Preverbal *d'* and its interactions with the initial consonant mutation system in Irish

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Initial consonant mutation in Irish

Initial consonant mutation (ICM)

Systematic **phonological alternation** of word-initial consonants, depending on **morphosyntactic context**

(1) a. ***ní*** ***dh****únfaidh* *siad* *é* [d→ɣ]
NEG **L**.close.FUT they it
'They will not close it.'

(**L** = "Lenition")

b. ***an*** ***gc****reideann* *tú* *í?* [k→g]
Q **E**.believe.PRS you her
'Do you believe her?'

(**E** = "Eclipsis")

c. ***d'*** ***fh****ágfainn* [f→∅]
HIST **L**.leave.COND.1SG
'I would leave.'

Trigger word account of ICM

- Floating phonological material on the right edge of a trigger word

(2)

a.	*ní*-**{L}** *dúnfaidh* ⟶ *ní* ***dh****únfaidh*	/d/ ⟶ [ɣ]
b.	*an*-**{E}** *creideann* ⟶ *an* ***gc****reideann*	/k/ ⟶ [g]
c.	*d'*-**{L}** *fágfainn* ⟶ *d'* ***fh****ágfainn*	/f/ ⟶ [∅]

(e.g. Lieber 1983; Iosad 2014; Breit 2019)

- **Prediction:** conditions for insertion of trigger word cannot be sensitive to the post-mutation identity of the target

- Demonstrably fails to hold for "historic tense particle" *d'*
  - ("historic tense" = specific subset of tense/mood combinations in Irish)

Two possible solutions

Morphosyntactic solution: {L} separate from *d'*

- Historic tense prefix {L}- inserted first
- Historic tense particle *d'* inserted **after** mutation has happened

d' **{L}-***fágfainn*

Phonological solution: {L} attached to *d'*

- Mutation-inducing material {L} inserted alongside *d'*
- A **separate factor** prevents *d'* from surfacing in some contexts

***(d)*-{L}** *fágfainn*

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***(d)*-{L}** *fágfainn*

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Irish ICM: Phonological alternations

Unmutated		Lenition		Eclipsis	
$p^{(j)}$	⟨*p*⟩	$f^{(j)}$	⟨*ph*⟩	$b^{(j)}$	⟨*bp*⟩
$t^{(j)}$	⟨*t*⟩	$h^{(j)}$	⟨*th*⟩	$d^{(j)}$	⟨*dt*⟩
$k^{(j)}$	⟨*c*⟩	$x^{(j)}$	⟨*ch*⟩	$g^{(j)}$	⟨*gc*⟩
$b^{(j)}$	⟨*b*⟩	$v^{(j)}$	⟨*bh*⟩	$m^{(j)}$	⟨*mb*⟩
$d^{(j)}$	⟨*d*⟩	$ɣ^{(j)}$	⟨*dh*⟩	$n^{(j)}$	⟨*nd*⟩
$g^{(j)}$	⟨*g*⟩	$ɣ^{(j)}$	⟨*gh*⟩	$ŋ^{(j)}$	⟨*ng*⟩
$m^{(j)}$	⟨*m*⟩	$v^{(j)}$	⟨*mh*⟩	–	–
$f^{(j)}$	⟨*f*⟩	$∅^{(j)}$	⟨*fh*⟩	$v^{(j)}$	⟨*bhf*⟩
$s^{(j)}$	⟨*s*⟩	$h^{(j)}$	⟨*sh*⟩	–	–
$l^{(j)}$	⟨*l*⟩	$(l^{(j)})$	$(⟨l⟩)$	–	–
$n^{(j)}$	⟨*n*⟩	$(n^{(j)})$	$(⟨n⟩)$	–	–

(adapted from Iosad 2023)

- **Lenition:** Stops ⟶ fricatives; coronals lose place feature
- **Eclipsis:** Voiceless stops ⟶ voiced; voiced stops ⟶ nasal

Irish ICM: Mutation contexts

Mutation following so-called "trigger words":

- Prepositions:
  - **Lenition:** *de* 'from/of', *do* 'for/to', *ó* 'from', *trí* 'through', ...
  - **Eclipsis:** *i* 'in'
  - **Non-mutation:** *ag* 'at', *as* 'out of', *go* 'to', *le* 'with', ...
- Numerals:
  - **Lenition:** 1-6 (e.g. *trí* ***bh****ád* 'three **L**.boats')
  - **Eclipsis:** 7-10 (e.g. *naoi* ***mb****liana* 'nine **E**.years')
- Preverbal particles:
  - **Lenition:** *a* (relative prt), *má* (cond), *ní* (neg), *d'* (tense prt), ...
  - **Eclipsis:** *go* (comp), *an* (question), *dá* (cond), *nach* (neg comp), ...

Irish ICM: Mutation contexts

Mutation linked to morphosyntactic features on the target word:

- Adjectival agreement:
  - *bean **bh**eag **dh**ílis* ‘a **L**.small **L**.loyal woman’
  - *na heitleáin **dh**earga **ch**éanna* ‘the **L**.same **L**.red airplanes
- Definite possessors:
  - *bád **Sh**eáin* ‘**L**.Seán’s boat’
  - *bád mór **Sh**eáin* ‘**L**.Seán’s big boat’
  - *bád **Sh**eáin **Mh**óir* ‘**L**.big **L**.Seán’s boat’
- After the definite article:
  - *an **fh**uinneog* ‘the **L**.window’ (F)
  - *an bád* ‘the boat’ (M)
  - *barr na fuinneoige* ‘the top of the window’ (F.GEN)
  - *dath an **bh**áid* ‘the colour of the **L**.boat’ (M.GEN)
  - *barr na **bhf**uinneog* ‘the top of the **E**.windows’ (F.GEN.PL)
  - *dath na **mb**ád* ‘the colour of the **E**.boats’ (M.GEN.PL)

ICM in an autosegmental framework

- Morphology is fundamentally concatenative
- Phonologically defective morphemes

(e.g. Trommer 2011; Bye & Svenonius 2012; Zimmermann 2017)

Floating phonological material + Target consonant $\longrightarrow$ Mutated target

e.g. floating features (Lieber 1983)
floating elements (Breit 2019)
floating geometric structure (Iosad 2014)

Advantages:

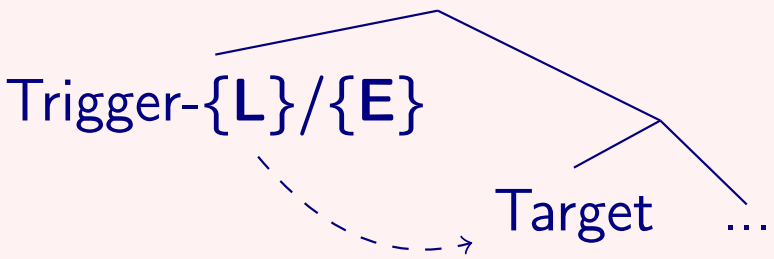
- Compatible with strict modularity (Scheer 2010; Bermúdez-Otero 2012)
- No ad hoc diacritics (cf. Hamp 1951; Pyatt 1997)
- Captures phonological regularities (cf. Stewart 2004; Green 2006)

ICM in an autosegmental framework

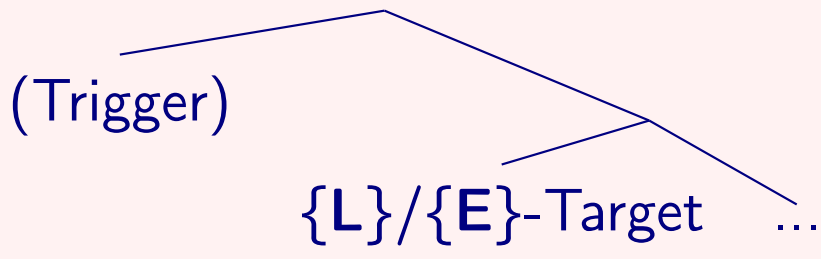
Possible sources of mutation-inducing material (Laoide-Kemp 2023)

- **Type 1:** Mutation material at right edge of a trigger word
- **Type 2:** Mutation material as a prefix on the target word

Type 1:



Type 2:



- **Both sources** are necessary to account for the Irish ICM data

ICM in an autosegmental framework

In the Irish clause...

- All preverbal particles are associated with mutation on the verb

Lenition		Eclipsis	
a^{L}	direct relative particle	a^{N}	indirect relative particle
má	conditional particle	*go*	complementiser
ní	negative particle	*an*	interrogative particle
		nach	negative complementiser
d'	historic tense particle	*dá*	conditional particle
all *-r* forms of dependent particles		*cá*	'where'

- Lexical property of each preverbal particle (contra Duffield 1995)

ICM in an autosegmental framework

- Mutation triggered on **any** following consonant

(3) a. *go* ***dt****uigim*
COMP **E**.understand.1SG
'...that I understand'

b. *go* ***mb****a* *mhór* *an* *ónóir* *í*
COMP **E**.COP.HIST L.great the honour it
'...that it was a great honour' (Gaois.ie 2022)

Hypothesis: All preverbal particles are mutation "trigger words" (Type 1)

- But lenition-triggering "historic tense particle" *d'* is problematic!

The puzzle of the historic tense particle

Two classes of tense/mood combinations:

- **Historic**: past indicative, past habitual, conditional, past subjunctive
- **Non-historic**: everything else

Markers of historic tense:

- Preverbal particles
  - Historic tense particle *d'* (*d'*-{L})
  - *-r* forms: *ní* vs. *níor*; *an* vs. *ar*, ... (*níor*-{L}, *ar*-{L}, ...)
- "Historic tense lenition"

Hypothesis

Historic tense preverbal particles are **mutation trigger words**, carrying lenition-inducing material {L} at their right edge

The puzzle of the historic tense particle

- Appears only before words that are underlyingly vowel- or *f*-initial

(4)
a. ***d'*** *ól* *mé*
HIST drink I
'I drank.'

b. ***d'*** ***fh****ág* *mé*
HIST **L**.leave I
'I left.'

c. ***(*d')*** ***bh****uaigh* *mé*
(HIST) **L**.win I
'I won.'

- Recall: f "deletes" under lenition: $\text{f}^{(\text{j})} \longrightarrow \varnothing^{(\text{j})}$

The puzzle of the historic tense particle

- Appears only before words that are underlyingly vowel- or *f*-initial

(5) a. ***d'*** *ól* *mé* ⟵ empty consonantal slot
HIST drink I
'I drank.'

b. ***d'*** ***fh****ág* *mé* ⟵ empty consonantal slot
HIST **L**.leave I
'I left.'

(Gussmann 1986; Ní Chiosáin 1991)

c. ***(*d')*** ***bh****uaigh* *mé*
(HIST) **L**.win I
'I won.'

- Recall: f "deletes" under lenition: $\mathrm{f}^{(\mathrm{j})} \longrightarrow \varnothing^{(\mathrm{j})}$

The puzzle of the historic tense particle

Historic copular particle *-b*: similar pattern to *d'* (in some contexts)

(6)

a. *níor* ***-bh*** *ealaíontóir í*
NEG.HIST **L**.COP.HIST artist she
'She was not an artist.'

b. *níor* ***-bh*** ***fh****eirmeoir í*
NEG.HIST **L**.COP.HIST **L**.farmer she
'She was not a farmer.'

c. *níor* ***(*-bh)*** ***sh****aighdiúir í*
NEG.HIST (**L**.COP.HIST) **L**.soldier she
'She was not a soldier.'

(**Note:** Lenition on *-b* following mutation trigger *níor*-**{L}**)

Evidence for the empty consonantal slot

Evidence for empty consonantal slot in vowel-initial words:

(7) a. *ithir* /ihirʲ/ 'soil'
b. *an ithir* /ənʲ ihirʲ/ 'the soil' (Ní Chiosáin 1991:80)

(8) a. *aois* /iːsʲ/ 'age'
b. *an aois* /ən iːs/ 'the age' (Ní Chiosáin 1991:81)

Evidence for empty consonantal slot following lenition of f:

(9) a. *feoil* /fʲoːlʲ/ 'meat'
b. *an **fh**eoil* /ənʲ oːlʲ/ 'the **L**.meat' (Gussmann 1986:894)

(10) a. *fáinne* /fanʲə/ 'ring'
b. *an **fh**áinne* /ən anʲə/ 'the **L**.ring' (Gussmann 1986:894)

The puzzle of the historic tense particle

- Appears only before words that are underlyingly vowel- or *f*-initial

(11)

a. ***d'*** *ól* *mé* ⟵ empty consonantal slot
HIST drink I
'I drank.'

b. ***d'*** ***fh****ág* *mé* ⟵ empty consonantal slot
HIST **L**.leave I
'I left.'

(Gussmann 1986; Ní Chiosáin 1991)

c. ***(*d')*** ***bh****uaigh* *mé*
(HIST) **L**.win I
'I won.'

Context for insertion of historic tense particle *d'*

An **empty consonantal slot** in the **post-mutation** form of the target word

Alternative analyses of *d'* pattern

- Surfaces to satisfy onset requirement?
  - No – see (12)
- Surfaces if syllabification does not violate phonotactic constraints?
  - No – see (13)

(12)
a. ***d'*** ***fh****liuch sí* [...]
HIST **L**.wet she
'She wet [...].'

b. ***d'*** ***fh****reagair sí*
HIST **L**.answer she
'She answered.'

(13)
a. ***(*d')*** *léim sé*
(HIST) jump he
'He jumped.'

b. ***(*d')*** *rith sé*
(HIST) run he
'He ran.'

The puzzle of the historic tense particle

Context for insertion of historic tense particle *d'*

An **empty consonantal slot** in the **post-mutation** form of the target word

$\Longrightarrow$ Spell-out timing paradox!

- *d'* inserted **before** mutation?
  - cannot be sensitive to post-mutation form of the target
- *d'* inserted **after** mutation?
  - cannot be the origin of mutation-inducing material

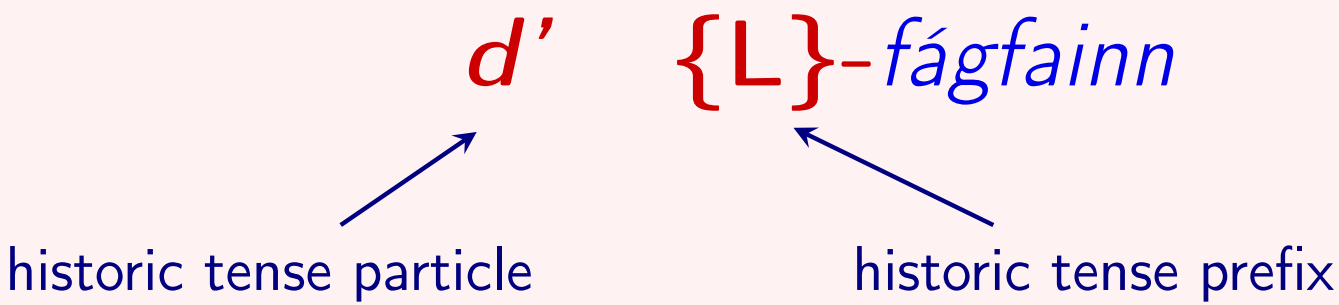
The upshot

If insertion of *d'* is sensitive to the post-mutation form of the target word, it **cannot be the trigger of lenition**.

Morphosyntactic solution

Two distinct exponents of historic tense in Irish

- Historic tense prefix {L}- triggers lenition
- Historic tense particle *d'* inserted separately



Crucially: mutation takes place **before** historic tense particle *d'* is inserted

Morphosyntactic solution

Morphosyntactic solution: {L} separate from *d'*

- Historic tense prefix {L}- inserted first
- Historic tense particle *d'* inserted **after** mutation has happened

d' **{L}-***fágfainn*

In favour of this analysis...

- **Independent evidence** for mutation-inducing prefixes in Irish
  - *bean* ***bh****eag* ***dh****ílis* 'a **L**.small **L**.loyal woman'
  - *ár* ***gc****apall* 'our **E**.horse'
  - *ár dhá* ***gc****apall* 'our two **E**.horses'
- **Unified treatment** of historic tense lenition

Problem 1: Past tense impersonal forms

- Past tense impersonal forms in Irish resist mutation:

(14)
a. ***dh****únamar* 'we **L**.closed' (PST)
b. ***dh****únfaí* '(someone) would **L**.close' (IMPERS)
c. ***d****únadh (*****dh****únadh)* '(someone) closed' (PST.IMPERS)

- **Prediction:** *d'* should only appear before vowel-initial verbs

- **Observation:** *d'* **never** appears

(15)
a. *(*d') dúnadh* '(someone) closed' (PST.IMPERS)
b. *(*d') óladh* '(someone) drank' (PST.IMPERS)
c. *(*d') fágadh* '(someone) left' (PST.IMPERS)

Problem 1: Past tense impersonal forms

- Maybe past tense impersonal verbs lack the [+historic] feature?
- Two objections:
  - Past tense impersonal forms of some irregular verbs **do** mutate

(16) a. ***ch****onacthas* '(someone) **L**.saw' (PST.IMPERS)
b. ***th****angthas* '(someone) **L**.came' (PST.IMPERS)

  - Also resist mutation following a **known trigger word** (e.g. *má*-{L})

(17) a. *má* ***dh****únaim* 'if I **L**.close' (PRES)
b. *má* ***dh****únfar* 'if (someone) will **L**.close' (FUT)
c. *má* ***d****únadh* 'if (someone) closed' (PST.IMPERS)

$\Longrightarrow$ **Intrinsically** resistant to mutation

- But if so, **why also resistant to *d*'?**

Problem 2: Evidence from Munster Irish

- So far: standard variety of Irish (Christian Brothers 1960)
- Munster Irish: more widespread use of preverbal *d'/dh'* (Ó Sé 2000)

Standard	Munster*	Gloss
ní ***fh****ásann*	*ní* ***dh'*** ***fh****ásann*	'(it) doesn't grow'
má ***fh****anann*	*má* ***dh'*** ***fh****anann*	'if (he) stays'
d' *imigh*	*(do)* ***dh'*** *imigh*	'(he) went away'

*Note: <*dh*> = [ɣ] in Munster Irish

- Preverbal *d'* no longer linked to historic tense
  $\longrightarrow$ Instead, observed in **all** lenition contexts
- However, **phonological restrictions on *dh'* are the same**

Recall: The puzzle of the historic tense particle

(18)

a. ***d'*** *ól* *mé* ⟵ empty consonantal slot
HIST drink I
'I drank.'

b. ***d'*** ***fh****ág* *mé* ⟵ empty consonantal slot
HIST **L**.leave I
'I left.'

(Gussmann 1986; Ní Chiosáin 1991)

c. ***(*d')*** ***bh****uaigh* *mé*
(HIST) **L**.win I
'I won.'

- **Previously:** *d'* is only inserted in a subset of phonological contexts
- **Instead:** What if *d'* is **always inserted**, but only pronounced under specific phonological conditions?

Phonological solution

Phonological solution: {L} attached to *d'*

- Mutation-inducing material {L} inserted alongside *d'*
- A **separate factor** prevents *d'* from surfacing in some contexts

***(d)*-{L}** *fágfainn*

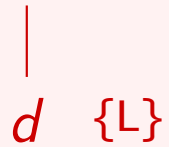
My proposal:

- Preverbal *d'* is a phonologically deficient "floating *d*"
- Only pronounced if linked to an **empty consonantal slot**
- Similar to liaison in French: *peti[t̶] chat* vs. *peti[t] enfant*

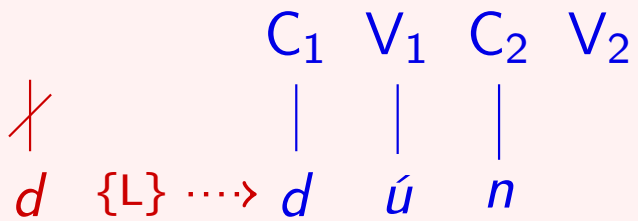
Phonological solution

Working within a strict CV framework... (Scheer 2012)

Proposed historic tense morpheme: [+hist] ↔

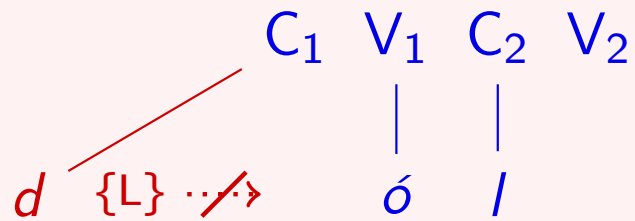


Before C-initial verb: *dún* 'close'



⟹ Result: ***dh****ún*

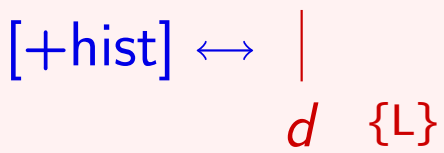
Before V-initial verb: *ól* 'drink'



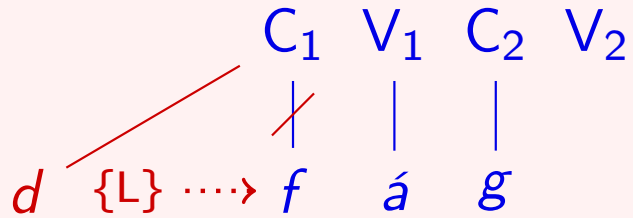
⟹ Result: ***d'*** *ól*

Phonological solution

Historic tense morpheme:



Before *f*-initial verb: *fág* 'leave'



$\Longrightarrow$ Result: ***d' fh**ág*

- Lenition-inducing material {L} deletes initial *f*
- Empty C-slot becomes available for floating *(d)* to link to

$\Longrightarrow$ Derives observed distribution of preverbal *d'*

Phonological solution

- Resolves the "spell-out timing paradox"
- Consistent with autosegmental approach to phonology
- Irish already has a rich system of prevocalic consonantal prefixes
  - ***t*-prefixation** after M.SG definite article
    an ***t***-*éan* 'the bird'
  - ***n*-prefixation** in many eclipsis environments
    ár ***n***-*athair* 'our father'
  - ***h*-prefixation** after a range of particles/prepositions
    go ***h***-*Éireann* 'to Ireland'
- Only difference here is the interaction with the mutation system

Phonological solution: Past tense impersonal forms

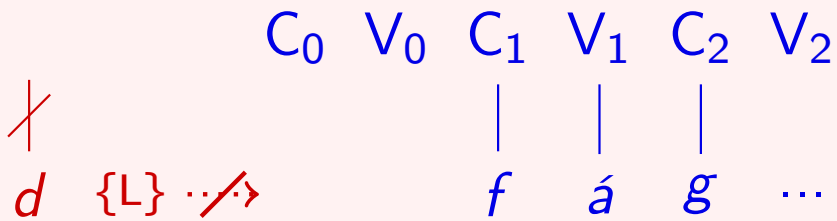
- **Recall:** Past tense impersonal forms resist mutation **and** *d*-prefixation

(19)

a.	*dúnadh* '(someone) closed'	(****dh****únadh*)
b.	*óladh* '(someone) drank'	(****d'*** *óladh*)
c.	*fágadh* '(someone) left'	(****d' fh****ágadh*)

- **Solution:** these forms carry additional structure at their left edge

(e.g. Breit 2019; Scheer 2012)



$\Longrightarrow$ Result: ***f****ágadh*

Phonological solution: Munster Irish

- **Recall:** Munster Irish makes more widespread use of preverbal *d'/dh'*

Standard	Munster	Gloss
ní ***fh****ásann*	*ní* ***dh'*** ***fh****ásann*	'(it) doesn't grow'
má ***fh****anann*	*má* ***dh'*** ***fh****anann*	'if (he) stays'
d' *imigh*	*(do)* ***dh'*** *imigh*	'(he) went away'

*Note: <*dh*> = [ɣ] in Munster Irish

- **Solution:** Floating *(ɣ)* found in **all** lenition-triggering environments

	Standard	Munster
Preverbal particles	*ní*-{L}	*ní*-*(ɣ)*{L}
	má-{L}	*má*-*(ɣ)*{L}
	...	...
Historic tense marker	*(d)*{L}	*do*-*(ɣ)*{L} / *(ɣ)*{L}

Comparison: Morphosyntactic vs. phonological solution

Morphosyntactic solution:

d' **{L}**-*fágfainn*

- Simpler phonology
- More complex morphosyntax

- Struggles with past tense impersonal
- Can't account for Munster data

Phonological solution:

***(d)*-{L}** *fágfainn*

- More complex phonology
- Simpler morphosyntax

- Easily accounts for past tense impersonals
- Easily extends to Munster data

Comparison: Morphosyntactic vs. phonological solution

Morphosyntactic solution

d' {L}-*fágfainn*

- Simpler phonology
- More complex morphosyntax

- Struggles with past tense impersonal
- Can't account for Munster data

Phonological solution:

***(d)*-{L}** *fágfainn*

- More complex phonology
- Simpler morphosyntax

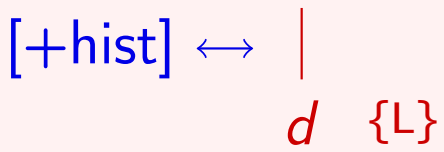
- Easily accounts for past tense impersonals
- Easily extends to Munster data

Further questions and reflections

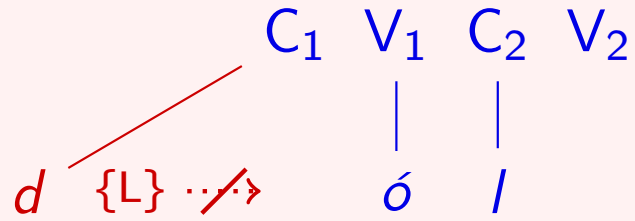
1. Why no lenition of *d'*?
2. What about *fr-* and *fl-* clusters?
3. What exactly **are** {L} and {E}?

Q1: Why no lenition of *d'*?

Historic tense morpheme:



Before V-initial verb: *ól* 'drink'



$\Longrightarrow$ Result: ***d'*** *ól*

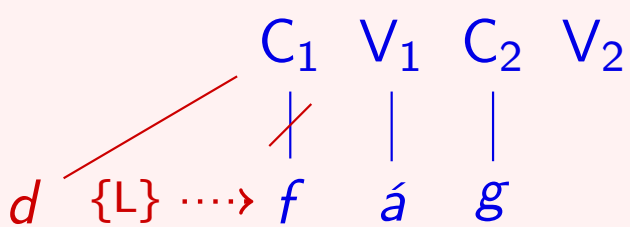
Q: Why doesn't {L} dock onto the linked *(d)*, giving output: ***dh'****ól*?

Possible answer:

- Deletion of {L} if not immediately able to dock?
- Not entirely satisfactory
  $\longrightarrow$ Recall: floating *(d)* remains even if unable to link to a C-slot

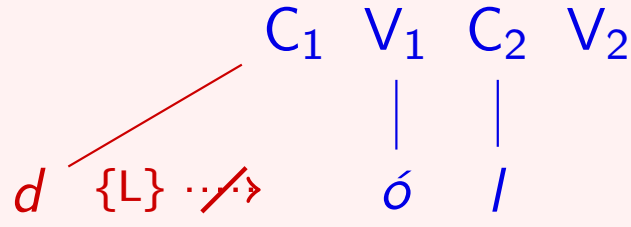
Q1: Why no lenition of *d'*?

Before *f*-initial verb: *fág* 'leave'



$\Longrightarrow$ Result: ***d' fh****ág* (*d'* + lenition)

Before V-initial verb: *ól* 'drink'



$\Longrightarrow$ Result: ***d'*** *ól* (only *d'*)

Alternative answer (two parts):

1. Irish mutation-inducing material constrained to dock **rightward only**
   - cf. leftward docking of mutation material in Breton (Iosad 2014)
2. **Intrinsic ordering** of subsegmental components of morphemes
   - but note Munster ***dh'****ól* (initial [ɣ]) $\longrightarrow$ source of dialectal variation?

Q2: What about *fr-* and *fl-* clusters?

(20) a. ***d'*** ***fh****liuch sí* [...]
HIST **L**.wet she
'She wet [...].'

b. ***d'*** ***fh****reagair sí*
HIST **L**.answer she
'She answered.'

(21) a. ***(*d')*** *léim sé*
(HIST) jump he
'He jumped.'

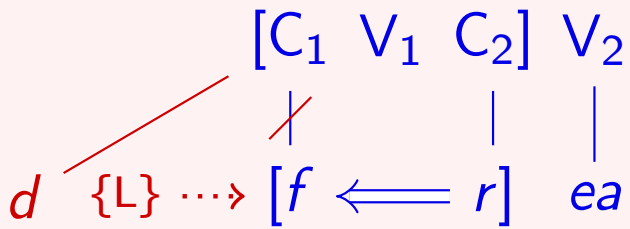
b. ***(*d')*** *rith sé*
(HIST) run he
'He ran.'

- In both cases, surface form of verb is *l-*/*r-*initial
- However,
  - in (20), empty C-slot remains following deletion of word-initial *f*
  - in (21) there is no such empty slot

Q2: What about *fr-* and *fl-* clusters?

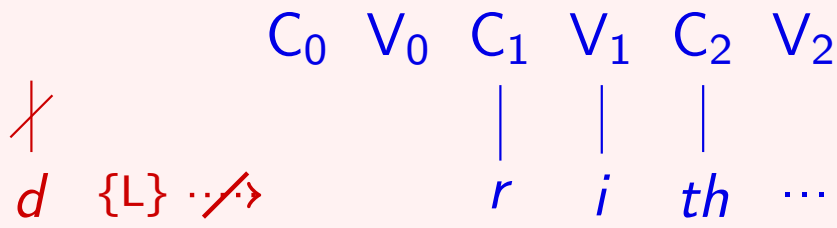
- Assume infrasegmental government relationship (IG; $\Longleftarrow$) between consonants in a cluster (Scheer 1998)

Initial *fr-* cluster: *freagair*



$\Longrightarrow$ Result: ***d' fh****reagair*

Initial *r-* (PST.IMP): *ritheadh*



$\Longrightarrow$ Result: ***r****itheadh*

- **Q:** How does **lenited *fr-* cluster** differ from **empty CV before *r***?

- Looks like IG structure is retained following lenition

Q3: What exactly **are** {L} and {E}?

The phonological representations discussed so far have included...

- "Traditional" segments: *k*, *a*, *t*, *tʲ*, ...
- Floating segments: *(t)*, *(n)*, *(h)*, *(d)*, *(b)*
- Empty CV units
- Floating mutation-inducing material: {L} and {E}

Irish words are built from combinations of these basic elements:

- M.SG definite article: segmental content *ən* + floating *(t)*
  - *an fear* 'the man'; *an* ***t****-éan* 'the bird'
- Preverbal NEG particle: segmental content *niː* + floating {L}
  - *ní* ***dh****únaim* 'I don't **L**.close'
- Historic tense morpheme: floating *(d)* + floating {L}
  - *d'* ***fh****ág mé* 'I **L**.left'

Q3: What exactly **are** {L} and {E}?

Unmutated		Lenition		Eclipsis	
$\mathrm{p}^{(\mathrm{j})}$	⟨*p*⟩	$\mathrm{f}^{(\mathrm{j})}$	⟨*ph*⟩	$\mathrm{b}^{(\mathrm{j})}$	⟨*bp*⟩
$\mathrm{t}^{(\mathrm{j})}$	⟨*t*⟩	$\mathrm{h}^{(\mathrm{j})}$	⟨*th*⟩	$\mathrm{d}^{(\mathrm{j})}$	⟨*dt*⟩
$\mathrm{k}^{(\mathrm{j})}$	⟨*c*⟩	$\mathrm{x}^{(\mathrm{j})}$	⟨*ch*⟩	$\mathrm{g}^{(\mathrm{j})}$	⟨*gc*⟩
$\mathrm{b}^{(\mathrm{j})}$	⟨*b*⟩	$\mathrm{v}^{(\mathrm{j})}$	⟨*bh*⟩	$\mathrm{m}^{(\mathrm{j})}$	⟨*mb*⟩
$\mathrm{d}^{(\mathrm{j})}$	⟨*d*⟩	$\mathrm{ɣ}^{(\mathrm{j})}$	⟨*dh*⟩	$\mathrm{n}^{(\mathrm{j})}$	⟨*nd*⟩
$\mathrm{g}^{(\mathrm{j})}$	⟨*g*⟩	$\mathrm{ɣ}^{(\mathrm{j})}$	⟨*gh*⟩	$\mathrm{ŋ}^{(\mathrm{j})}$	⟨*ng*⟩
$\mathrm{m}^{(\mathrm{j})}$	⟨*m*⟩	$\mathrm{v}^{(\mathrm{j})}$	⟨*mh*⟩	–	–
$\mathrm{f}^{(\mathrm{j})}$	⟨*f*⟩	$\varnothing^{(\mathrm{j})}$	⟨*fh*⟩	$\mathrm{v}^{(\mathrm{j})}$	⟨*bhf*⟩
$\mathrm{s}^{(\mathrm{j})}$	⟨*s*⟩	$\mathrm{h}^{(\mathrm{j})}$	⟨*sh*⟩	–	–
$\mathrm{l}^{(\mathrm{j})}$	⟨*l*⟩	$(\mathrm{l}^{(\mathrm{j})})$	$(\langle l \rangle)$	–	–
$\mathrm{n}^{(\mathrm{j})}$	⟨*n*⟩	$(\mathrm{n}^{(\mathrm{j})})$	$(\langle n \rangle)$	–	–

(adapted from Iosad 2023)

- **Lenition:** Stops ⟶ fricatives; coronals lose place feature
- **Eclipsis:** Voiceless stops ⟶ voiced; voiced stops ⟶ nasal

Q3: What exactly **are** {L} and {E}?

- Mutations are phonologically regular in many ways...
- ...but difficult to capture through a single (set of) featural change(s)
- One solution: phonologically conditioned allomorphy

(cf. Iosad (2014) on Breton; Breit (2019) on Welsh)

$$\text{negation particle} \longleftrightarrow \begin{cases} \textit{ní}\text{-}\{\mathrm{L}_1\} & \text{in phon env 1} \\ \textit{ní}\text{-}\{\mathrm{L}_2\} & \text{in phon env 2} \\ \ldots & \ldots \text{ etc.} \end{cases}$$

- But why are mutation effects so consistent across the language?
- Do {L} and {E} have an independent existence in the linguistic knowledge of Irish speakers?

Preverbal *d'* and its interactions with the ICM system

Go raibh míle maith agaibh!

Thank you!

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