

Non-prominent positions

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Prominence

- **Phonetic** prominence:
 - e.g., syllables with primary stress
- **Psycholinguistic** prominence:
 - e.g., first syllables of roots
- Prominent positions have a **privileged role in phonology**.

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Prominent Positions

- **Markedness**:
 - Heavy syllables and high-sonority segments are **stress-attracting**
 - Vowels occupy **peak position** in syllables
- **Faithfulness**:
 - protected **against deletion**
 - protected **against change**
 - "positional faithfulness", Beckman 1997, Casali 1997, Smith 2002

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Non-Prominent Positions

- Properties of non-prominent positions
- One common view:
 - **No** properties
 - The "**elsewhere**" case
- **Goal of the talk today**: To show that—
 - Non-prominent positions do have **special** properties
 - Not merely **absence** of prominence

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Markedness

Prince and Smolensky's 1993(2004), de Lacy 2002, 2006

- P&S's syllable markedness theory refers to both prominent and non-prominent positions:
- Peak hierarchy: (**Prominent** positions)
 - Affinity between **high-sonority items** and **peaks** of syllables.
- Margin hierarchy: (**Non-prominent** positions)
 - Affinity between **low-sonority items** and **margins** of syllables.

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Faithfulness

- "MAX-Prominence" **prominent** → **prominent**
 - Elements occupying prominent positions in the input must remain so in the output.
 - **Positional faithfulness** = prominent positional faithfulness
- "DEP-Prominence" **nonprominent** → **nonprominent**
 - Elements occupying non-prominent positions in the input must remain so in the output.
 - "**ultimately non-prominent**" = "**non-existent in the input**"
 - Avoidance in many languages to place stress or accent on epenthetic vowels (**HEAD-DEP**-effects, Alderete 1999).

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HEAD-DEP effects in Japanese loanwords

- Final **voiceless stops** in the source word are usually **geminated**:

'stop'	suto ^ˈ ppu
'flat'	fura ^ˈ tto
'block'	buro ^ˈ kku

- But **not** when (regularly assigned antepenultimate) **pitch accent** falls on an **epenthetic vowel**: (Kubozono, Ito and Mester 2008).

'help'	he ^ˈ rupu	*heru ^ˈ ppu
'duct'	da ^ˈ kuto	*daku ^ˈ tto
'mask'	ma ^ˈ suku	*masu ^ˈ kku

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Non-prominent positions

Today's focus:

- Weak position of a foot (foot-tail)**
vs.
- Strong position of a foot (foot-head)**
- Stressed elements = foot-head**
- Unstressed elements = foot-tail or unfooted**
 - Kager 1989, McCarthy 2008, Bennett 2009

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Schwa

Markedness:

- Schwa **must occupy a foot-tail position**.
- Schwa **excluded as the nucleus of a stressed syllable**.
- The schwa restriction comes in different flavors.

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Schwa

- In Dutch or English, the ban is **absolute**:

cut (x)
[ˈkʌt]

market (x .)
[ˈmɑɪkət]

No words like * (x)
[ˈkət]

I.e., varieties of English that distinguish between (unstressed) [ə] and (stressed) [ʌ].

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NO STRESSED-ə

- Evidence for the existence of a constraint:

NO STRESSED-ə	
*	x
	ə

"x" indicates the head of a foot, its prominent position.

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NO STRESSED-ə

- Undominated** in a language like English/Dutch.
- Dominated** in another type of language (French, Tondano), where **stressed schwa is permitted only under special conditions**.

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NO STRESSED-ə in French

- As a dominated constraint–
- Schwa-syllables constituting **clitics** can be bearers of **phrase-final stress**.

prens-^lə *^lprens-lə *take it*

- Schwa-syllables in **content words** cannot, and stress is retracted to the **penult**:

*prens^ldrə ^lpren^ldrə *take*

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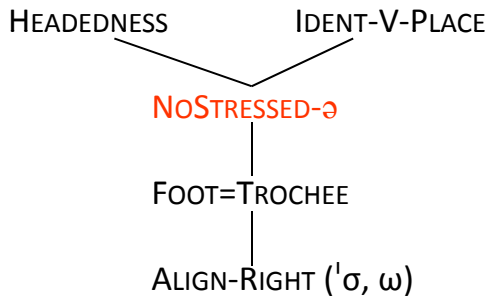
Tondano: Stress avoidance for schwa

Sneddon 1975, Ball 2003, and Piggott 2010

- Regular **penult** stress:
 - kari^lmaŋka? *spider*
- **Antepenult** stress (**penult** = schwa)
 - wiŋ^lka^ltəna *will be asked by him*
- **Final** stress (**penult** & **antepenultimate** = schwa)
 - mə^lrə^lde^lj *intends to stand*
- **Penult schwa** stress (**all vowels** = schwa)
 - ^lrə^lpət *fast*

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Tondano Ranking



Schwa in German

- **Stressed schwa is categorically ruled out.**
 - So, nothing more to say about schwa in German?
- **No.** Besides its unstressability, an interesting different restriction is at work:
- Schwa must be the **weak member** of a foot
 - I.e., ruled out as the **prominent member of a foot**, **AND** as an **unfooted syllable**.

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Schwa in German

- Observationally:
 - **Schwa-syllables occur in post-stress positions.**
- Preview of analysis:
 - a dominated constraint
 - violated under certain conditions
 - but many situations where it is operative.

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Schwa in German

- Window to the **hidden underlying rhythmic structure** whose overt manifestation is stress
 - Liberman and Prince 1977, and others
- 1. Dichotomy of **"stressed"** and **"unstressed"**
- 2. Dichotomy between **two kinds of unstressed syllables**: the **"footed"** and the **"unfooted"**
 - McCarthy 2008, Bennett 2009

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Background: the stress system of German

- **Word stress** limited to the **last three syllables of the word**
 - with very few exceptions
- The familiar **Latin stress rule**
 - as in Dutch and English
 - with some variations and modifications

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German stress

- Word-final **superheavy** syllables are stressed:
 1. **V:C₁** long vowel followed by one or more consonants,
 2. **VCC₁** short vowel followed by two or more consonants,
 3. **VVC₀** diphthong with or without following consonants.

V:C ₁	VCC ₁	VVC ₀
Ban'di:t	A'larm	Ab'tei
Ath'le:t	At'test	a'hoi
Atten'ta:t	Ef'fekt	al'lein
Des'po:t	Hori'zont	Ap'plaus
Dis'pu:t	Kon'zert	Papa'gei

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Superheavy finals: more examples

V:C ₁	VCC ₁	VVC ₀	Glosses		
Ko'me:t	O'lymp	Par'tei	comet	Olymp	party
Pa'pi:r	Pro'dukt	Poli'zei	paper	product	police
Para'di:s	Re'zept	Ra'dau	paradise	recipe	row
Pi'ra:t	Ta'lent	Samu'rai	pirate	talent	samurai
Ta'ri:f	Tu'mult	Thera'peut	tariiff	riot	therapist

Examples appear in German orthography, with phonetic details indicated only when essential (e.g., schwa and vowel length).

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Analysis of superheavy finals

- Word-final consonants are **non-moraic**.
- This means that in final position:
 - **superheavy syllables** (trimoraic status) count as **heavy** (bimoraic status), and
 - **heavy syllables** (bimoraic status) count as light (monoraic status)

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Analysis

Notation: σ = syllable (of any weight)

H = heavy syllable

L = light syllable

... $\sigma \sigma$ 'H] _w	... σ 'H L] _w	... ' σ L L] _w
Papa'gei	Hi'biskus	'Tremolo
parrot	rose mallow	quaver
Para'di:s		
paradise		

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Analysis

- A quantity-sensitive **trochee** at the **right word edge**, with **final mora-less consonants**

x L L (H) Papagei Paradi:s	x . L (H L) Hibiskus	x . . (L L) L Tremolo
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Standard OT analysis

FOOT=TROCHEE

"The foot is trochaic (left-prominent)."

WSP: Weight-to-Stress Principle

"If heavy, then stressed."

NONFINALITY

"No foot at the right edge of the prosodic word."

RIGHTMOST: ALIGN-RIGHT(σ , ω)

"The stressed syllables is rightmost in the prosodic word."

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Illustration

	WSP	NonFin	Al-R(σ , PrWd)
▶ ('Tremo)lo			**($\sigma\sigma$)
Tre('molo)		*!	*
('Hibis)kus	*!		**
▶ Hi('biskus)		*	*
('Papa)gei	*!		**
Pa('pagei)	*!	*	*
Papa('gei)		*	

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Controversial issue: long vowels

- Behavior of **open syllables with long vowels** in German and Dutch
- Which is the operative feature, **length or vowel quality** (tense vs. lax)?
 - Do **long vowels** lead to **heavy syllables**?

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Controversial issue: long vowels

- For purposes of the stress system,
- Open syllables with **long vowels** behave as **light**.
 - Open syllables **with diphthongs** behave as **heavy**, as do closed syllables.

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Controversial issue: long vowels

- Zonnefeld, Trommelen, Jessen, Rice, Bruce and Árnason 1999:
- Long vowels per se do not make syllables heavy.**

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Controversial issue: long vowels

- Antepenultimate** stress when the **penult** is **open** and has a **long vowel** (underlined),
– provided the final is not superheavy.

E.'li.s <u>a</u> .beth	'A.l <u>i</u> .bi	'E.x <u>o</u> .dus
'Do.m <u>i</u> .no	'Ma.r <u>a</u> .bu	'Al.b <u>a</u> .tros
'Tre.m <u>o</u> .lo	'A.n <u>o</u> .rak	'Le.x <u>i</u> .kon
'Ko.l <u>i</u> .bri	Indi.'vi.d <u>u</u> .um	Kur.'ri.k <u>u</u> .lum
'Gi.g <u>o</u> .lo	A.'na.ph <u>o</u> .ra	
'Pa.pr <u>i</u> .ka	in.'k <u>o</u> .n <u>i</u> .to	

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Controversial issue: long vowels

- This pattern is **not exceptionless**, but only a **statistical tendency**.
- Penult** stress is also found under these circumstances:

A. 'ro.ma Mos. 'ki.to Ar. 'thri.tis
 Bi. 'ki.ni Mu. 'se.um Hi. 'a.tus
 Ka. 'si.no Bo. 'ta.nik Abraka. 'da.bra

The English equivalents are virtually identical to the German forms.

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Statistics

- The choice is **lexically determined**,
- but **antepenultimate** pattern considerably **more frequent**.
- Basis:
- Data in Féry 1998
 - extracted from the large lexical database CELEX developed at the Max-Planck-Institute in Nijmegen.

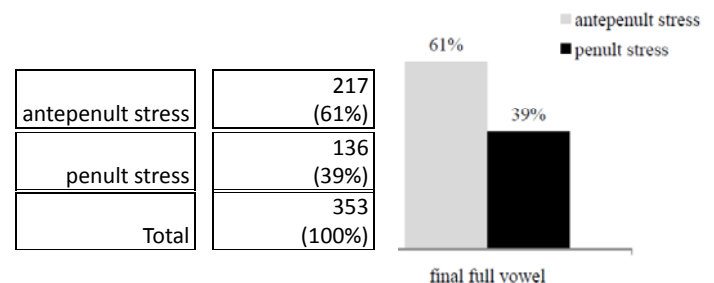
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Statistics

- Focusing on words with the following properties:
 - Trisyllabic monomorphemic words [σσσ]
 - Full vowels** in their last syllable
 - Non-final stress**
- What is the distribution of **antepenult** and **penult** stress?

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Statistics



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Words ending in a schwa syllable

- Surprising result: **Opposite tendency** from words ending in full vowels
- Word stress is **overwhelmingly penultimate**, and the antepenultimate pattern is very rare.

Apothe. 'o.sə Lokomo. 'ti.və Kara. 'wa.nə
 Me. 'tho.də Zi. 'tro.nə Anti. 'lo.pə
 Ta. 'pe.tə West. 'fa.lən O. 'bo.ə
 A. 'ka.[zjə] Ok. 'to.bər Tro. 'phä.ə

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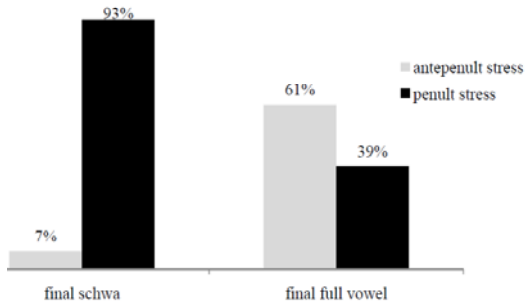
Statistics

- Distribution of antepenult and penult stress in words with **final schwa** vs. those with **final full vowels**
 - after Féry 1998, focusing on trisyllabic monomorphemic words with non-final stress

	final schwa	final full vowel
antepenult stress	38 (7%)	217 (61%)
penult stress	528 (93%)	136 (39%)
Total	566	353

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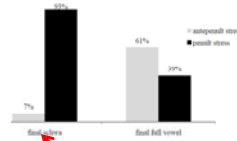
Statistics



Post-stress generalization: Schwa syllable located right after the stress syllable

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Statistics



- **Post-stress preference** for schwa firmly anchored in the prosodic system of German.
- Most violations are only apparent.
 - The remaining 7% of antepenult stress in words with final schwa include compound and pseudo-compound-like exceptions.

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Post-stress generalization for schwa: Independent support

- Cases whose **last vowel** has historically been **reduced to schwa**:
- Stress shifts from **antepenult** to **penult**.

'Ge.ne.sis > Ge.'ne.s[ə] *genesis*
 'Vi.o.la > Vi.'o.l[ə] *viola*
 Di.'a.sto.l[ɛ] > Di.a.'sto.l[ə] *diastole*

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Borrowings with stress shift to pre-schwa syllable

Source:

'mormon	>	Mor'mon[ə]	English
'shaman	>	Scha'man[ə]	
'Iroquoise	>	Iro'kes[ə]	
ca'nibal	>	Kanni'bal[ə]	Spanish

Source: Koepcke 1995

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Post-stress preference

- Generalization:
- The **schwa** syllable must appear as the **weak member of a trochaic foot**.
- This is a **subset of all unstressed positions**, which also include unfooted occurrences.

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FOOTTAIL-ə

- Referring to this position as "foot tail", the FOOTTAIL-ə constraint is violated by any schwa not occurring in this position.

FOOTTAIL-ə

Obligatory position for ə :

(x .)
ə

- Informally: A schwa syllable needs another syllable to depend on (lean against) inside a foot.

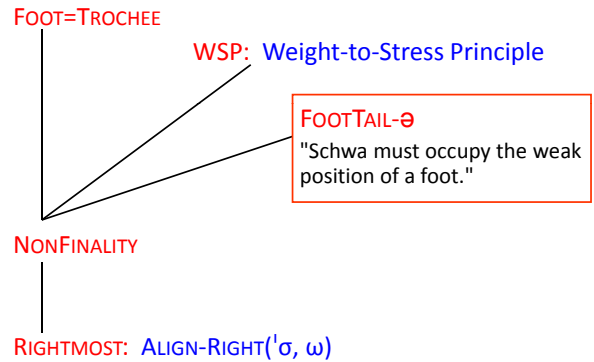
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FOOTTAIL-ə

- NOStRESS-ə is only violated by
 - stressed schwa (English)
- FOOTTAIL-ə is violated by two kinds of schwa:
 - stressed schwa
 - unfooted (or loose) schwa (German)

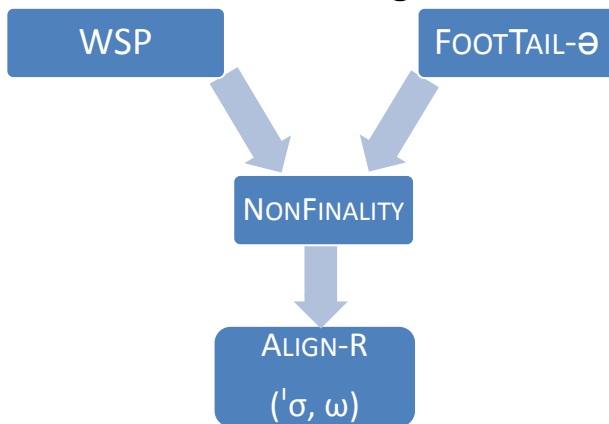
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OT analysis: Add FOOTTAIL-ə



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Ranking



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Illustration

	WSP	Foottail-ə	NonFin	Al-R('σ, PrWd)
Tremolo <i>quaver</i>				
▶ ('Tremo)lo				**
Tre('molo)			*!	*
Zitronə <i>lemon</i>				
('Zitro)nə		*!		**
▶ Zi('tronə)			*	*

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Schwa in foottail vs. unfooted schwa

An interesting issue wrt. FOOTTAIL-ə

Two types of (unstressed) schwa:

1. Footed schwa (schwa in foottail)
 - required in German
2. Unfooted schwa
 - but there are also languages where schwa-syllables prefer **not to be footed at all!**

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Indonesian

- The variety of Indonesian described and analyzed in Cohn 1989 and Cohn and McCarthy 1998.
- Stress profile of a **four-syllable** word:

(x)
 (x .) (x .)
 (,bijak) ('sana) 'wise'
 ↙
 with **secondary stress** on the **first** syllable.

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Indonesian

- Four-syllable words with schwa in second position have no initial secondary stress:

(x) (x)
 . . (x .) (x .) (x .)

kopə('rasi) 'cooperation', not *(,kopə)('rasi)

– Schwa-syllables are not just **unstressable**, they behave as if they stay **outside of foot structure** altogether.

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Indonesian

- Cohn and McCarthy (1998:21):
 - "Schwa-headed syllables do not project any structure in metrical representation."
- The fault lies here:

(x)
 (x .) (x .)
 *(,kopə)('rasi)

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Prosodic typology of schwa-syllables

- Does **such preference for unfooted schwa** **undermine** the existence of the constraint FOOTTAIL-θ.
- We think not—it is rather an issue of **decisions at different levels**.

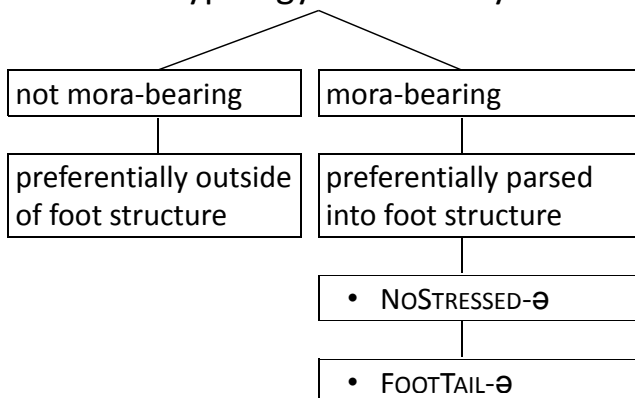
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Prosodic typology of schwa-syllables

- First issue:**
 - Is schwa part of metrical representation—say, **does it carry a mora?**
- If yes,
- Second issue:**
 - What **constraints** hold of such **schwa-moras**?
 - Here, FOOTTAIL-θ constraint plays a role, as in German.

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Prosodic typology of schwa-syllables



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Back to German: Other FOOTTAIL-θ effects

- The systematic stress shift in nouns ending in *-or*, when a schwa-syllable is added to form the plural.

(x .)	. (x .)	*(x .) .
'Dok.tor	Dok.'to.rən	*'Dok.to.rən
Pro.'fes.sor	Pro.fes.'so.rən	*Pro.'fes.so.rən
'Trak.tor	Trak.'to.rən	*'Trak.to.rən
	<i>doctor(s)</i>	
	<i>professor(s)</i>	
	<i>tractor(s)</i>	

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More examples (Ad.'duk.tor ~ Ad.duk.'to.rən, etc.)

Ad'duktor	In'duktor	'Mentor	'Senior
Ag'gressor	In'spektor	Pro'jektor	'Sensor
'Aktor	In'vestor	'Proktor	'Tensor
'Cursor	'Kantor	Pro'tektor	Tran'sistor
De'skriptor	Kom'paktor	Pro'zessor	'Vektor
De'tektor	Kor'rektor	'Quantor	'Zensor
Di'rektor	Korrepe'titor	Re'aktor	
Ef'faktor	Kol'lektor	'Reflektor	
'Faktor	'Lektor	'Sektor	

The English equivalents are virtually identical to the German forms.

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FOOTTAIL-ə active in inflection

- Some inflectional suffixes have allomorphs with and without schwa.

des 'Manns	des 'Mannəs	<i>man</i>
des 'Tags	des 'Tagəs	<i>day</i>
des Er'folgs	des Er'folgəs	<i>success</i>
des Er'trags	des Er'tragəs	<i>yield</i>

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FOOTTAIL-ə active in inflection

- FOOTTAIL-ə precludes the use of the variant with ə:

des 'Regəns	*des 'Regənəs	<i>rain</i>
des 'Sessəls	*des 'Sessələs	<i>armchair</i>
des 'Lehrərs	*des 'Lehrərəs	<i>teacher</i>
des 'Monats	*des 'Monatəs	<i>month</i>
des 'Schicksals	*des 'Schicksaləs	<i>fate</i>
des 'Autos	*des 'Autoəs	<i>car</i>

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One consequence of FOOTTAIL-ə

Schwa should not be able to follow another schwa-syllable: *... əC₀ə ...

In the inflectional system, sequences of schwa syllables can arise, leading to **violations of FOOTTAIL-ə**.

'(troc.kə)n	<i>dry</i>
'(troc.kə.)nər	ADJ+COMPARATIVE
'(troc.kə.)nə	ADJ+INFLECTION
'(troc.kə.)nə.rə	ADJ+COMPARATIVE+INFLECTION

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FOOTTAIL-ə as a dominated constraint

- What gives rise to this?

'(troc.kə.)nər ADJ+COMPARATIVE

- Constraints dominating FOOTTAIL-ə
 - IDENT-V-PLACE
 - NO STRESSED-ə
 - MAX
- preclude any other outcome.

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FOOTTAIL-ə active in German derivational morphology

- Country demonyms**
 - Names for inhabitants of countries
- Two main **allomorphs** to derive country demonyms, **-ə** and **-ər**.
- These **schwa-suffixes** are strictly **required to follow a stressed syllable** (Fuhrhop 1998).

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Country demonyms in -ər

Adjustments for stress to lodge on the pre-schwa syllable.

Ä'gypten	Ä'gypt-ər
Bangla'desch	Bangla'desch-ər
Gui'nea	Gui'ne-ər
Herze'gowina	Herzego'win-ər
'Indien	'Ind-ər
'Ja,pan	Ja'pan-ər
'Kanada	Ka'nad[i]ər
'Niger	'Nigr-ər
O'man	O'man-ər
'Syrien	'Syr-ər
63 more cases	

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Pseudo-compound country demonyms

- Special set of cases with secondary stress, securing a foottail-status for -ər.

'Eng,land	'Eng,länd-ər
'Liechten,stein	'Liechten,stein-ər
'Luxem,burg	'Luxem,burg-ər
'Nor,wegen	'Nor,weg-ər
'Öster,reich	'Öster,reich-ər
'Neu,see,land	'Neu,see,länd-ər
'Para,guay	'Para,guay-ər
'Singa,pur	'Singa,pur-ər

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Country demonyms in -ə

Af'ghanistan	Af'ghan-ə
Bul'garien	Bul'gar-ə
'Dänemark	'Dän-ə
'Deutschland	'Deutsch-ə
'Estland	'Est-ə
'Finnland	'Finn-ə
Mada'gaskar	Mada'gass-ə
Guat'e'mala	Guatema'l'tek-ə
'Ir,land	'Ir-ə
Jugo'slawien	Jugos'law-ə
25 more	

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Country demonym interfixes

- Depending on the base word, the country demonym allomorphs, **-ə** and **-ər**
 - occurs either **alone**, or
 - with an additional **interfix** (**-es-**, **-an-**),

without interfix	-ə	-ər
with interfix	-es-ə	-an-ər

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Country demonyms

- The interfix occurs mainly (but not exclusively) to attract the word stress to the pre-ə syllable.

Af'ghanistan	der Af('ghan-ə)	Ä'gypten	der Ä('gypt-ər)
'Senegal	der Senega('l-es-ə), der *('Sene)gal-ə, der *Sene('gal-ə)	'Mexiko	der Mexi('k-an-ər), der*('Me.xi)ko-ər, der*('Mexi)k-ər, *Me('xik-ər)

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Country demonyms in -'an-ər

- Interfix **-an-** attracts the stress and makes sure that the FOOTTAIL-ə constraint is fulfilled.

An'gola	Ango'l-an-ər
Ber'mudas	Bermu'dan-ər
Bra'silien	Brasi'l[i]-an-ər
Do'minica	Domini'c-an-ər
Ecu'a'dor	Ecuadori'-an-ər
Ja'maika	Jamai'k-an-ər
Ko'rea	Kore-'an-ər
'Mexiko	Mexi'k-an-ər
Pe'ru	Peru-'an-ər
Puerto 'Rico	Puerto Ri'c-an-ər
35 more	

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Country demonyms in -'es-ə

- Interfixes (-es-, etc.) allowing FOOTTAIL-ə to be fulfilled.

'China	Chi'n-es-ə
Ka'labrien	Kala'br-es-ə
'Kongo	Kongo'l-es-ə
'Libanon	Liba'n-es-ə
Ne'pal	Nepa'l-es-ə <i>etc.</i>

Other interfixes + ə:

'Chile	Chi'l-en-ə
'Portugal	Portu'gies-ə
Sa'voyen	Savo'y-ard-ə

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Few exceptions

Ba'hamas	Ba'hama-ər
'Ghana	'Ghana-ər
'Litauen	'Litau-ər
'Marshallinseln	'Marshall-ər
'Panama	'Panama-ər
Saudi-A'rabien	Saudi-'Arab-ər
St. 'Vincent	St. 'Vincent-ər
'Timor	'Timor-ər
To'bago	To'bago-ər
'Tonga	'Tonga-ər
'Trinidad	'Trinidad-ər

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Regularization

- Most of these exceptions have alternate variants which conform to the generalization.
- Even a form like *Saudi-A'rab[i]-ər*, which sounds outlandish because of the well-established word *Arabər*, is attested in non-facetious uses.

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Regularization

FOOTTAIL-ə violating forms:	Alternate FOOTTAIL-ə conforming variants:
Ba'hama-ər	Baha'm-an-ər
'Ghana-ər	Gha'n-es-ə
'Litau-ər	Gibralt'an-ər
'Marshall-ər	Marchal'l-an-ər
'Panama-ər	Pana'm-es-ə ~ Pana'm-en-ə
Saudi-'Arab-ər	Saudi-A'rab[i]-ər
St. 'Vincent-ər	St. Vin'cent-ər
'Timor-ər	Timo'r-an-ər ~ Timo'r-es-ə
To'bago-ər	Tobago'l-es-ə
'Tonga-ər	Ton'g-an-ər ~ Tonga'n-es-ə
'Trinidad-ər	Trinida'n-es-ə

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Metalinguistic awareness

- This is not simply some kind of internet noise—
- Rather, speakers are explicitly aware of the prosodically problematic status of forms like *'Panama-ər*.

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Cf. blog entries such as the following:

- "[W]ie nennt man auf Deutsch wohl einen Menschen aus **Guinea-Bissau**? **Guinea-Bissauer**, **Guineer** (Bissau), **Guinea-Bissauaner** oder gar **Guinea-Bissai**? Das ist keine Scherzfrage. Ich muss einen Bericht schreiben..."
- ("What does one call a person from Guinea-Bissau in German? Guinea-Bissauer, Guineer (Bissau), Guinea-Bissauaner, or even Guinea-Bissai? This question is not a joke. I have to write a report...")

(http://www.wer-weiss-was.de/theme143/article_4660166.html)

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Or this one:

- "hallo leute ☺ wollte mal hallo sagen bin neu hier und hab einen klub in **litauen** übernommen ☺ [...] was bin ich den[n] nun...? ein **litauaner.., litaunese.., litaunippizaner..,...**?" ("hello people ☺ wanted to say hi am new here and have taken over a club in lithuania ☺ [...] so what am I now? a litauaner.., litaunese.., litaunippizaner..,..."?)

(<http://board1.2min.eu/showthread.php?t=20&page=12>, both retrieved on 11/19/2010)

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Demonyms in -ər derived from city names: no stress restriction

- Behavior of the city inhabitant suffix can be attributed to an OO-IDENT(STRESS) constraint.

'Altona	'Altona-ər
Ber'lin	Ber'lin-ər
'Düsseldorf	'Düsseldorf-ər
'Frankfurt	'Frankfurt-ər
'Göttingen	'Götting-ər
'Potsdam	'Potsdam-ər
'Wuppertal	'Wuppertal-ər

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Conclusion

The theory of prosodic constituent structure is built on a three-way distinction between

- one kind of strong position:
 - foot-head,
- two kinds of weak position:
 - footed: foot-nonhead,
 - unfooted.

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Conclusion

- This goes beyond the simple observational dichotomy of the stressed vs. the unstressed.
- One kind of empirical evidence:
 - Certain items must not just be unstressed, but must occupy the weak position of a foot.
 - German schwa, with its characteristic post-stress prosodic signature, is an example of this kind.

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