A strictly modular analysis of initial consonant mutation in Irish

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What is initial consonant mutation?

Initial consonant mutation (ICM)

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

Examples

- **br**óg 'shoe' (initial /b/) → Base form
- an **bh**róg 'the shoe' (initial /v/) → Lenition
- ár **mb**róg 'our shoe' (initial /m/) → Eclipsis

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Phonological alternations

Phonological alternations: (adapted from Green 2006)

Base	p	t	k	b	d	g	f	s	m	n	l	r
Lenited	f	h	x	v	ɣ	ɣ	∅	h	v	–	–	–
Eclipsed	b	d	g	m	n	ŋ	v	–	–	–	–	–

General observations:

- **Lenition:** stops to fricatives
- **Eclipsis:** voiceless consonants to voiced; voiced stops to nasals

Puzzle 1: Phonological patterns, but not fully regular

Mutation triggers

Trigger word:

- *roimh **mh**aidin* 'before morning'
- Trigger Constraint: Trigger word must immediately precede and c-command its target   (Lieber 1983)

Exceptions:

- Linear non-adjacency: *ár dhá **mb**róg* 'our two shoes'
- No overt trigger: ***dh**úisigh mé* 'I awoke'
- Morphosyntactic features: *muintir **Sh**eáin* 'Seán's family'

Puzzle 2: What is the role of the "trigger word"?

Modularity

Modularity of mind (Fodor 1983)

The human cognitive system is built up from a number of distinct and independent subsystems.

Modularity in linguistic theory (Scheer 2010; Bermudez-Otero 2012)

- Implicitly assumed by most generative theories
- Regularly violated in practice
- Need clear division of responsibility between modules

Modularity

Initial consonant mutation (ICM)

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

Puzzle 3: Is Irish ICM compatible with the modular hypothesis?

Desiderata for a modular account of ICM

Puzzle 1: Phonological patterns, but not fully regular
Account for the patterns...

...while allowing for irregularities

Puzzle 2: What is the role of the "trigger word"?
Understand the role of the trigger word...

...but also the exceptions

Puzzle 3: Is Irish ICM compatible with the modular hypothesis?
Identify a clear and distinct role for each module

Proposal: a strictly modular analysis of ICM

Initial consonant mutation (ICM)

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

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┌──────────────────┐          ┌──────────────────┐
│  Morphosyntax    │          │   Phonology      │
└──────────────────┘          └──────────────────┘
         │                             │
         ▼                             ▼
Responsible for the           Responsible for the
triggering of mutation        phonological changes
```

Proposal: a strictly modular analysis of ICM

- Mutation triggered by floating phonological material

  an + {*L*} + *bróg* → an **bh**róg (initial /v/) 'the shoe'

  ár + {*E*} + *bróg* → ár **mb**róg (initial /m/) 'our shoe'

Base	*p*	*t*	*k*	*b*	*d*	*g*	*f*	*s*	*m*	*n*	*l*	*r*
Lenited	*f*	*h*	*x*	*v*	*ɣ*	*ɣ*	*∅*	*h*	*v*	*–*	*–*	*–*
Eclipsed	*b*	*d*	*g*	*m*	*n*	*ŋ*	*v*	*–*	*–*	*–*	*–*	*–*

- Content of {*L*}/{*E*} → **phonologically conditioned allomorphy**

Puzzle 1: Phonological patterns, but not fully regular ✓
Account for the patterns...

...while allowing for irregularities

Puzzle 2: What is the role of the "trigger word"?
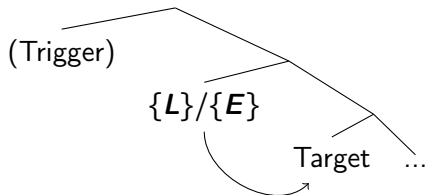Understand the role of the trigger word...
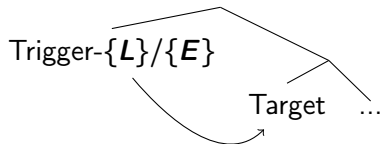
... but also the exceptions

Puzzle 3: Is Irish ICM compatible with the modular hypothesis?
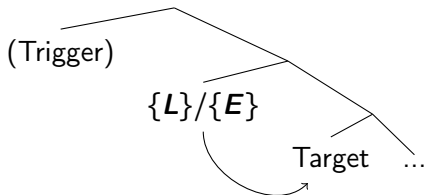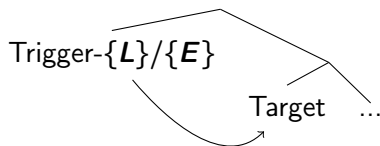Identify a clear and distinct role for each module

Proposal: a strictly modular analysis of ICM

Two distinct mutation subtypes

- **Type 1:** Mutation-inducing material tied to a trigger word
- **Type 2:** Mutation-inducing material inserted separately

Proposal: a strictly modular analysis of ICM

Trigger word:

- *roimh-{**L**} maidin* → *roimh **mh**aidin* 'before morning'

Linear non-adjacency:

- *ár dhá {**E**}-bróg* → *ár dhá **mb**róg* 'our two shoes'

No overt trigger / morphosyntactic features:

- *{**L**}-dúisigh mé* → ***dh**úisigh mé* 'I awoke'
- *muintir {**L**}-Seáin* → *muintir **Sh**eáin* 'Seán's family'

Desiderata for a modular account of ICM

Puzzle 1: Phonological patterns, but not fully regular ✓

Account for the patterns...

...while allowing for irregularities

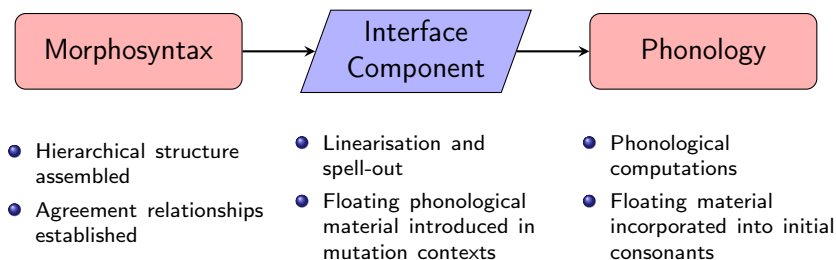**Puzzle 2: What is the role of the "trigger word"?** ✓

Understand the role of the trigger word...

... but also the exceptions

Puzzle 3: Is Irish ICM compatible with the modular hypothesis?

Identify a clear and distinct role for each module

Proposal: a strictly modular analysis of ICM

Morphosyntax	→	Interface Component	→	Phonology

- Hierarchical structure assembled
- Agreement relationships established

- Linearisation and spell-out
- Floating phonological material introduced in mutation contexts

- Phonological computations
- Floating material incorporated into initial consonants

(building on the work of Breit 2019 and Embick 2010)

Desiderata for a modular account of ICM

Puzzle 1: Phonological patterns, but not fully regular ✓

Account for the patterns...

...while allowing for irregularities

Puzzle 2: What is the role of the "trigger word"? ✓

Understand the role of the trigger word...

... but also the exceptions

Puzzle 3: Is Irish ICM compatible with the modular hypothesis? ✓

Identify a clear and distinct role for each module

Coronal blocking of mutation (CB)

Blocking of mutation when two coronals come together at word boundary in a subset of mutation environments

Examples

- e.g. *an teanga*, **an theanga* 'the language'
- ...but **traein dearg*, *traein dhearg* 'red train'

- "when two coronals come together" $\rightarrow$ phonology?

- "in a subset of mutation environments" $\rightarrow$ morphosyntax?

One further puzzle: coronal blocking of mutation

My proposal:

- CB entirely within phonology
- Coronal fusion: (Ní Chiosáin 1991)
  - adjacent coronal segments share their [+cor] feature
- No longer accessible as host for floating phonological material
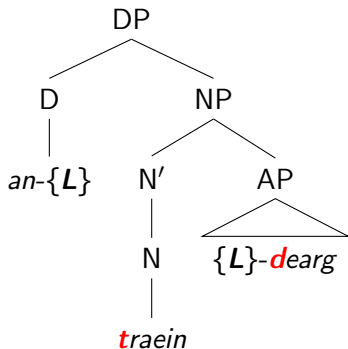
Two distinct mutation subtypes

- **Type 1:** Mutation-inducing material tied to a trigger word
- **Type 2:** Mutation-inducing material inserted separately

Illustrative example – *a**n** trai**n** **dh**earg* 'the red train'

$$an\text{-}\{\boldsymbol{L}\}\ traein\ \{\boldsymbol{L}\}\text{-dearg}$$

- Irish ICM is **compatible with strict modularity**
  - **Morphosyntax** responsible for triggering of mutation
  - **Phonology** responsible for phonological changes
  - **Interface component** mediates between these modules

- Proposed **two distinct mutation subtypes**
  - Type 1: Mutation features **tied to trigger word**
    - obeys Trigger Constraint
    - coronal blocking effects
  - Type 2: Mutation features **inserted separately**
    - non-adjacency of trigger/target
    - mutation in absence of an overt trigger
    - may express morphosyntactic features of target

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Go raibh míle maith agaibh! – Thank you!

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References I

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