

Resolving the spell-out timing paradox in Irish historic tense lenition

Anna Laoide-Kemp

anna.laoide-kemp@ed.ac.uk

School of Philosophy, Psychology and Language Sciences (PPLS)
University of Edinburgh

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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 dhíolfaidh siad é* [*díolfaidh*]
NEG L.sell.FUT they it
'They will not sell it.' (L = "Lenition")
- b. *an gcreideann tú í?* [*creideann*]
Q E.believe.PRS you her
'Do you believe her?' (E = "Eclipsis")
- c. *d' fhágfainn* [*fágfainn*]
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} *díolfaidh* → *ní dhíolfaidh*
 - b. *an*-{E} *creideann* → *an gcreideann*
 - c. *d'*-{L} *fágfainn* → *d' fhágfainn*

(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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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 → 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)

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:

- Pre-verbal 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 pre-verbal 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

(3) a. *d'* ól mé ← empty consonantal slot

HIST drink I
'I drank.'

b. *d'* fhág mé ← empty consonantal slot

HIST L.leave I
'I left.'

(Gussmann 1986; Ní Chiosáin 1991)

c. *(*d')* bhuaigh 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

The puzzle of the historic tense particle *d'*

Context for insertion of historic tense particle *d'*

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

⇒ 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: {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
 - *ár*_{TRIGGER} *dhá gcapall* 'our two **E**.horses'
 - *bean bheag dhílis* 'a **L**.small **L**.loyal woman'
- **Unified treatment** of historic tense lenition

Problem 1: Past tense impersonal forms

- Past tense impersonal forms in Irish resist mutation:

- (4) a. *dhúnamar* 'we L.closed' (PST)
b. *dhúnfaí* '(someone) would L.close' (IMPERS)
c. *dúnadh* (**dhúnadh*) '(someone) closed' (PST.IMPERS)

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

- Observation: *d'* never appears

- (5) 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

- (6) a. *chonacthas* '(someone) L.saw' (PST.IMPERS)
b. *thangthas* '(someone) L.came' (PST.IMPERS)

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

- (7) a. *má dhúnaim* 'if I L.close' (PRES)
b. *má dhúnfar* 'if (someone) will L.close' (FUT)
c. *má dúnadh* 'if (someone) closed' (PST.IMPERS)

⇒ **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 |
|-------------------|-----------------------|---------------------|
| <i>ní fhásann</i> | <i>ní dh' fhásann</i> | '(it) doesn't grow' |
| <i>má fhanann</i> | <i>má dh' fhanann</i> | 'if (he) stays' |
| <i>d' imigh</i> | <i>(do) dh' imigh</i> | '(he) went away' |

*Note: <dh> = [ɣ] in Munster Irish

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

Recall: The puzzle of the historic tense particle

- (8) a. *d'* ól mé ← empty consonantal slot
HIST drink I
'I drank.'
- b. *d'* fhág mé ← empty consonantal slot
HIST L.leave I
'I left.'
- c. *(*d')* bhuaigh mé
(HIST) L.win I
'I won.'

(Gussmann 1986; Ní Chiosáin 1991)

- **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: {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**
- Like French liaison: *peti[ʔ] chat* vs. *peti[t] enfant*

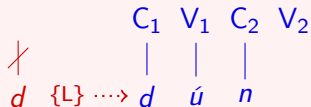
Phonological solution

Working within a strict CV framework...

(Scheer 2012)

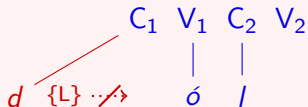
Proposed historic tense morpheme: $[+hist] \leftrightarrow$ 

Before C-initial verb: *dún* 'close'



⇒ Result: *dhún*

Before V-initial verb: *ól* 'drink'



⇒ Result: *d'ól*

Phonological solution

Historic tense morpheme:

[+hist] ↔ $\begin{array}{c} | \\ d \quad \{L\} \end{array}$

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

$\begin{array}{cccc} & C_1 & V_1 & C_2 & V_2 \\ & / & | & | & \\ d & \{L\} \cdots \rightarrow & f & á & g \end{array}$

⇒ Result: *d' fhág*

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

⇒ 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 hÉireann ‘to Ireland’
- Only difference here is the interaction with the mutation system

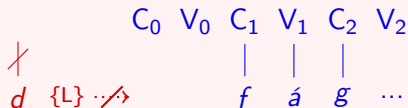
Phonological solution: Past tense impersonal forms

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

- (9)
- | | | |
|----|----------------------------------|-----------------------|
| a. | <i>dúnadh</i> '(someone) closed' | (* dh únadh) |
| b. | <i>óladh</i> '(someone) drank' | (* d' óladh) |
| c. | <i>fágadh</i> '(someone) left' | (* d' fhágadh) |

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

(e.g. Breit 2019; Scheer 2012)



⇒ Result: *fágadh*

Phonological solution: Munster Irish

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

| Standard | Munster | Gloss |
|-------------------|-----------------------|---------------------|
| <i>ní fhásann</i> | <i>ní dh' fhásann</i> | '(it) doesn't grow' |
| <i>má fhanann</i> | <i>má dh' fhanann</i> | 'if (he) stays' |
| <i>d' imigh</i> | <i>(do) dh' imigh</i> | '(he) went away' |

*Note: <dh> = [ɣ] in Munster Irish

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

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

Go raibh míle maith agaibh! – Thank you!

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Appendix A: Phonology of mutations

Phonological alternations:

(adapted from Green 2006)

| | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Radical | <i>p</i> | <i>t</i> | <i>k</i> | <i>b</i> | <i>d</i> | <i>g</i> | <i>f</i> | <i>s</i> | <i>m</i> | <i>n</i> | <i>l</i> | <i>r</i> |
| Lenited | <i>f</i> | <i>h</i> | <i>x</i> | <i>v</i> | <i>ɣ</i> | <i>ɣ</i> | ∅ | <i>h</i> | <i>v</i> | – | – | – |
| Eclipsed | <i>b</i> | <i>d</i> | <i>g</i> | <i>m</i> | <i>n</i> | <i>ŋ</i> | <i>v</i> | – | – | – | – | – |

Note: each consonant above also has a “palatalised” counterpart
→ same mutation pattern, but with secondary [+pal] feature

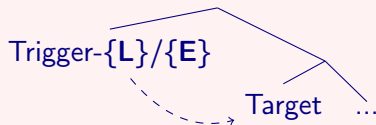
Appendix B: Sources of mutation-inducing material

Possible sources of mutation-inducing material

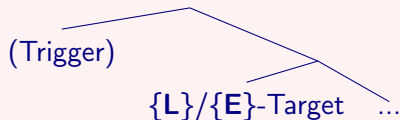
(Laoide-Kemp 2023)

- **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

Appendix C: ICM and preverbal particles

In the Irish clause...

- All pre-verbal particles are associated with mutation on the verb

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

- Lexical property of each pre-verbal particle

Appendix C: ICM and preverbal particles

- Mutation triggered on **any** following consonant

- (10) a. *go dtuigim*
COMP E.understand.1SG
'...that I understand'
- b. *go mba mhór an ónóir í*
COMP E.COP.HIST L.great the honour it
'...that it was a great honour'

(Gaois.ie 2022)

Hypothesis: All pre-verbal particles are mutation “trigger words” (Type 1)

Appendix D: Evidence for the empty consonantal slot

Evidence for empty consonantal slot in vowel-initial words:

- (11) a. *ithir* /ihir^ɨ/ 'soil'
b. *an ithir* /ən^ɨ ihir/ 'the soil' (Ní Chiosáin 1991:80)
- (12) a. *aois* /i:s^ɨ/ 'age'
b. *an aois* /ən i:s/ 'the age' (Ní Chiosáin 1991:81)

Evidence for empty consonantal slot following lenition of *f*:

- (13) a. *feoil* /f^ho:ɲ^ɨ/ 'meat'
b. *an fheoil* /ən^ɨ o:ɲ^ɨ/ 'the meat' (Gussmann 1986:894)
- (14) a. *fáinne* /fan^ɨə/ 'ring'
b. *an fháinne* /ən an^ɨə/ 'the ring' (Gussmann 1986:894)

Appendix E: Alternative analyses of *d'* pattern

- Surfaces to satisfy onset requirement?
 - No – see (15)
- Surfaces if syllabification does not violate phonotactic constraints?
 - No – see (16)

- (15) a. *d'* *fhliuch sí* [...] (16) a. *(*d')* *léim sé*
HIST L.wet she (HIST) jump he
'She wet [...].'
'He jumped.'
- b. *d'* *fhreagair sí* b. *(*d')* *rith sé*
HIST L.answer she (HIST) run he
'She answered.'
'He ran.'

Appendix F: Historic tense lenition in copular clauses

- (17) a. *is* *cosúil le taibhse é*
COP like with ghost he
'He is like a ghost.'
- b. *ba* *shaighdiúirí iad*
COP.HIST L.soldiers they
'They were soldiers.'

- Structure: Copular particle – Predicate – Subject
- Only distinguish historic vs. non-historic tense
- Historic tense → lenition on predicate

Appendix F: Historic tense lenition in copular clauses

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

- (18) a. *níor* *-bh* *ealaíontóir í*
NEG.HIST L.COP.HIST artist she
'She was not an artist.'
- b. *níor* *-bh* *fhéirmeoir í*
NEG.HIST L.COP.HIST L.farmer she
'She was not a farmer.'
- c. *níor* *(*-bh)* *shaighdiúir í*
NEG.HIST (L.COP.HIST) L.soldier she
'She was not a soldier.'

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