OO-correspondence to phonetically predictable properties: Evidence from episodic -ée

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Aspiration in English

Aspiration is normally a predictable, postlexical process in English

- Voiceless stops are aspirated...
  - Initial in stressed syllable
    - [tʰ]ále, a[tʰ]áin, átti[tʰ]ùde
  - Initial in word, even before unstressed syllable
    - [tʰ]erraín, [tʰ]élépathy
  - In third syl of initial dactyl (Davis 2005, and refs therein)
    - Navrat[h]ilova, Winnep[h]esauke (and manat[h]ee, canop[h]y?)
- In other positions, they are unaspirated
  - Onset of unstressed syllable:
    - ál[t]er, áf[t]er, vá[p]or, há[p]y
  - Non-initial in syllable:
    - s[t]ále, ab.s[t]áin, au.s[t]ére (assumes [ɔ-st])
The correct formal description of these contexts is orthogonal to my argument here today

- See Kiparsky (1979), Selkirk (1982), Nespor & Vogel (1986), Iverson & Salmons (1995), Davis (2005), etc.

- The data I will discuss will concern the onset of stressed syllables, which is uncontroversially an aspiration context under all analyses.

- In this position, aspiration is predictable and automatic, leading to alternations

Morphological conditioning of aspiration

- Aspiration not conditioned across word boundaries:
  - $u[p]-\text{énd} \neq ap^{p^h}\text{énd}$
**Morphological conditioning of aspiration**

- Aspiration not conditioned across word boundaries:
  - \( u[p]-\text{énd} \neq ap[p^h]\text{énd} \)

- Aspiration not blocked by prefixes ending in [s]
  - \( dis[p]\text{láys} \) (monomorphemic) vs. \( dis[p^h]\text{léase} \)
Morphological conditioning of aspiration

- Aspiration not conditioned across word boundaries:
  - $u[p]$-én̆d $\neq ap[p^h]$én̆d

- Aspiration not blocked by prefixes ending in [s]
  - $dis[p]áys$ (monomorphemic) vs. $dis[p^h]léase$

- Aspiration can also be retained in suffixed forms
  - $mili[t^h]áry \sim mili[t^h]aristic$ (Withgott 1982)
  - Cf. unaspirated/flapped stop in $capi[t/r]alistic$
  - Though see Davis (2005) for discussion of arguments that aspiration is actually expected here
  - Either way, normal distribution of aspiration is disrupted by morphological structure
Why do word and morpheme boundaries matter?

Traditional answer: derivation constrained by boundaries in English

- No resyllabification across word boundaries (e.g., Selkirk 1986)
  - [əp.'ɛnd] vs. [ə.pʰɛnd]
- ... or across certain morpheme boundaries
  - [dɪs.pʰliːz] vs. [dɪ.spleɪ]
- Cyclic evaluation
  - Also [kʰæpɪrəl] → [kʰæpɪrəlistɪk], [mɪləθɛri] → [mɪləθɛrɪstɪk]
Why do word and morpheme boundaries matter?

A popular alternative in OT: OO-Correspondence

- Words in phrases correspond to their isolation forms
  
  máke  \((unaspirated)\)
  
  \[\uparrow\]
  
  màke úp \((aspiration blocked)\)

- “Base-prioritizing” correspondence (Benua 1997; Kenstowicz 1997; Kager 1999; Steriade 2000, etc.)
  
  \(make\ \text{up}\) could be evaluated as single prosodic word, but realization of /k/ is bound by OO faithfulness to base form
  
  \([\text{meik}]\) \(\neq [\text{meik}^h]\)
Goal of this talk

Present data from another context in which aspiration seems to be blocked, at least for many speakers of American English.
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- Voiceless stops before “auto-stressed” suffixes: -ée, -ése, etc.
    ...the person who has been video taped or, as some of us like to call him or her, the “tapee.”
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    - the person who has been video taped or, as some of us like to call him or her, the “tapee.”

- For many speakers (myself included), this is obligatorily pronounced [tʰeɪpiː], not *[tʰeɪpʰiː]
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I will argue that a resyllabification or standard cyclic account is inadequate; an OO-analysis appears to be required

- In particular, faithfulness to non-contrastive properties of final stop releases
Present new empirical data describing the realization of stops before -ée, for two varieties of American English speakers
Point out difficulties that this data poses for a cyclic derivation account
Show that this realization of stops in this context exhibits a close connection to release properties of the corresponding stops in the base form
Sketch an explanation for why this particular suffix might show such fine-grained faithfulness, beyond what is normally observed
The data

For speakers of the relevant dialect, aspiration is systematically blocked before stressed suffixes like -ée

  Puppies nip to see how far they can go with the nippee.

  The jumpee gets your dog into jumping mode by entering through the front door or simply walking up to him in a friendly manner.

- http://www.southendzone.com/columns/?i=wag&d=19981201
  Sometimes the bark was not directed strictly toward the barkee since he might not have looked straight at him.

  Licking is okay in small doses, but as you are a cat, licking in more than limited quantities can be quite painful for the lickee.
Some minimal pairs

Self-diagnostic: do you have these distinctions?

- *beepee* [bipíː] vs. *B.P.* [bipʰíː]
- *nukée* [nukíː] vs. *new key* [nukʰíː]
- *markee* [markíː] vs. *marquis* [markʰíː] (not as clear for all speakers)
Some minimal pairs

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- *markee [markíː]* vs. *marquis [markʰíː]* (not as clear for all speakers)

Caveats

- These pairs almost certainly differ in respects other than aspiration (incl. especially vowel length and quality)
  - Nonetheless, for speakers who have this contrast, there is a consistent and clear aspiration difference, esp. for VpV
- They also differ in semantic plausibility
  - See Barker (1998) for discussion (“episodic -ee”)
  - I’m relying here on a certain amount of flexibility and imagination in finding a suitable interpretation
Preliminary phonetic description

Pilot data showing that the stops that I’m calling “unaspirated” are really categorically unaspirated (and not, say, some intermediate value of weak aspiration)

Compared the following conditions:
- Word boundary location: #C vs. #C
  - so key vs. soak E, B.P. vs. beep E
- Suffix boundaries:
  - Unstressed suffixes
    - soaker, beeper
    - soaked, beeped
  - Stressed suffixes
    - soakée, beepée
- Contrastive focus: Not the soakER, but the soakEE
VOT for [k] (left) > [p] (right), as expected
Introduction
Realization of stops before -ee
Analysis and discussion

Preliminary phonetic description

Data from one representative speaker

- VOT for [k] (left) > [p] (right), as expected
- Clear separation in VOT between aspirated and unaspirated
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Clear separation in VOT between aspirated and unaspirated
VOT before -ee falls firmly within unaspirated range
**Preliminary phonetic description**

Data from one representative speaker

- VOT for [k] *(left)* > [p] *(right)*, as expected
- Clear separation in VOT between aspirated and unaspirated
- VOT before -ee falls firmly within unaspirated range
Summary of phonetic description

- Clear differentiation in VOT of aspirated vs. unaspirated stops
- Aspiration depends not only on following stress, but also on morphological context
  - No aspiration before contrastively focused -ER
  - No aspiration before -ée

<table>
<thead>
<tr>
<th>Unaspirated</th>
<th>vs.</th>
<th>Aspirated</th>
</tr>
</thead>
<tbody>
<tr>
<td>gróupies, gróupers, group É’s,</td>
<td></td>
<td>grew peas</td>
</tr>
<tr>
<td>groupées, groupÉRs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Although this is just a small amount of pilot data, it shows a rather clean pattern
- Discussions with speakers suggests that the distinction is perceived reliably, and, at least in these simple cases, there are clear intuitions about which realization is required in which contexts
It’s not just -ée

A couple other auto-stressed suffixes that resist aspiration:

- -ésé
  - Yapese [jæpíːz]

- -été
  - http://www.amazingsocks.com/
    - Product name: “Air Socks” Coolmax Sockette [sakét]
So what is the explanation?

- Possibility 1: Lack of resyllabification
  - \( \text{groupée} = \text{group.ée} \), just like \( \text{group E} = \text{group.E} \)
  - Similarly \( \text{Yap.ése} \)
  - Alignment of syllable and morpheme boundaries

- Possibility 2: faithfulness to isolation form
  - \( \text{groupée} \) must resemble \( \text{group} \), which has unaspirated [p]
Problems for a resyllabification analysis

Not generally true in English
- Many English suffixes resyllabify freely
  - *denote* $\sim$ *denot[^h]ation*
- Even level 2 suffixes like *-oid* allow aspiration (*plánet[^h]oid*)

A close comparison: *-érer*

- Both are auto-stressed
- Both cause morphological truncation (*evacu-ée*, *volunt-érer*)
- But *-érer* allows resyllabification/aspiration:
  - charioteer [ʃæriətʰiə], pamphleteer [pʰæmflə'tʰiə], gazetteer [ɡæzətʰiə]
  - Productively: *armament[^h]érer*, *cabinet[^h]érer*, *bayonet[^h]érer*, *syndicat[^h]érer* (forms cited by Raffelsiefen 2004, without discussion of aspiration properties; nonce, at least to me, but intuition is clear that it must be aspirated)
Although it would be possible, given the data presented thus far, to state that resyllabification does not occur specifically with suffixes like -ée and -ése, the restriction to these suffixes would be somewhat stipulative.

☞ An awkward problem, but not fatal.
More serious problems: truncated forms

When verb is truncated, aspiration occurs as (phonotactically) expected

- \textit{amput}[^h]\text{ée} (lexicalized)
- D.H. Lawrence \textit{The Rainbow}, chap 2:
  \begin{quote}
  \textit{Lydia Lensky, married to the young doctor, became with him a patriot and an \textit{emancip}[^h]\text{ée}.}
  \end{quote}
  \begin{quote}
  \textit{We need to allow them to be freed whenever the \textit{alloc}[^h]\text{ée} decides, and to be allocated in a common format to allow the table to be freed at any time as required…}
  \end{quote}
- Seems to be generally true of nonce forms: \textit{regurgit}[^h]\text{ée}, \textit{partic}[^h]\text{ée} (1 “legit” Google hit each); Raffelsießen (2004): \textit{rehabilit}[^h]\text{ée}
- Parallel with \textit{-éé}: \textit{Mal}[^t\text{h}]\text{éé}

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The problem with truncated forms

Forms like $amput^{[h]}\text{-éé}$ and $emancip^{[h]}\text{-ee}$ show that failure to resyllabify can’t even be stated as a property of the -ee suffix

- $emanci.p^{[h]}\text{-éé}$ vs. $develop.\text{-éé}$
The problem with truncated forms

Forms like *amput*[^h]ée and *emancip*[^h]-ée show that failure to resyllabify can’t even be stated as a property of the -ée suffix

- *emanci.p[^h]ée vs. develop.ée*

They also do not follow easily from the standard analysis of truncation

- “Truncation” is often taken to be affixation to a stem
  - *emancip + ée*
- However, this fails to distinguish *emancip* from *develop*
- Aspiration of -*ate* form could only carry over if we assume true truncation, with preservation of syllabification
  - *e(mánci)(p^h-ate) + ée → e(mánci)(p^h-ée)*
  - cf. *de(vélop) + ée → de(vélop).(ée)*
The problem with truncated forms

The difference follows naturally, however, if we look at the properties of the /p/ in the base form

\[
\begin{array}{ll}
\text{dévelop} & \text{émáncip}^h \text{áte} \\
\uparrow & \uparrow \\
\text{dévelopée} & \text{émáncip}^h \text{ée}
\end{array}
\]

- Preservation of a non-contrastive property of the base
- Perhaps parallel to aspiration in \textit{milit}^[h]\textit{arístic} (Steriade 2000)
Things get worse: coronals

For verbs ending in \(-nt\) and \(stop + t\), aspiration is possible, though weak and variable

- Attested: *appointée, absentée, patentée* (prefer \([t^h]\))
- Nonce: *augmentée, hauntée*; Raffelsiefen lists *presentee, affrontee, selectee* (variable)

http://www.duelingdestinies.com/Halloween.html

*Next, set up a row of felt sheets that get increasingly shorter as they get closer to the hauntée, until they get to be about 3 feet tall.*

http://www15.brinkster.com/KAB/Learned.html

*A mystical chant from a cereal box top has only a gu[a]rantee for the chanter not the chantee.*
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    A mystical chant from a cereal box top has only a *gu[a]rantee* for the chanter not the *chantee*.

Optionality? Also possible that this is not “true” aspiration, but weak aspiration/“turbulent release” is involved
Things get worse: coronals

For verbs ending in -\textit{lt}, there is similar variation

- No well-attested forms
- Nonce: \textit{assaultée}, \textit{insultée}, etc.
    \textit{This also reminds me of a discussion I've had a few times with people about whether an 'insult' requires that the insultee knows that he is being insulted.}
  - http://freerepublic.com/focus/f-news/1582905/posts
    \textit{While they were able to launch their test dummy a few score yards, they found that human bodies don't take kindly to the treatment and the catapultee would arrive in the USA in bad shape or in pieces.}

- Viz. also \textit{Salt[^h]ín}es
Things get worse: coronals

For verbs ending in -rt, things get awkward for many speakers

- Aspirated? flapped? glottal stop? nothing is totally satisfactory

  *The truth often hurts and hurting is never funny for the “hurtee”*

  *An alert is sent to at least one individual, called alertee, through the communication network. . . *

- http://www.metafilter.com/comments.mefi/19300
  *I love the idea of these people being thwarted, but todays thwart can so often become tomorrow’s thwartee. And if you say ‘thwartee’ five times real fast, it causes a pleasant bluzzing sensation on the soft palate.*
Things get worse: coronals

For verbs in singleton -t, nothing sounds right for many speakers

- ?eatée, ?hit(t)ée, etc.
- These are a paradigm gap; neither [iri:] nor [itʰi:] sounds right
  - Emphatic [iʔtʔ iː] is possible, but doesn’t quite feel like a fluent realization of the intended word
- Other speakers have no such difficulty
  - This is an important fact, and we’ll return to it later
Two different reflexes of a paradigm gap

1. Reported difficulty, periphrasis
   - “Spontaneous” difficulty by speakers first encountering the problem:
     “What would you call someone who has been eaten?”
     - “an ea[tʰ]ée... an eá[r]ee... no... an ea[tʰ]ée... Nothing... victim!”
     - “an ea[tʰ]ee... an ea[?]... an ea[t]ee... an ea[t ?]ee... an ea[t ?]ee.”
   - Similar problem arise for nonce forms like Tibetese

2. Variability
   - Both within and across speakers
   - See Albright (2003) on a similar phenomenon in morphological paradigm gaps
Variable realizations of uncertain /t/ in pettee

- Voiced flap

- Voiceless/aspirated tap

- Glottalized and aspirated

- Ejective
A methodological issue

- Asking speakers to read sentences which contained potentially problematic forms (like eatee) did not yield uncomfortable silences or reports of uncertainty
  - Speakers just pick a realization and say it (variability)
  - Subsequent debriefing reveals discomfort with certain words
  - Difficult to interpret read tokens
- Asking speakers to create the forms themselves yields substantial uncertainty
  - “What would you call someone who has been eaten? An ____”
  - Behavior in this task mirrors more closely the gap intuition, for those speakers that have gaps
- Ultimately, it would be nice to understand the relation between these sources of evidence
Revisiting non-coronal stops

In fact, a parallel difference also seems to be observed between singletons and clusters for non-coronals

- Definitely unaspirated: beep-ee, trip-ee, soak-ee, lick-ee
- Generally unaspirated: warp-ee, usurp-ee, mark-ee, cork-ee
- Aspiration uncertain: help-ee, scalp-ee, milk-ee, sulk-ee
- Aspiration somewhat possible?: stamp-ee, jump-ee, sink-ee, rank-ee

- I myself basically prefer unaspirated for all of these contexts
- The intrinsically longer and noisier release of [k], and of stops after nasals, makes the distinction harder to intuit
- Tokens elicited in the lab do have variable and often quite aspirated release (this is the basis for the table above), though not clear if VOT is actually greater
- Pinning this down is a matter of on-going research
Summary of stop realization before -ee

Putting together what we have seen so far

<table>
<thead>
<tr>
<th></th>
<th>p</th>
<th>t</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>V___</td>
<td>unaspirated</td>
<td>gap</td>
<td>unaspirated</td>
</tr>
<tr>
<td>Vr___</td>
<td>unaspirated?</td>
<td>gap?</td>
<td>unaspirated?</td>
</tr>
<tr>
<td>VI___</td>
<td>variable?</td>
<td>variable?</td>
<td>variable?</td>
</tr>
<tr>
<td>Vn___</td>
<td>variable?</td>
<td>variable?</td>
<td>variable?</td>
</tr>
<tr>
<td>V{p,k}___</td>
<td>—</td>
<td>variable?</td>
<td>—</td>
</tr>
</tbody>
</table>

- Post-vocalic realization (first row) supported by *soaky/soakee/soak* E pilot data above
- Gap data supported by elicitation and debriefing
- Realization in NC and CC clusters requires further investigation
Why, in simple cases, does -ee not trigger aspiration of stem-final consonants, even though aspiration in that position is fine for truncating verbs?

Why does the preceding C context make a difference when clusters are involved?

Why do coronals create uncertainty in some contexts?

Why do speakers differ from one another about this uncertainty?
Reminder: as discussed above, the difference between *develo[p]ee* and *emanci[pʰ]-ee* is straightforwardly predicted by Base Identity

```
develop    emancipʰáte
  ↑        ↑
dévelopée  emancipʰée
dévelop  éach
```

- OO Faith suppresses phonotactically expected aspiration, in the onset of the stressed syllable
The quandary of coronals

Base Identity also predicts suppression of aspiration for coronals

\[
\begin{align*}
\text{eat} & & \text{hurt} & & \text{halt} & & \text{haunt} & & \text{adopt} \\
\uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\
\text{eatée} & & \text{hurtée} & & \text{haltée} & & \text{hauntée} & & \text{adoptée} \\
\text{eat each} & & \text{hurt each} & & \text{halt each} & & \text{haunt each} & & \text{adopt each}
\end{align*}
\]
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<tr>
<td>↑</td>
<td>↑</td>
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</tr>
<tr>
<td>eatée</td>
<td>hurtée</td>
<td>haltée</td>
<td>hauntée</td>
<td>adoptée</td>
</tr>
<tr>
<td>eat each</td>
<td>hurt each</td>
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</table>

- After vowels and [ʌ], this puts [t] in a flapping environment
- Across word boundaries, flapping is enforced

<table>
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et\text{ée} & \quad \text{hurt}\text{ée} & \quad \text{halt}\text{ée} & \quad \text{haunt}\text{ée} & \quad \text{adopt}\text{ée} \\
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- Across word boundaries, flapping is enforced

\[
\begin{align*}
etr\text{ each} & \quad \text{hurr each} & \quad \text{halt each} & \quad \text{haunt each} & \quad \text{adopt each}
\end{align*}
\]

- Before -ee, we see two important differences

\[
\begin{align*}
(*\text{eat[???]ée}) & \quad (*\text{hurt[???]ée}) & \quad \text{halt}^{t}\text{ée} & \quad \text{haunt}^{t}\text{ée} & \quad \text{adopt}^{t}\text{ée}
\end{align*}
\]
The quandary of coronals

- What blocks flapping before -ée, even though it is allowed at prosodically equivalent word boundaries?
- What allows aspiration after clusters, at least as an optional variant?
The quandary of coronals

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- What allows aspiration after clusters, at least as an optional variant?

Proposal

What unifies these two cases is that the realization before -ée is more like the phonetic realization that stop would have in phrase-final position

- Final /t/ glottalized/unreleased
- Final stops in clusters: robustly released/even aspirated
Release properties of final /t/

Claim: realization of /t/ before -ee tracks the likelihood/acceptability of release in phrase-final position

<table>
<thead>
<tr>
<th>Release status</th>
<th>Releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release very likely</td>
<td>land, plant, fold, colt</td>
</tr>
<tr>
<td></td>
<td>act, apt</td>
</tr>
<tr>
<td>Release variable/less likely</td>
<td>hurt, court</td>
</tr>
<tr>
<td>Release very unlikely,</td>
<td>cat, coat</td>
</tr>
<tr>
<td>glottalization practically obligatory</td>
<td></td>
</tr>
</tbody>
</table>

If this is right, it lends very specific support to the idea that the realization of stops before -ée is determined with reference to release properties of the corresponding stop in the base form.
A small test

- Set of monosyllabic words ending in stops in various contexts
  - After tense and lax vowels
  - In final /C, /ℓC, /nC clusters
  - Roughly matched for CELEX frequency (≈ 200-300 COBUILD)
- Placed each word at the end of a sentence
  - Each sentence nine syllables, designed to encourage reading as single intonational phrase, with pitch accent on final word
  - Examples
    - *They got together to make a quilt.*
    - *The German Shepherd started to pant.*
    - *My grandmother grew up in a hut.*
- 88 sentences, interleaved with 88 sentences with stops between syllables 4 and 5 (mostly not ending in stops)
- 7 speakers of American English
A small test

Classified final stops as released or unreleased, based on presence of burst

- Extremely clear, categorical difference
- Final release typically accompanied by exhalation
- Some speakers sometimes produce ejectives (esp. for [p])

**Unreleased**

```
plastic cu[p^]
```

**Exhale**

```
plastic cu[p^h]
```

**Ejective**

```
gentle ta[p']
```
A small test

Rate of final stop release: \( \text{avg} = \text{bars, individual speakers} = \text{lines} \)

- Two speakers consistently released all final [t]'s
- Other speakers generally show similar context effect
  - \( \text{Vt, Vrt} < \text{Vlt, Vnt} \)
  - Closely mirrors willingness to aspirate before -ée
An even more significant fact

After production test, recorded same speakers producing -ée forms

- Then debriefed, asking for intuitions of well-formedness
An even more significant fact

After production test, recorded same speakers producing -ée forms
  - Then debriefed, asking for intuitions of well-formedness

- Without exception, speakers who glottalize Vt show gaps for eat (etc.), while speakers who generally release Vt do not
- Only 2 “always releasing” speakers recorded so far, but anecdotally confirmed with several others by casual observation of final releases, then asking for -ée intuitions
Final stop release as a speaker-controlled parameter

Systematic differences between languages and groups w.r.t. final stop releases

- Language by language differences
  - Strongly released/aspirated: Swedish (Johansson, Horne, and Strömqvist 2001)
  - Obligatorily unreleased: Korean, Tagalog, etc.

- Must be learned as part of L2 acquisition
  - Zsiga (2003), Tsukada & al. (2004)

- As a sociolect marker
  - Girl geeks (Bucholtz 1996)
  - Educated orthodox Jewish men (Benor 2001)
  - Gay professionals (Podesva & al. 2002)
Local summary of coronals

Comparison across contexts and across speakers points to an intimate relation between properties of final stop releases and realization before -ée

Population A:

<table>
<thead>
<tr>
<th></th>
<th>Phrase-final realization</th>
<th>Realization before -ée</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vt,</td>
<td>noisy release</td>
<td>variably aspirated (?)</td>
</tr>
<tr>
<td>Vrt</td>
<td>noisy release</td>
<td>variably aspirated (?)</td>
</tr>
<tr>
<td>Vlt</td>
<td>noisy release</td>
<td>variably aspirated</td>
</tr>
<tr>
<td>Vnt</td>
<td>noisy release</td>
<td>variably aspirated</td>
</tr>
<tr>
<td>Vpt</td>
<td>noisy release</td>
<td>variably aspirated</td>
</tr>
</tbody>
</table>
Comparison across contexts and across speakers points to an intimate relation between properties of final stop releases and realization before -ée

Population B:

<table>
<thead>
<tr>
<th>Phrase-final realization</th>
<th>Realization before -ée</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vt, unreleased, glottal</td>
<td>unrealizable</td>
</tr>
<tr>
<td>Vrt typically unreleased</td>
<td>awkward</td>
</tr>
<tr>
<td>Vlt noisy release</td>
<td>variably aspirated</td>
</tr>
<tr>
<td>Vnt noisy release</td>
<td>variably aspirated</td>
</tr>
<tr>
<td>Vpt noisy release</td>
<td>variably aspirated</td>
</tr>
</tbody>
</table>
Revisiting the non-coronals

Recall that for non-coronals, a parallel but slightly different pattern is observed:

- Like /t/: variable aspiration in clusters (esp. /Np/)
- Unlike /t/: Vp and Vk are obligatorily unaspirated before -ée (no gaps)
  - *soaker, soak E, soakée* comparison

Expectation: typical phrase-final release of Vp, Vk should be different from both Vt and VCp
Differences in release rates across place of articulation

Comparing Vp, Vt, Vk:

- Data from TIMIT counts (Kang 2003) have similar profile, but show labial/dorsal difference not reflected in my data, or in the -ee intuitions.
- Possible difference: TIMIT less careful “lab-speech”?
- Interesting possibility: realization before -ee is not the *typical* realization, but rather, some sort of *canonical* realization.
Differences in release type across different contexts

Comparing Vp, Vk vs V Cp, VCk

-Possible that final releases are longer or noisier in clusters?
  -“Exhale” (glottal-only source) vs. extra turbulence (additional supralaryngeal sources)?
  -Or, perhaps extra glottalization for singleton codas?

-Not enough data yet to draw any conclusions; an area of on-going investigation
Summary of correspondences

<table>
<thead>
<tr>
<th>Base form</th>
<th>Before -ée</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glottalized/unreleased</td>
<td>Gap</td>
</tr>
<tr>
<td>Released</td>
<td>Released, unaspirated</td>
</tr>
<tr>
<td>Noisily released</td>
<td>Variably asp./unasp.</td>
</tr>
<tr>
<td>Aspirated</td>
<td>Aspirated</td>
</tr>
</tbody>
</table>

- Overall claim: realization before -ee preserves release properties of stop in base form, spoken in isolation
- Small acoustic differences are allowed (noisy release mapped variably to plain burst, or aspiration)
- Larger differences prohibited (weak release ↔ aspiration)
- For speakers with characteristically glottalized/unreleased final /t/, OO-Ident to base form prevents change to any realization that is possible to produce intervocalically
One approach to paradigm gaps: **MParse**

- **MParse**-ee: -ee derivatives must have non-null exponence
  - Violated in cases of gaps (null exponence: O)
  - See McCarthy & Wolf (2006) for discussion of affix-specific MParse

**Tableau for eat-ee /it-í/, related to base form [iʔ(tʰ)]**

- All possible realizations are too different from [ʔtʰ], or are ruled out by inviolable English phonotactics

<table>
<thead>
<tr>
<th>/it-í/</th>
<th>*[...ʔV]</th>
<th>OO-Id(c.g.)</th>
<th>OO-Id(unrel)</th>
<th>MParse-ee</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ítí</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. írí</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. iʔtí</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>c. iʔtʔí</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. O</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
OO correspondence for release properties?

- It should be evident that these cutoffs are difficult to make using standard feature systems.
- If this account is right, it would constitute an extreme case of OO correspondence for non-contrastive properties.
  - Including some properties that are never contrastive in any language?
- Not only controversial, but also unusual.
  - So far, few such cases have been documented in the literature.
  - Grounds for caution!
The potential pay-off, if this is right

A consideration that may make an OO analysis more appealing, and might also help explain why this case is so unusual:

- How do speakers learn the realization of stops before -ée?
  - As we'll see in a moment, there's very little data from existing words to go on (perhaps none that learners would actually be exposed to)

- Claim: the best account is one in which it follows from other things
  - Learned constraint ranking governing phonetic realizations of stops in other contexts (Speaker-particular)
  - Initial state/prior expectations about licit correspondences
Stop realization, from a learning perspective

Evidence available to the learner about effect of various boundaries on the realization of the preceding stop:

<table>
<thead>
<tr>
<th>Across wd boundaries</th>
<th>unasp, flapping</th>
<th>tons of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before -ed, -ing, -er</td>
<td>unasp, flapping</td>
<td>tons of data</td>
</tr>
<tr>
<td>Before -eer</td>
<td>aspirated</td>
<td>musketeer, charioteer, profiteer, puppeteer, racketeer, privateer, gazetteer, pamphleteer</td>
</tr>
<tr>
<td>Before -ee</td>
<td>???</td>
<td>NO RELEVANT DATA</td>
</tr>
</tbody>
</table>

The only -ee forms which are eligible for flapping that show up in the OED are: devotee, deportee, bootee

- All other attested -tée forms are in ambiguous phonological contexts: appointée, draftée, amputée (< amput[h]ate), etc.

- Conjecture: kids don’t have access to the unambiguous forms
Stop realization, from a learning perspective

The initial state, under standard assumptions

- \( \text{OO-F} \gg \mathcal{M} \gg \text{IO-F} \)
- \( \mathcal{F} \gg \text{MPARSE} \) (McCarthy & Wolf 2006)
  - OO-F is all that’s required here

Two learning scenarios:

- Evidence of alternations, such as \([?t^\ast] \sim [t^h]\): demote OO-F, promote affix-specific MPARSE
- No evidence of alternations: learner stays in initial state, assuming no alternations, even at the cost of potential morphological gaps
Stop realization, from a learning perspective

The initial state, under standard assumptions
- \( \text{OO-} \mathcal{F} \gg \mathcal{M} \gg \text{IO-} \mathcal{F} \)
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Two learning scenarios:
- Evidence of alternations, such as \( [?^\text{t}^\text{x}] \sim [t^\text{h}] \): demote \( \text{OO-} \mathcal{F} \), promote affix-specific \( \text{MParSE} \)
- No evidence of alternations: learner stays in initial state, assuming no alternations, even at the cost of potential morphological gaps

In other words, ranking seen here is not a bizarre quirk of English
- It’s the ranking already independently predicted to be the initial state, based on a combination of learnability arguments and empirical motivations
What creates the gap?

Two crucial properties of -ée

- For accidental reasons, there are no attested examples after stems ending in V+voiceless stop
- It is a prosodically unusual affix
  - In principle, -eer could provide some useful evidence, but that’s just one affix
  - Realization before -eer also conflicts with realization at word boundaries, which is the other relevant comparison context
Conjecture: speakers are cautious to generalize across different morphological and phonological contexts, unless there is sufficient evidence that they really do behave similarly

- -éer and word boundaries are different; no generalization that would cover them and extend to over cases
- -éer and -ée might be alike, but there’s just no evidence supporting this comparison
- Conservative strategy for learning alternations ends up leaving speakers with no way to transform -ee forms into something pronounceable
So why is this case so unusual?

- It’s probably not all that common for a language to have just one or two suffixes that are prosodically unlike any other suffixes in the language.
- Evidence about flapping is particularly inconsistent:
  - Only before stressless word internally, also before stressed across a word boundary.
  - “Unexpected” lack of flapping in some morphological contexts.
- Faithful realization is impossible:
  - Stop required to be unreleased in medial position; not allowed in English (or ever?)
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- Faithful realization is impossible:
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Perhaps these properties don’t line up in this way all that often; usually there’s a lot more evidence that helps learners overcome caring about excessively detailed OO constraints about predictable properties.
A variety of evidence seems to point to the conclusion that the realization of voiceless stops before suffixes like -ée requires preservation of non-contrastive properties in derived forms.

- In fact, if it is correct that not only glottalization, but also the noisiness of the release makes a difference, this involves a far less contrastive difference than the flapping data discussed by Steriade (2000).

- In cases where preservation of these properties is absolutely ruled out (*Unreleased/V__ V), a fix is required:
  - Different affixes take different paths; no “default”
  - When evidence is lacking about a specific suffix, a gap results.
Benefit of an OO approach: plausible learning account

- Explains how speakers know this pattern in spite of lack of input data, and why there are individual differences
- Possible reasons why this case shows more detailed faithfulness than other known cases
Thank you!
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