Metrical opacity, stratal derivation, and restructuring in Southern Pomo

Max J. Kaplan
UC Santa Cruz

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UNIVERSITY OF CALIFORNIA
SANTA CRUZ

mkaplan2 [æʔt] ucsc [dɑʔt] edu people.ucsc.edu/~mkaplan2

Preview

- How does grammar relate to typology?
- We could exclude unattested phenomena, assuming these are unattested because they aren't generable
- But frameworks needed for some patterns ***overgenerate***
- If the grammar *can* generate a phenomenon, why would the predicted pattern be unattested, or very uncommon?

Preview

- *Metrical incoherence* – opposed structures within same string – one class of rare phenomena

Process A σὸσὸσό **Process B ???**

If A and B should only occur in weak positions (e.g. reduction and lenition)…

- Easily derivable, but typologically rare (Gordon, 2016)

Typology

- Opposed views of the phonological component & typology:

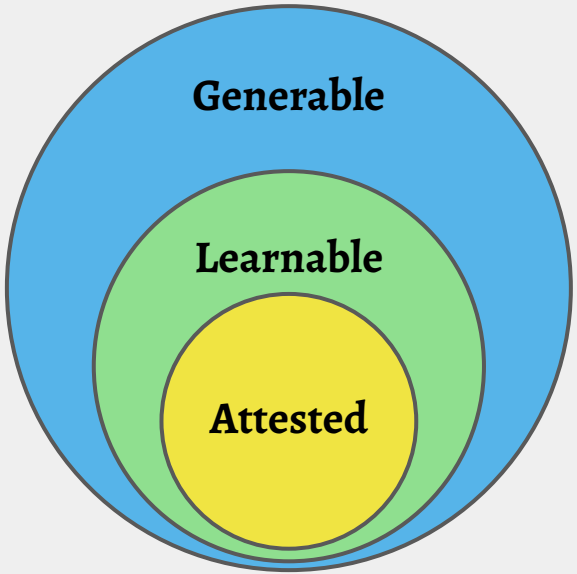
(1) Restrictive enough to make strong predictions
   - **Grammar *per se*** tightly constrains typology ('straitjacketing' effects; De Lacy, 2006)

(2) Generative capacity is expansive, and overgenerates
   - **Extragrammatical factors** constrain typology (Hale & Reiss, 2008; Stanton, 2016; i.a.)

Preview

- Limited evidence ⇒ learners biased towards metrical coherence
- Restructuring of syncope in Southern Pomo: **low learnability** leads to restructuring

  ➢ **limited attestation of generable patterns**



Syncope and opacity

Syncope

- Metrically-conditioned vowel deletion
- Targets **metrically weak** positions:
  a. weak in foot: (ó**σ**) → (ó_)
  b. unparsed: (σσ)**σ** → (σσ)_
- ex: **Macushi Carib** (Kager, 1997)

a. (w_nàː)(m_ríː)
/ w**a**.na.m**a**.ri /
“mirror”

b. (_wàː)(n_màː)(r_ríː)
/ **u**.wa.n**a**.ma.r**i**.ri /
“my mirror”

Syncope and opacity

- Opacity ≈ dissonance between process and environment
- **Opaque syncope**
  - ➢ Strong, not weak, positions undergo deletion

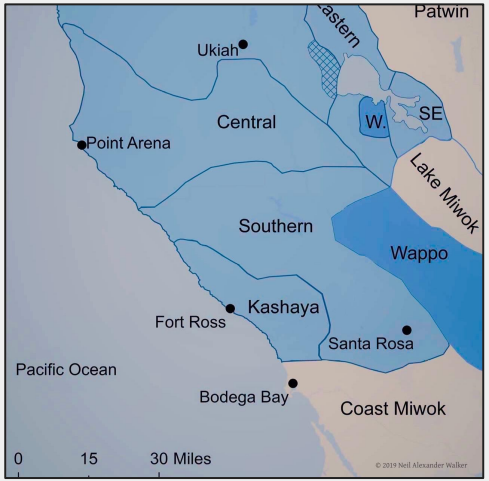
σ**σ́**σ**σ́**σ → σ_σ́_σ

- Good typological evidence against deletion in strong positions (McCarthy, 2008)
  - ➢ Surface metrical structure ≠ conditioning structure

Southern Pomo and syncope

Southern Pomo

- Pomoan; iso: peq
- Traditionally spoken in Northern California
- Recently dormant (ca. 2014); community revitalization ongoing
- Most materials: Annie Burke (1876-1962), Elsie Allen (1899-1990), Elizabeth Dollar (1895-1971).



Elsie Allen and Annie Burke, 1956. *With permission from the Healdsburg Museum & Historical Society.*

Syncope in Southern Pomo

- Targets odd, word-medial syllables **from left to right**.

Southern Pomo syncope (Walker, 2020)

[hà:.ʧaṯ._lók._ʧʼa] [σσ_σ_σ]

/ ha(:)- ʧa- ṯ- **a**lok**o**ʧʼ- a / /σσσ_3σσ_5σ/

by.wing-fly-PL.ACT-DIR-EVID

“they’re flying out”

*Southern Pomo data are from Walker (2020) or Oswalt’s (unpublished) dictionary.

Syncope in Southern Pomo

- Targets odd, word-medial syllables **from left to right**.
- Regular across the lexicon

Southern Pomo syncope (Walker, 2020)

(a) [ʃiː.báːʈ͡ʂʰ._mʰuj]
/ ʃi(ː)baːʈ͡ʂʰ**a**- mhuʧ-Ø /
poor-RECIP-PFV
“felt sorry for each other”
/$\sigma_1\sigma_2$**σ_3**σ_4 ⇒ [$\sigma_1\sigma_2$_σ_4]
/

(b) [ʔàh.ʈ͡ʂim._kʼó.ʧin]
/ ʔa- (h)ʈ͡ʂi- m**o**koʧ- in /
move-foot-DIR-SG.IMP
“put foot back!”
/$\sigma_1\sigma_2$**σ_3**$\sigma_4\sigma_5$/ ⇒ [$\sigma_1\sigma_2$_$\sigma_4\sigma_5$]

*Southern Pomo data are from Walker (2020) or Oswalt’s (unpublished) dictionary.

Syncope in Southern Pomo

- Targets odd, word-medial syllables **from left to right**.
- Regular across the lexicon

Southern Pomo syncope (Walker, 2020)

(c) [hàː.ʧaʈ._lók._ʧʼa]
/ ha(ː)- ʧa- ʈ- **a**lok**o**ʧʼ- a /
by.wing-fly-PL.ACT-DIR-EVID
“they’re flying out”

$/\sigma_1\sigma_2\underline{\sigma_3}\sigma_4\underline{\sigma_5}\sigma_6/ \Rightarrow [\sigma_1\sigma_2\_\sigma_4\_\sigma_6]$

(d) [ʔeː.kʰèʈ._la.méː.le]
/ʔe(ː)- kʰe- ʈ- **a**lameʧ- le/
w.body-move-PL.ACT-DIR-PL.IMP
“(2) move down from above!”

$/\sigma_1\sigma_2\underline{\sigma_3}\sigma_4\boldsymbol{\sigma_5}\sigma_6/ \Rightarrow [\sigma_1\sigma_2\_\sigma_4\boldsymbol{\sigma_5}\sigma_6]$

*Southern Pomo data are from Walker (2013/2020) or Oswalt’s (unpublished) dictionary.

Syncope in Southern Pomo

Schematized:

a.	Four syll.	/$\sigma_1\sigma_2\underline{\sigma_3}\sigma_4$/	$\Rightarrow$	[$\sigma_1\sigma_2$–σ_4]
b.	Five syll.	/$\sigma_1\sigma_2\underline{\sigma_3}\sigma_4\sigma_5$/	$\Rightarrow$	[$\sigma_1\sigma_2$–$\sigma_4\sigma_5$]
c.	Six syll.	/$\sigma_1\sigma_2\underline{\sigma_3}\sigma_4\underline{\sigma_5}\sigma_6$/	$\Rightarrow$	[$\sigma_1\sigma_2$–σ_4–σ_6]

Syncope is irregular relative to stress

Surface stress – penultimate, alternating from **right to left**

Odd parity UR: weak positions deleted

a. [ʔàh.ʈim._kó.ʧin] → [σ̀$_1$σ$_2$_σ́$_4$σ$_5$] *[σ$_1$σ̀$_2$**σ$_3$**σ́$_4$σ$_5$]

Even parity UR: strong positions deleted

b. [pʰuh.ʈóp._.ʈow] → [σ$_1$σ́$_2$_σ$_4$] *[σ̀$_1$σ$_2$**σ́$_3$**σ$_4$]

c. [hàː.ʧaʈ._lók._.ʧ 'a] → [σ̀$_1$σ$_2$_σ́$_4$_σ$_6$] *[σ̀$_1$σ$_2$**σ̀$_3$**σ$_4$**σ́$_5$**σ$_6$]

Syncope is irregular relative to stress

Surface stress ≠ conditioning stress

- Stress alternates from penult, i.e. **right-to-left**
- Syncope in odd syllables counting from **left-to-right**
- Structure must change between stages

Stratal derivation

Deriving opaque syncope

- Metrical structure built left-to-right
- Syncope, conditioned by that structure
- Metrical structure recomputed right-to-left

	Stratum I – ω	***Stratum II – φ***	
0. Input	1. Parse L-to-R	2. Syncopate	3. Reparse R-to-L
σσ**σ**σσ	σ**σ̀**σ**σ́**σ	σ**σ̀**_**σ́**σσ	**σ̀**σ_**σ́**σ
/ʔahti-m**o**kotʃ-in/	|ʔah.t**ì**.m**o**.k**ó**.tʃin|	|ʔah.t**ì**m._k**ó**.tʃin|	[ʔ**à**h.tim._k**ó**.tʃin]

(See appendices for SOT implementation)

Strata and metrical incoherence

- Stratal independence – metrical structure at different levels allowed to differ
- Contrary to "metrical coherence" – generalization that languages utilize *consistent* metrical structure throughout derivation (Dresher & Lahiri, 1991)
- **"Metrical incoherence" predicted by strata**

Metrical incoherence and overgeneration

Problem:

- For any process which occurs crosslinguistically in only stressed (or only unstressed) syllables, strata allow & predict the reverse:

	Stratum I – ω		***Stratum II – φ***
0. Input	1. Parse	2. Aspirate	3. Reparse
CV.CV.CV	C**V́**.CV.C**V́**	C^{h}**V́**.CV.C^{h}**V́**	C^{h}V.C**V́**.C^{h}V

- Limited attestation; inherent overgeneration (Wolf, 2012)

If metrical incoherence is generable, why are there so few cases?

- **Limited learnability**

Learnability

Is this pattern learnable?

- Stratal patterns pose a learnability issue – but a resolvable one (Boersma & van Leussen, 2017)

  …with evidence for **stratal affiliation** of process (Nazarov & Pater, 2017)

- What evidence do learners have?

Robust evidence for syncope

Intraparadigmatic vowel-Ø alternations (*cf.* Bowers, 2019)

e.g. suffix /-alokoʧ-/ “out(ward)”

a. [-_lok._ʧ-]

[hà:.ʧat._lók_ʧʼa]

/ha-(h)ʧa-t̪-alokoʧʼ-a/

by.wing-fly-PL.ACT-DIR-EVID

“they're flying out”

b. [-al._koʧ-]

[hàʧ.ʧal_.kó.ʧʼin]

/ha-(h)ʧa-alokoʧʼ-in/

by.wing-fly-DIR-SG.IMP

“fly out!”

Evidence for strata

- Surface stress is phrasal
- Alternating from penult of phrase (Walker, 2020; Buckley, 2019)
- Shifts rightward to avoid lapse within phrase

Phrasal stress shift

a. [ts’**í**h.ta]$_{\omega}$ [min.n**á**ːn.ti]

⇒ [ts’ih.t**à** min.n**á**ːn.ti]$_{\varphi}$

“trapping birds"

b. [naː.p^{h}**í**.jow]$_{\omega}$ [ʔah.ʧ**á**h.ʧej]$_{\omega}$

⇒ [n**à**ː.p^{h}i.j[ò]w ʔah.ʧ**á**h.ʧej]$_{\varphi}$

“all human beings”

However…

Recall:

- Syncope occurs at phrase level
- Position determined by ω-level structure

***Stratum I* – ω**

Parse left-to-right

σὸσόσ σὸσὸσό

thus…

Syncope is insensitive to position within phrase

a. [maʔ.dàkʰ_.den # dàh.te.tém.huy]
/ma(ʔ)-dakʰad-en # da-(h)te-te-mhuʧ/
3.own-spouse-OBJ w.hand-PAT-RED-RECIP
“[He and his wife] pat each other”

b. [màʔdakʰ_dèn # muʔ.tʼá.waj] **Stress shifted**
/maʔ-dakʰad-en # mu-ʔtʼa-waʧ/
3.own-spouse-OBJ ?-attach-DIR
“He sticks to his wife, is always with her”

Stratal affiliation of syncope

- Phrasal stress doesn't interact with deletion
- Other derivational processes don't clearly interact with syncope
  - thus not strong evidence for when deletion occurs derivationally
- Leaves open alternative explanation:

  Stress-to-Weight Principle (SWP)
  - i.e. "if stressed, then heavy" (Prince, 1991)

Syncope and Stress-to-Weight

- For *most* forms, SWP is explanatory:

(a) [ʃiː.báːʈʰ._mʰuj]
/ ʃi(ː)baːʈʰ**a**- mhuʧ-Ø /
poor-RECIP-PFV
“felt sorry for each other”

/σσ**σ**σ/ ☞ [σσ́$_{H}$_σ]
*[σσ**σ́**$_{L}$σ]

(b) [hàː.ʧaʈ._lók._ʧʼa]
/ ha(ː)- ʧa- ʈ- **a**lok**o**ʧʼ- a /
by.wing-fly-PL.ACT-DIR-EVID
“they’re flying out”

/σσ**σ**σ**σ**σ/ ☞ [σ̀$_{H}$σ_σ́$_{H}$_σ]
*[σ**σ̀**$_{L}$σσ́$_{H}$_σ]
*[σ̀$_{H}$σ**σ̀**$_{L}$σ**σ́**$_{L}$σ]

Syncope and Stress-to-Weight

- For *most* forms, SWP is explanatory
- ***Except*** odd-parity URs with light penult ~ /σσσ**σ$_L$**σ/
  - **Optimal**: delete in *light*, *even* (**4th**) syllable ⇒ [σ̀σ**σ́$_H$**_σ]
  - Instead targets V in *odd* (**3rd**) syllable ⇒ [σ̀σ_**σ́$_L$**σ]

CVC.CV.C**V**$_3$.C**V**$_4$.CV

[ʔah.ti.m**o**.k**o**.ʧin]

*CV̀C.CV.**CV́**$_3$**C**_.CV

CV̀C.CVC_.**CV́**$_4$.CV

[ʔà**h**.tim._k**ó**.ʧin]

Syncope – a learning problem

- **Credit problem** (Stanton, 2016)
  - SWP or opaque derivation?
  - SWP just as good a "fit" for large subset of input data

- **Scarcity of evidence**
  - Only 4-syllable SRs can give evidence needed
  - Narrative[1]: 71 sentences, 8 [ʊ̀sʊ́ˌs] forms, but none with V~Ø alternations.

[1] Walker, 2020. p. 345-361, "Rock Man and Grey Squirrel"

Syncope – a learning problem

- SWP – not perfect, but high degree of empirical coverage
  - Small subset of words provide evidence against SWP
- Stress shift is not sufficient evidence against SWP
  - Stress shift at φ-level with SWP-driven ω-level syncope
- How do learners evaluate this evidence?

Restructuring

Restructuring

- Learners may **restructure** when failing to ‘solve’ an opaque system (Hayes, 1999)
  - i.e. innovative constraint ranking or *ad hoc* constraints
- Diachronic bias towards transparency (Kiparsky, 1968, 1971)
- Evidence Southern Pomo may have been restructuring:
  - **Exceptional syncope**

Exceptional syncope

Some five-syllable forms delete in **4th** syllable (rather than **3rd**)

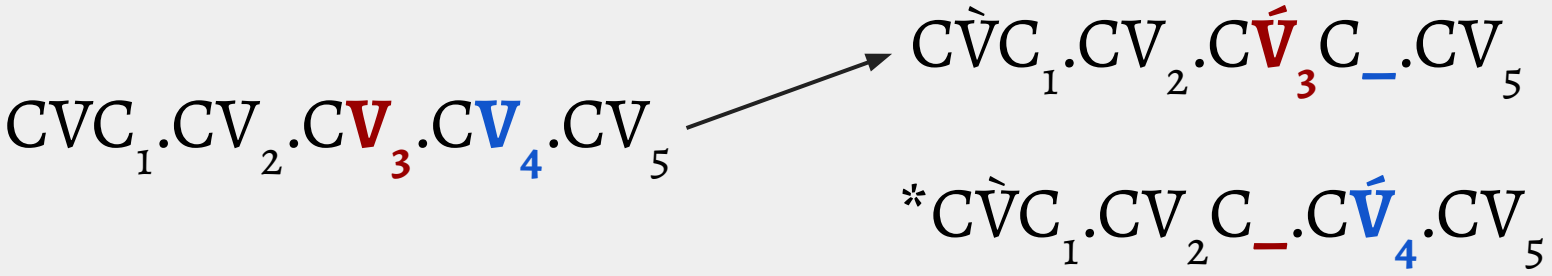
Actual: $\sigma_1\sigma_2\boldsymbol{\sigma_3}\_\sigma_5$ Expected: $^*\sigma_1\sigma_2\_\boldsymbol{\sigma_4}\sigma_5$

a. [hàt̪.t̪a.l**ó**k._.ʧin]
/hat̪t-alokoʧ-in/
“[move foot] up out of[!]”
*[hàt̪.t̪al_.k**ó**.ʧin]

b. [bè:.nem.h**ú**t^h._.le]
/be:-ne-mhuʧ’-t^{h}u-le/
“2 don’t hug each other!”
*[bè:.nem^h_.t^h**ú**.le]

Exceptional syncope

- Only occurs when expected form would have light penult
- SWP-optimizing – no light stressed syllables



- "Flattened" analysis; **syncope is metrically coherent**

Restructuring

- Specific evidence needed to differentiate opaque derivation from surface-oriented account
- Metrically incoherent grammar unstable because of infrequency of this evidence
- Too little input of specific shape ⇒ learners acquire grammar maximizing transparency and metrical coherence

Restructuring

- Metrically incoherent strata, contra-typological patterns are generable
- Not necessarily learnable:

  Learners are limited by the ability of input data to (dis)confirm hypotheses
- Typological frequency ≠ grammar-internal restrictions

Conclusion

- Southern Pomo syncope conditioned by incoherent metrical structure
- Metrically incoherence may be rare because **low learnability leads to restructuring**.
- **Overgeneration is necessary**. Learnability, rather than grammar, constrains typology (at least some of the time).

mkaplan2 [æʔt] ucsc [dɑʔt] edu people.ucsc.edu/~mkaplan2

Yahwih!

Thank you!

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mkaplan2 [æʔt] ucsc [dɑʔt] edu
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