch, the high set ⟨ ̄ ˊ ̀ ̂ ̌⟩ is the default, used when no further phonetic distinction needs to be made. The low set ⟨ ̲ ˎ ̗ ̖ ̬⟩ augments these for low pitch. That is, ⟨ ̄ ˊ ̀ ̂ ̌⟩ when used alone mean pitch or tone that is simply *level*, *rising*, *falling*, *peaking*, and *dipping*; it is only when they contrast with the low set ⟨ ̲ ˎ ̗ ̖ ̬⟩ that they take on the implication of high pitch. The mid accent marks ⟨- ˊ ̀⟩ are tertiary: They are typically used when a two-way high–low contrast is insufficient, and they are consequently less frequent in texts. A three-way contrast of ⟨ ̄ - ̲⟩ is routine for level pitch, even if only one or two needs to be used, and it is not uncommon for rising and falling pitch to also show a three-way contrast, but this is less likely for more complex pitch contours. We have been unable to find examples in the literature of a mid-height circumflex or caron used to transcribe mid-peaking or mid-dipping pitch, and we do not request them here.

Unicode coverage

The basic set of IPA spacing accent marks, illustrated to varying degrees of completeness in IPA publications prior to 1989, is presented in **Table 1**. The high and low sets have complete Unicode coverage, but there is only a single character in the middle set: U+02F4 MODIFIER LETTER MIDDLE GRAVE ACCENT. As noted above, a middle circumflex or caron is unlikely to be needed. That leaves the *middle macron* and *middle acute accent* lacking Unicode support.

Pitch contour:	*Level*	*Rising*	*Falling*	*Peaking*	*Dipping*
High pitch	U+02C9 ˉ	U+02CA ˊ	U+02CB ˋ	U+02C6 ˆ	U+02C7 ˇ
Mid pitch	[proposed] -	[proposed] ˊ	U+02F4 ˴	*(not attested)*	
Low pitch	U+02CD ˍ	U+02CF ˏ	U+20CE ◌̀	U+A788 ꞈ	U+02EC ˬ

Table 1. The spacing accent marks used as tone marks in old-style IPA, and the Unicode characters that can be used for them. Mid-level and mid-rising are not supported.

There are already multiple hyphen-like symbols in Unicode, so we will try to provide justification for encoding a middle macron. One might conceivably use any of various dashes instead. The most obvious choice would be U+02D7 MODIFIER LETTER MINUS SIGN, because it is defined as a modifier letter and would therefore behave like the other characters in Table 1, all of which are defined as modifier letters. However, before 1989 the minus and mid macron contrasted. The minus indicated retraction, and in IPA charts it was provided with optional serifs (<->) to keep it visually distinct from both the hyphen and the tone mark that we request here. An IPA font might therefore adopt a serifed form, which would not be appropriate for the tone mark. A minus diacritic used for mid level pitch is also likely to be significantly shorter than the macrons used for high level and low level pitch, and so would not form a coherent visual set with them.

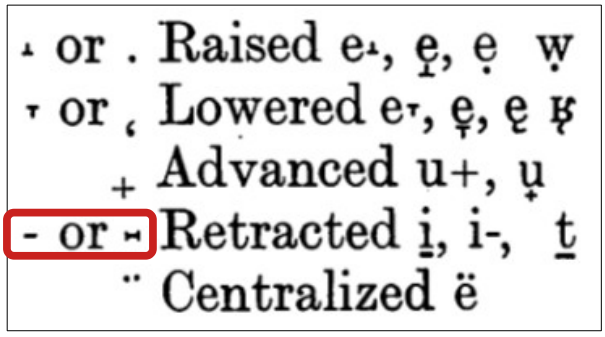


Figure 2. International Phonetic Association (1978: 1). The modifier minus sign is provided with the possibility of serifs, and so is not a good substitute for the mid macron for tone.

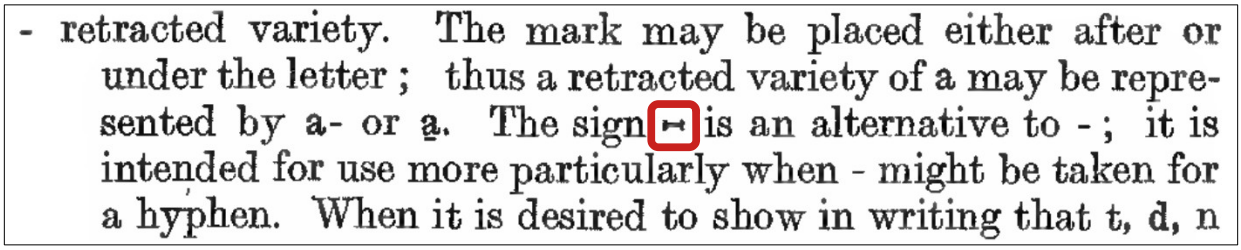

- retracted variety. The mark may be placed either after or under the letter; thus a retracted variety of a may be represented by a- or a̠. The sign ↦ is an alternative to -; it is intended for use more particularly when - might be taken for a hyphen. When it is desired to show in writing that t, d, n

Figure 3. International Phonetic Association (1949: 17). The serifed form of the minus sign is intended specifically to disambiguate it from a hyphen; this would not be appropriate for a mid level tone mark.

Other possibilities include U+2011 NON-BREAKING HYPHEN and U+2012 FIGURE DASH, but they are not defined as modifier letters and would therefore make mid-level the sole tone mark that behaved as punctuation. Also, in the transcription of tone, the middle macron should have the same form as U+02C9 MACRON and U+02CD LOW MACRON, and be vertically aligned halfway between them, so U+2011..U+2012 are not suitable substitutions. (See **Figure 5** for graphic contrast with a hyphen.) We believe that a dedicated modifier letter middle macron therefore is warranted.

Other tone marks

Various other tone marks that are not semantically equivalent to combinations of Chao tone letters have been used in IPA notation. They may conflate pitch and stress or indicate other patterns of intonation. For example, the double accent marks U+02F5 MODIFIER LETTER MIDDLE DOUBLE GRAVE ACCENT ˵ and U+02F6 MODIFIER LETTER MIDDLE DOUBLE ACUTE ACCENT ˶ have been used for emphatic falling and rising intonation.

Arrows are also found. Two common ones, low rising ↗ and high falling ↘, are requested. These differ semantically from the IPA arrows for global changes in pitch, U+2197 NORTH EAST ARROW ↗ and U+2198 SOUTH EAST ARROW ↘, in that they are *tonic* marks that also indicate that a syllable is stressed, so markup is insufficient (see for example Error: Reference source not found); similarly with the steeper Lithuanian dialectological arrows U+2B4E SHORT SLANTED NORTH ARROW ⭮ and U+2B4F SHORT BACKSLANTED SOUTH ARROW ⭯ that form a graphic set with U+2B5A..2B5F ⭚ ⭛ ⭜ ⭝ ⭞ ⭟. It is our experience in teaching (British) English intonation that the low or high positioning of the arrow has mnemonic significance, because the low or high starting point is crucial: The low rising arrow ↗ means specifically a low pitch from which a rise begins, and the high falling arrow ↘ similarly means a jump to a high pitch followed by a fall (**Figure 11**). The global arrows instead indicate a simple rise or fall in pitch without indicating that it starts low or high or that the syllable is stressed.

Also needed is a spacing double grave accent ˵ for floating extra-low tone, which would complete the set of spacing IPA tone diacritics commonly used to transcribe floating tone (**Table 2**).

Pitch contour:	*Extra high*	*High*	*Mid*	*Low*	*Extra low*
Combining mark	U+030B ◌̋	U+0301 ◌́	U+0304 ◌̄	U+0300 ◌̀	U+030F ◌̏
Floating tone	U+02DD ˝	U+02CA ˊ	U+02C9 ˉ	U+02CB ˋ	[proposed] ˵

Table 2. The spacing accent marks used for floating tones in modern IPA, and the Unicode characters that can be used for them. Double grave is not supported.

Double grave ˵ is also needed for Serbo-Croatian, along with an inverted breve ◌̑. These tone diacritics, standard in dictionaries, are used as standalone characters for abstract tone (Figure 14 *ff*). Theoretically these spacing diacritics could be handled by attaching U+030F COMBINING DOUBLE GRAVE ACCENT and 0311 COMBINING INVERTED BREVE to a whitespace character, but that approach is generally a poor solution: Applications could replace it with their own whitespace handling, and in addition line breaking and word selection could be affected.

References

Paul Carley & Inger Mees (2021) *American English Phonetic Transcription*. Routledge.

J. C. Catford (1977) *Fundamental problems in phonetics*. Indiana University Press.

Alan Cruttenden (1997) *Intonation*. 2nd ed. Cambridge University Press.

Gerhard Dietrich (1970: 3) ɹədʒə kiŋdənz tounmɑ·ks ədæptid tə frenʃ intouneiʃn. *Le Maître Phonétique*, 48 (85), no. 133.

E. D. Elderkin (1982) *Some Preliminary Notes on Sandawe Tone*. University of Dar es Salaam.

R. A. D. Forrest (1947) tʃaini:z, daiəlɛkt əv niŋpɔ. *Le Maître Phonétique*, vol. 25 (62), no. 87.

International Phonetic Association (1949). The Principles of the International Phonetic Association. *Le Maître Phonétique*. Troisième série. 27 (91). Supplement.

International Phonetic Association (1978). The International Phonetic Alphabet (Revised to 1979). *Journal of the International Phonetic Association.* **8** (1–2). Supplement.

International Phonetic Association (1989) Report on the 1989 Kiel Convention. *Journal of the International Phonetic Association.* **19** (2).

R. Kingdon (1939) tounetik stres mɑ:ks fər iŋgliʃ. *Le Maître Phonétique*, vol. 17 (54), no. 68.

Langston (2015 [2006]) *Čakavska prozodija: naglasni sustavi čakavskih govora*. Matica Hrvacka, Zagreb.

Ilse Lehiste & Pavle Ivić (1986) *Word and Sentence Prosody in Serbocroatian*. The MIT Press.

J. D. O'Connor & G. F. Arnold (1973) *Intonation of colloquial English: A practical handbook*. 2nd ed. Longman.

Paul Passy & Daniel Jones (1921) *L'Ecriture phonétique internationale : exposé populaire avec application au français et à plusieurs autres langues*, 2nd ed. Association phonétique internationale.

Figures

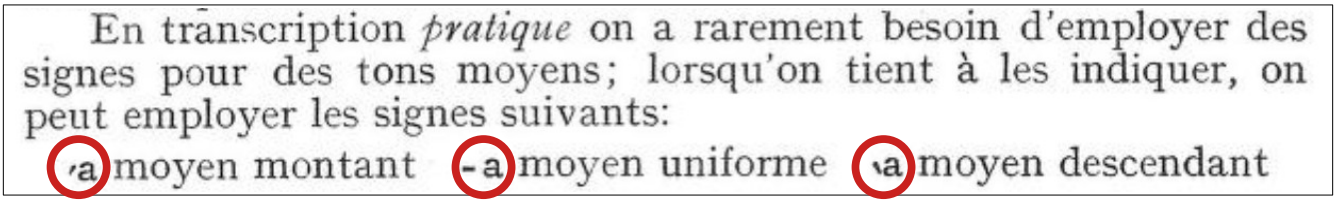

En trānscription *pratique* on a rarement besoin d'employer des signes pour des tons moyens; lorsqu'on tient à les indiquer, on peut employer les signes suivants:
ˊa moyen montant ˗a moyen uniforme ˋa moyen descendant

Figure 4. Passy & Jones (1921). Old IPA transcription of mid pitch. Translation:

> *In* practical *transcription, we rarely need to use signs for mid tones; when we have to indicate them, we can use the following signs:*
>
> ˊ**a** *mid rising* ˗**a** *mid level* ˋ**a** *mid falling*

Only the last, *mid falling*, is currently supported by Unicode.

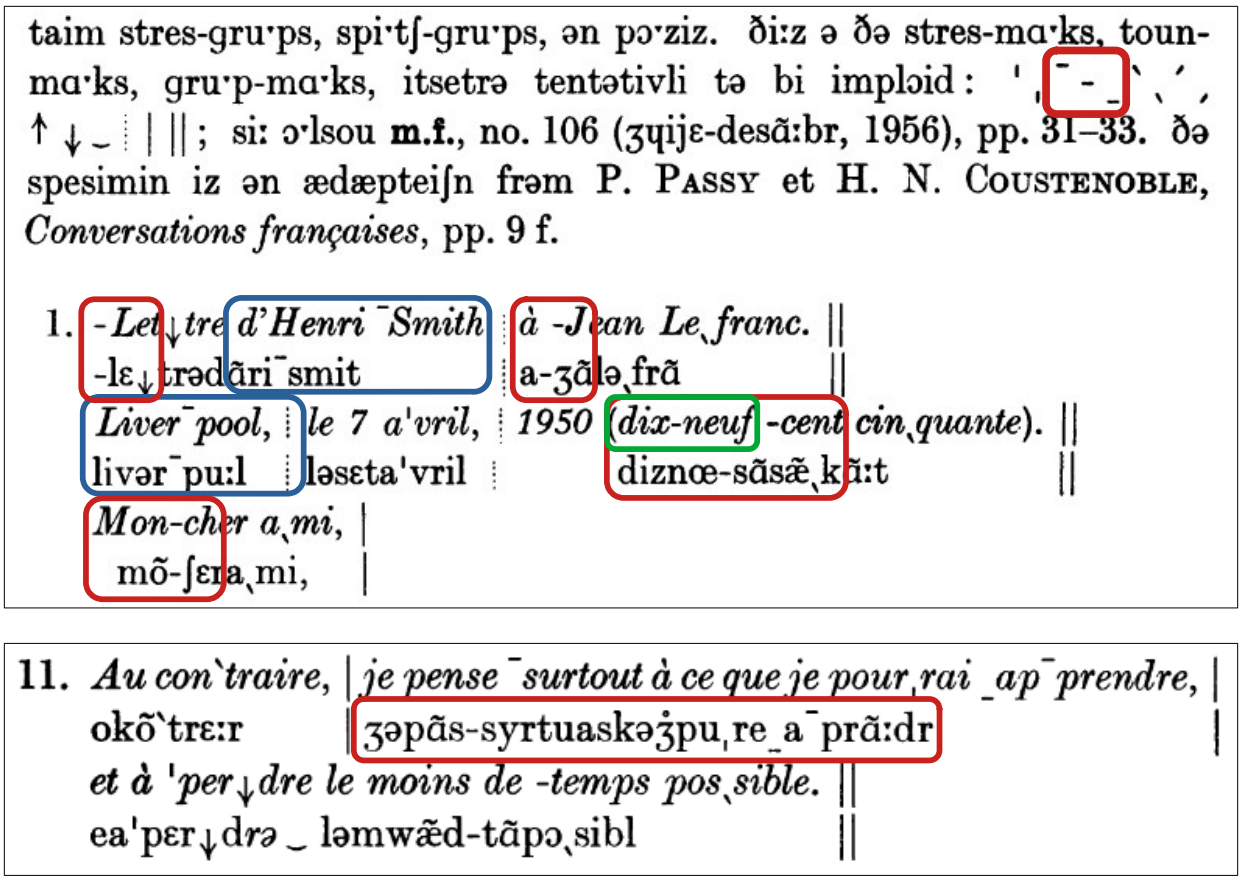


Figure 5. Dietrich (1970: 4–5). In line 1, a mid-height macron <-> (red) contrasts with both a high macron <¯> (blue) and a shorter orthographic hyphen <-> in *dix-neuf* (green). In line 11, mid-height macron <-> contrasts with both high and low macron <¯ _>. (In the 'corrections' section on p. 40 of the next issue of the journal, orthographic ¯*surtout* is corrected to -*surtout* to match the IPA transcription above.)

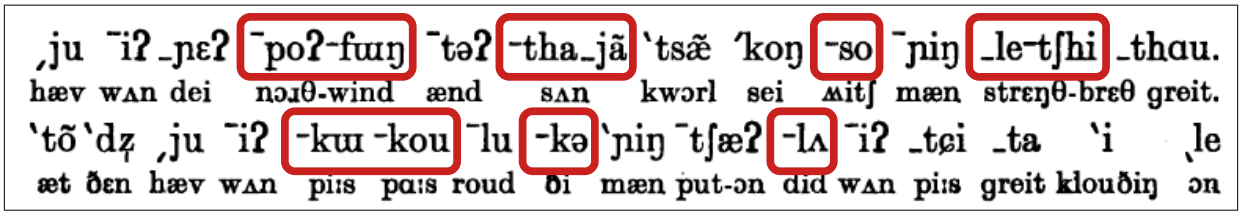


Figure 6. Forrest (1947: 13). Contrast of mid <-> with high <¯> and low <_>.

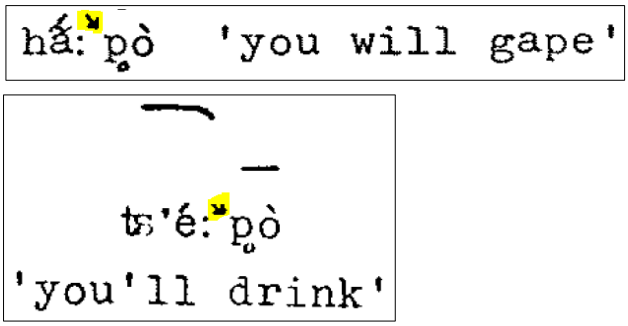


Figure 7. Elderkin (1982: 3, 4). High falling <ˋ> in the transcription of Sandawe. Loss of markup with existing Unicode characters would result in this becoming *global fall* <↘> in the intonation of the phrase, rather than falling pitch in the lexical tone.

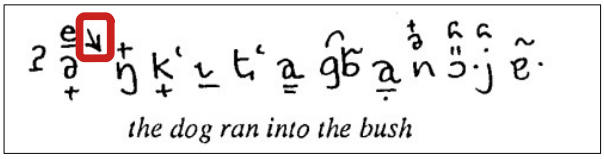


Figure 8. Kelly & Local (1989: 120). High falling <ˋ> for delimitation of intonation in Igbo.

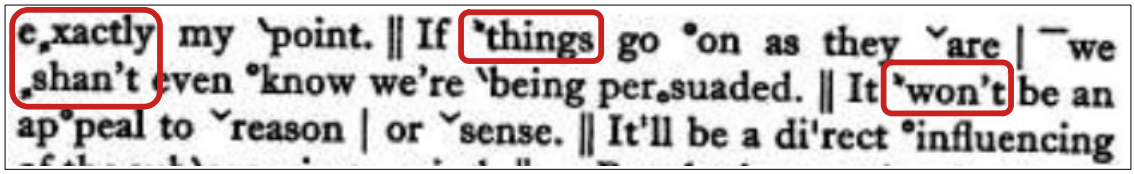


Figure 9. O'Connor & Arnold (1973: 285). The modifier arrows <ˋ> and <↗> in orthographic text, where they mark prosodic emphatic stress with falling and rising pitch, not a global rise and fall in intonation. The text is:

> e↗xactly my ˋpoint. || If ˋthings go ˚on as they ˅are | ¯we
> ↗shan't even ˚know we're ˋbeing per↓suaded. || It ˋwon't be an
> ap˚peal to ˅reason | or ˅sense. || It'll be a di'rect ˚influencing

The ᵛessence of the problem | is that we 'hear the sounds of a new ˌlanguage | in 'terms of the sounds of our ˌfirst language. ‖ ↘That's why it's ᵛdifficult | to 'get them 'right, | and ↘that's why we can't ᵛhear | when we're 'getting them 'wrong. ‖ So ↘when I tell ᵛlearners | that the ᵛdifficulty they're having | is the 'cumulative eˌffect | of the 'dozens and dozens of little ˌways | in which their ↘consonants and ᵛvowels | are ↘mispro ᵛnounced, | and ↘not caused by a mysterious pheᵛnomenon | called ↘intoᵛnation, | they 'don't be'lieve me. ‖ If they ↘can't ᵛhear something, | they 'don't believe it's ˌthere. ‖ It's 'human 'nature,

2) Our system of in-text intonation marks requires only a small number of additions to the basic text, namely underlining and ['], [↘] [ˈ], [ˌ], [ˊ], [ˏ], [ˇ].

Figure 10. Carley & Mees (2021: 113). High falling ‹ˇ› for intonation in English. Again, the scope of the arrows is minimally the syllable, not global rise and fall in pitch as the baseline arrows ‹↘› and ‹↗› would. Also seen are ‹ˈ› ‹ˌ› ‹ˎ› ‹ˊ› ‹ˏ› and ‹ˇ›.

steeper it is. When there's only one syllable in the head, the fall takes place on that syllable. The symbol for the falling head is [↘]

Figure 11. Carley & Mees (2021: 124). Note the pitch-reset in the first instance, where the unmarked low pitch in the pre-tonic syllables *But I* jumps to the high end of the speaker's range on ˇ*only*, only to descend thereafter. There is a similar pitch-reset on ᵛ*best*, but the subsequent prosody differs.

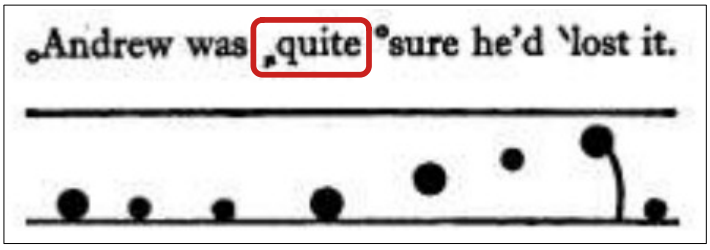
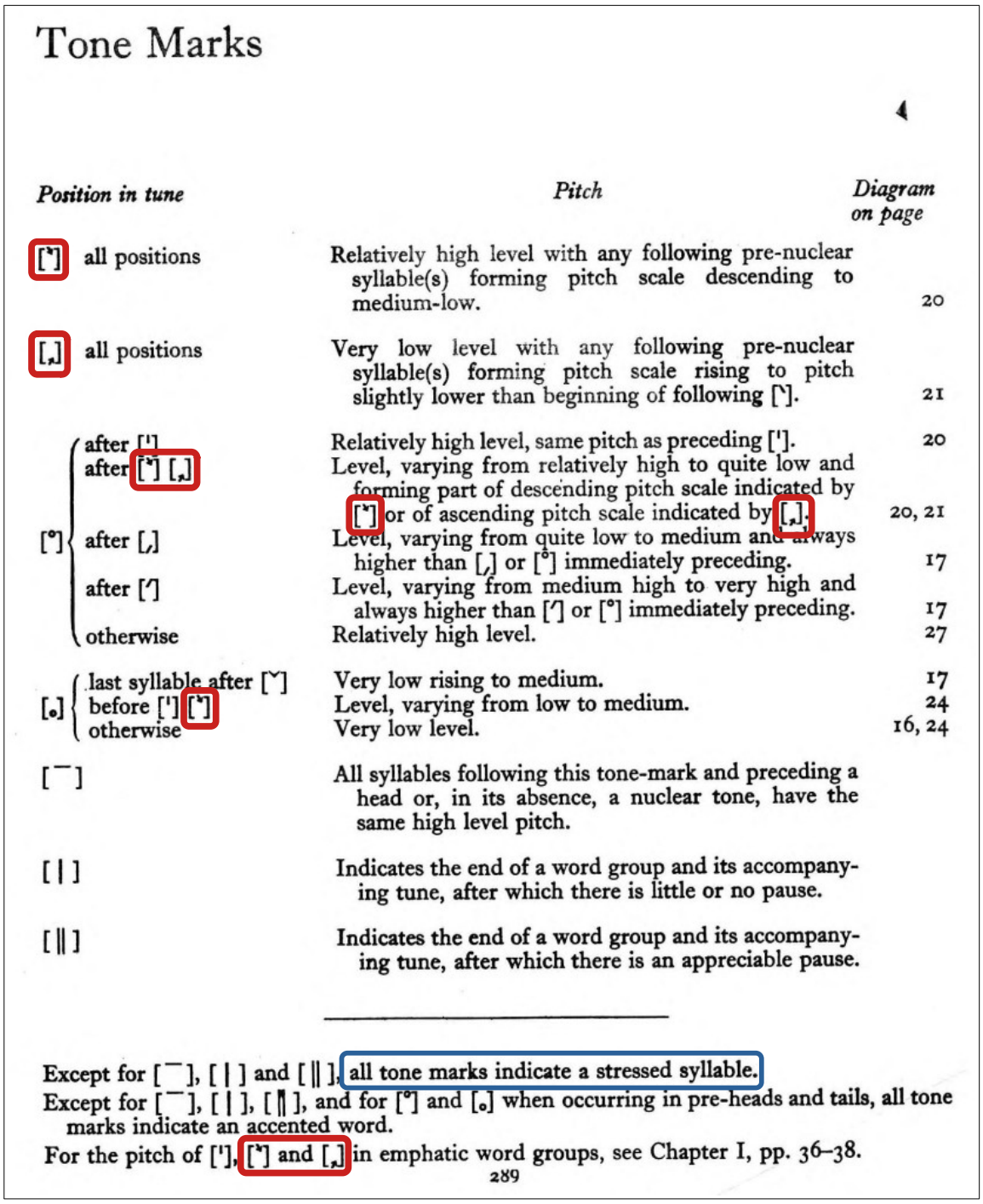


Figure 12. O'Connor & Arnold (1973: 35). A similar illustration of the low arrow on ˌ*quite*.



Tone Marks

Position in tune		*Pitch*	*Diagram on page*
[ˈ]	all positions	Relatively high level with any following pre-nuclear syllable(s) forming pitch scale descending to medium-low.	20
[ˌ]	all positions	Very low level with any following pre-nuclear syllable(s) forming pitch scale rising to pitch slightly lower than beginning of following [ˈ].	21
[°]	after [ˈ]	Relatively high level, same pitch as preceding [ˈ].	20
	after [ˈ] [ˌ]	Level, varying from relatively high to quite low and forming part of descending pitch scale indicated by [ˈ] or of ascending pitch scale indicated by [ˌ].	20, 21
	after [ˌ]	Level, varying from quite low to medium and always higher than [ˌ] or [°] immediately preceding.	17
	after [ˊ]	Level, varying from medium high to very high and always higher than [ˊ] or [°] immediately preceding.	17
	otherwise	Relatively high level.	27
[.]	last syllable after [ˇ]	Very low rising to medium.	17
	before [ˈ] [ˈ]	Level, varying from low to medium.	24
	otherwise	Very low level.	16, 24
[‾]		All syllables following this tone-mark and preceding a head or, in its absence, a nuclear tone, have the same high level pitch.	
[|]		Indicates the end of a word group and its accompanying tune, after which there is little or no pause.	
[‖]		Indicates the end of a word group and its accompanying tune, after which there is an appreciable pause.	

Except for [‾], [|] and [‖], all tone marks indicate a stressed syllable.
Except for [‾], [|], [‖], and for [°] and [.] when occurring in pre-heads and tails, all tone marks indicate an accented word.
For the pitch of [ˈ], [ˈ] and [ˌ] in emphatic word groups, see Chapter I, pp. 36–38.

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Figure 13. O'Connor & Arnold (1973: 289). The arrows <ˈ> and <ˌ> (red) explained, including their identity as tonic pitch marks on stressed syllables (blue).

Table 2.1
Number of times each accent type occurred with each syllable nucleus in the test words produced by P. I. (After 1963:33.)

	/̏/		/̀/		/̂/		/́/	
Vowel	**Words**	**Tokens**	**Words**	**Tokens**	**Words**	**Tokens**	**Words**	**Tokens**
i	**9**	**17**	**11**	**19**	**6**	**13**	**14**	**26**
e	29	54	22	45	**7**	**14**	**7**	**15**

Figure 14. Lehiste & Ivić (1986: 37). ⟨̏⟩ and ⟨̂⟩ used as phonemic tone letters in the Serbo-Croatian tradition.

word types. The most curious case is that of speaker E13. In her pronunciation the vowel under ̏ had a rising F_0 contour, and the vowel under ̀ a falling contour (Ivić and Lehiste 1965:86). In no case did the direction of

Figure 15. Lehiste & Ivić (1986: 55). ⟨̏⟩ as a spacing character representing its tone.

Maretić's terminology (fast, slow, etc.). On the basis of five kymographic recordings, he tries to prove that the two long accents ̂ and ́ are pronounced differently in the genitive plural of nouns than in other instances.

Figure 16. Lehiste & Ivić (1986: 33). ⟨̂⟩ as a spacing character representing its tone.

accents. Belić (1935b) mentions the rising character of the syllables under ̀ and ́ and the falling nature of the syllables under ̏ and ̂, but adds that in words with ̀ and ́ the tone overflows into the following syllable, whereas with ̏ and ̂ "accent seems to detach the stressed syllable from other syllables, as if there were a pause after it" (p. 165). Belić states that falling

Figure 17. Lehiste & Ivić (1986: 30).

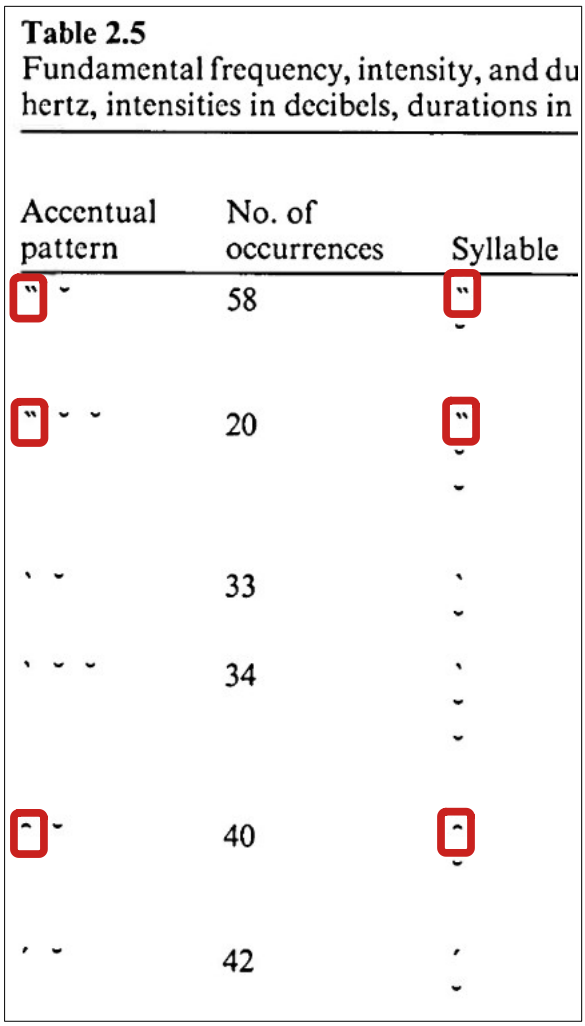

Table 2.5
Fundamental frequency, intensity, and du
hertz, intensities in decibels, durations in

Accentual pattern	No. of occurrences	Syllable
ȕ ˘	58	ȕ ˘
ȕ ˘ ˘	20	ȕ ˘ ˘
` ˘	33	` ˘
` ˘ ˘	34	` ˘ ˘
ˆ ˘	40	ˆ ˘
´ ˘	42	´ ˘

Figure 18. Lehiste & Ivić (1986: 51). Use of ⟨ȕ⟩ and ⟨ˆ⟩ for Serbo-Croatian prosody (along with ⟨`⟩, ⟨´⟩ and ⟨˘⟩), analogous to ⟨¯⟩ and ⟨˘⟩ for Latin prosody.

in a new way: ` is pronounced "oštro" (sharply), with ˆ "glas (se) kao okrugao razlazi" (the voice goes out roundly), but with ´ "se glas upravo proteže" (the voice stretches in a straight line). Karadžić retains the unfortunate "accent" ˆ, but introduces ȕ, stating that it is pronounced "oštrije" (more sharply) than `. Thus, we find here for the first time the complete inventory of four symbols that are still used to designate the four Neoštokavian accents. Meanwhile, Karadžić continues to use the symbol `

Figure 19. Lehiste & Ivić (1986: 5). The inverted breve ⟨ˆ⟩ (red) is historically distinct from the circumflex ⟨ˆ⟩ (blue) in Serbo-Croatian dictionaries, and this is reflected in Unicode characters such as U+0213 ȓ LATIN SMALL LETTER R WITH INVERTED BREVE. As in IPA, the graphic doubling of grave ⟨`⟩ to form ⟨ȕ⟩ is motivated by an iconic doubling of its meaning.

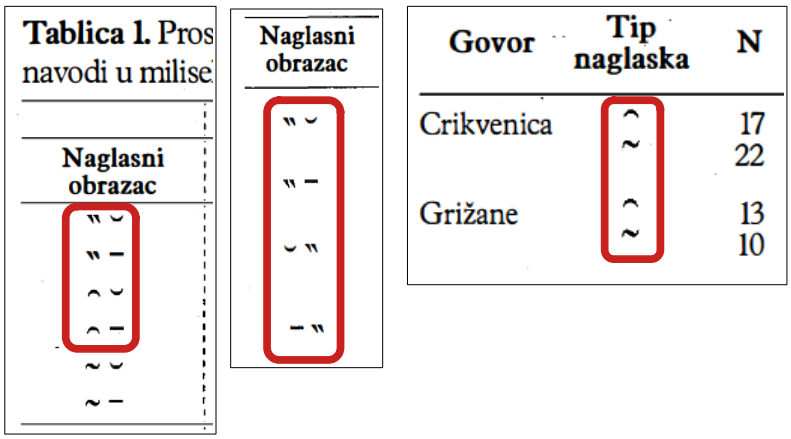

Figure 20. Langston (2015 [2006]: 75, 76, 79). ⟨ˆ⟩ and ⟨ˈˈ⟩ alongside traditional macron and breve in a Croatian source translated from English.

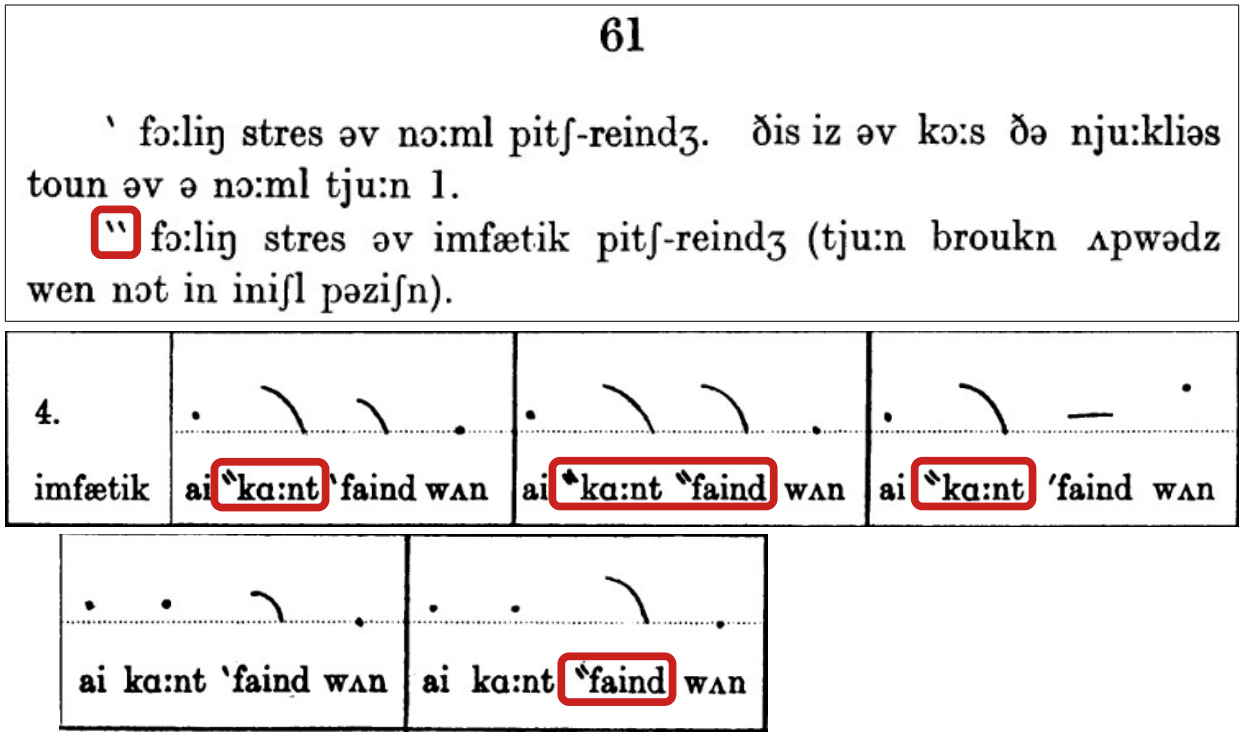

Figure 21. Kingdon (1939: 61, 62b). Once again, doubling the grave accent is iconic.

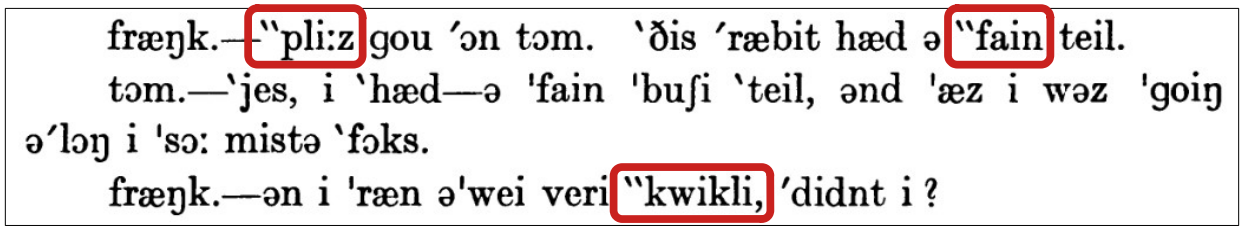

Figure 22. Kingdon (1939: 63).

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html for guidelines and details before filling this form.
Please ensure you are using the latest Form from std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html.
See also std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html for latest *Roadmaps*.

A. Administrative

1. **Title:** *Old IPA tone and tonetic stress marks*
2. Requester's name: *Kirk Miller, Michael Ashby*
3. Requester type (Member body/Liaison/Individual contribution): *individual*
4. Submission date: *2025 June 02*
5. Requester's reference (if applicable):
6. Choose one of the following:
   This is a complete proposal: *yes*
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters):
      Proposed name of script:
   b. The proposal is for addition of character(s) to an existing block: *yes*
      Name of the existing block: *Latin Extended G*
2. Number of characters in proposal: *6*
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary x B.1-Specialized (small collection) B.2-Specialized (large collection)
   C-Major extinct D-Attested extinct E-Minor extinct
   F-Archaic Hieroglyphic or Ideographic G-Obscure or questionable usage symbols
4. Is a repertoire including character names provided? *yes*
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? yes
   b. Are the character shapes attached in a legible form suitable for review? *yes*
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard? *Kirk Miller*
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.): *SIL (Gentium Release)*
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? *yes*
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? *yes*
7. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? *yes*

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at www.unicode.org for such information on other scripts. Also see Unicode Character Database (www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? *no*
   If YES explain
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? *yes*
   If YES, with whom? *The authors are members of the user community.*
   If YES, available relevant documents:
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?
   Reference:
4. The context of use for the proposed characters (type of use; common or rare) *phonetic*
   Reference:
5. Are the proposed characters in current use by the user community? *yes*
   If YES, where? Reference: *see illustrations*
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? *no*
   If YES, is a rationale provided?
   If YES, reference:
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? *no*
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? *no*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? *no*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? *no*
    If YES, is a rationale for its inclusion provided?
    If YES, reference:
11. Does the proposal include use of combining characters and/or use of composite sequences? *no*
    If YES, is a rationale for such use provided?
    If YES, reference:
    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? *no*
    If YES, reference:
12. Does the proposal contain characters with any special properties such as control function or similar semantics? *no*
    If YES, describe in detail (include attachment if necessary)
13. Does the proposal contain any Ideographic compatibility characters? *no*
    If YES, are the equivalent corresponding unified ideographic characters identified?
    If YES, reference: