Toneme as a basic unit of tonology and criteria for its identification

Valentin Vydrin [1,2]   Kirill Maslinsky [1]

[1]Inalco, Paris, France   [2]LLACAN (CNRS, UMR-8135), Paris, France

↓ DEFINITIONS ↓

We need comparative categories suitable for typological study.

Toneme: a definition

Toneme is a basic unit of tonology which can distinguish lexical and/or grammatical meanings.

Phonologically a toneme is defined by a **sequence of pitch targets** positioned at specific tonal levels.

LEVEL: /H/   CONTOUR: /HL/

Tonemes and segments

Prerequisites for analysis:

(i) pitch ranges are already classified into distinct tonal levels (xL L M H xH).

(ii) the TBU in a language is defined as either the syllable or the mora (τ).

Tonal span is a part of the segmental chain where the toneme is realized. We mark it with brackets.

(1) τ τ τ τ τ τ
      [H H] [LH] [H] [L][H] L

m-item is any item in the mental lexicon with which tonemes are underlyingly associated.

(2)   a. $m(\tau_1\tau_2; [H\ H])$
      b. $m(\tau_1\tau_2; /H/)$

Tonal process

Tonal process is a situation where the surface realization of the same m-item in different contexts is not phonologically equivalent with respect to tone.

Two classes of tonal processes:

(i) Surface mapping of tonemes onto TBUs crosses the segmental boundaries of their host m-items.

(ii) The toneme in some m-item is changed, created or deleted in the specific tonal context.

↓ AXIOMS ↓

Making our theoretical assumptions explicit helps us create a logically consistent system of diagnostic criteria.

Toneme properties

Sequentiality

① Tonemes follow each other, but do not overlap.

Integrity

② One TBU cannot bear more than one toneme if no tonal process is involved.

③ If a TBU is involved in a tonemic contrast, it is involved in it completely.

Scalability

④ A toneme can be extended to multiple consecutive TBUs.

⑤ Two consecutive tonemes can be compressed onto one TBU.

Non-obligatoriness

⑥ Not every TBU is necessarily associated with a toneme.

Continuity

⑦ A toneme is realized on an uninterrupted sequence of TBUs.

Conformity

⑧ Tonemes in a language tend to occupy entire prosodic units belonging to a certain level (syllable, prosodic foot, or prosodic word).

Zero tone axioms

⑨ *Zero tone cannot surface on the TBU outside its host m-item.*

⑩ *Zero tone cannot cause a tonal process (alternation) in another m-item.*

↓ DIAGNOSTIC DISTRIBUTIONAL CRITERIA ↓

General criterion

Persistence criterion `old` `new` If a tone on a single TBU is contrastive and it persists in all contexts (i.e., it is not affected by tonal processes), it is considered to be a toneme. ② ③

Whenever we isolate a single-TBU m-item with non-zero tonal spec, that spec is a single toneme. This also applies to tonal contours.

(3)   a. $m(\tau; H) = m(\tau; /H/)$
      b. $m(\tau; HL) = m(\tau; /HL/)$; $*m(\tau; /H/\ /L/)$

Not applicable to multi-TBU m-items.

Contour criteria

Non-compositionality criterion `old` If a language has a tonal contour realized on one TBU composed of levels at least one of which is not available in this language as a toneme in the language, this contour is a toneme. ② ③
We only limited its application to a single TBU.

The extensibility criterion `new` If a contour toneme is attested on a prosodic unit (foot, prosodic word) consisting of a single TBU, this contour also represents one toneme when it is hosted by a longer segmental unit belonging to the same level of the prosodic hierarchy. ② ④ ⑧

(4)   a. $m_a(\tau; /HL/)$
      b. $m_b(\tau\tau; HL) = m_b(\tau\tau; /HL/)$; $*m_b(\tau\tau; /H/\ /L/)$

(5)   Dom (< Chimbu-Wahgi < Nuclear Trans New-Guinea)

Toneme	1 syllable	2 syllables	3 syllables
/H/	ká 'word'	ékú 'afterwards'	ŋgúmáná 'nose.1sg.'
/HL/	káà 'name.3sg.poss'	jópà 'tree (sp.)'	mólíŋgwàl 'be.3pl.loc.'
/LH/	tàá 'dawn.inf'	àpál 'woman'	àupàlé 'sister.3sg.poss'

Non-zeroness criteria

As abstract mental representations, tonemes are not directly observable and should be deduced from the surface distributional phenomena.

The floating criterion `modified` If a tone can float, it is a toneme or a part of a toneme. ③ ⑤ ⑨

(6)   Bambara (< Mande)
      kúmá   ↓fɔ́
      speech-ART say
      $m_1 \times m_2 \times m_3(\tau_1\tau_2\tau_3; H.H.{}^{L}H) =$
      $m_1(\tau_1\tau_2; H.H) \times m_2(\varnothing; L) \times m_3(\tau_3; H) \rightarrow m_2(\varnothing; /L/)$

(7)   Babanki (Grassfields Bantu)
      kàbájn ká   vá↓lím
      7-fufu AM 2-husband
      $m_1 \times m_2 \times m_3(\tau_1\tau_2\tau_3\tau_4\tau_5; L.H.H.H.{}^{L}H) =$
      $m_1(\tau_1\tau_2; L.H) \times m_2(\tau_3; H) \times m_3(\tau_4\tau_5; L.H) \rightarrow$
      $*m_3(\tau_4\tau_5; \varnothing.H)$

The shared TBU criterion `modified` If two level tones can be assigned to one TBU, each tone is a toneme or a part of a toneme, and neither is Ø. ③

(8)   Bambara (< Mande)
      kúmâ 'speech-ART'
      $m_1 \times m_2(\tau_1\tau_2; H.HL) = m_1(\tau_1\tau_2; H.H) \times m_2(\varnothing; L) \rightarrow$
      $m_1(\tau_1\tau_2; /H/)\ m_2(\varnothing; /L/)$

The activity criterion `modified` If a tone is able to surface outside its host m-item or triggers a tonal change outside of its host m-item, it is a toneme or a part of a toneme. ⑨ ⑩

(9) $m_1 \times m_2(\tau_1\tau_2\tau_3; H.H.H) =$
      $m_1(\tau_1\tau_2; H.H) \times m_2(\tau_3; /L/) \rightarrow m_1(\tau_1\tau_2; /H/)$

The tonal morpheme criterion `new` An additive or replacive tonal (non-segmental) grammatical morpheme contains at least one toneme. ⑨

(10)   a. $m_1(\varnothing; H) \rightarrow m_1(\varnothing; /H/)$
       b. $m_2(\varnothing; HL) \rightarrow m_2(\varnothing; /H/\ /L/)$; $m_2(\varnothing; /HL/)$