A strictly modular analysis of initial consonant mutation in Irish

The Celtic initial consonant mutations (ICM) involve a complex interaction of phonology, morphology and syntax, and have long posed a challenge to modular theories of language structure. I offer a strictly modular analysis of ICM in Irish, showing that the phonological and morphosyntactic aspects are driven by separate mechanisms. Moreover, I argue that there are two distinct subtypes of mutation, depending on whether the mutation-inducing element is more closely tied to the trigger or target word. My analysis leads to a natural explanation for some of the more puzzling aspects of the Irish mutation system.

ICM is the systematic alternation of word-initial consonants in a range of morphosyntactically defined environments. For example, word-initial *b* mutates to *v* in a feminine noun following the definite article (1b) and becomes *m* if the word is the complement of the possessive pronoun *ár* (1c).

(1a) ***b****róg* 'shoe' (initial [*b*])

(1b) *an* ***bh****róg* 'the **L**.shoe' (**L**enition – initial [*v*])

(1c) *ár* ***mb****róg* 'our **E**.shoe' (**E**clipsis – initial [*m*])

Previous theoretical approaches to ICM have generally emphasised either the phonology of the alternations (Ó Dochartaigh 1979; Ní Chiosáin 1991; Swingle 1993; Gnanadesikan 1997) or the mutation triggering process (Duffield 1995; Stewart 2004; Green 2006; Hannahs 2013). However, there has been relatively little research before now into how the grammatical modules of phonology and morphosyntax work together to effect the mutations (Pyatt 1997 and Breit 2019 being two exceptions). The question of how the work is split between grammatical modules is nevertheless crucial, because it provides a direct test of the modular hypothesis: that is, the view that grammatical modules operate distinctly and independently from one another (cf. Fodor 1983; Scheer 2010).

I propose that mutations are triggered by floating phonological material that is introduced into the derivation either as part of the phonological representation of a trigger word or as the exponent of certain morphosyntactic features on the target word. This floating material latches onto any immediately following consonant to produce a mutated consonant. So, for example, the mutation of *b* to *v* in (1b) is achieved by assuming that the feminine definite article *an* carries a floating [+cont] feature at its right edge, which docks onto the initial *b*, changing it from a stop to a fricative.

Under my analysis, there is a distinct role for each module: morphosyntax determines the environments where mutation is triggered; phonology determines the form of the mutated consonant. An interface component mediates between these two modules, via cyclic inside-out spell-out of nodes in the hierarchical morphosyntactic structure (cf. Embick 2010). However, its role is strictly limited to translation from morphosyntactic to phonological "vocabulary" via lexical look-up; crucially, it is unable to interpret or process the material from either module. This means that, despite apparent evidence to the contrary, the mutation system is compatible with the modular hypothesis.

Furthermore, my account predicts the possibility of two distinct mutation subtypes, depending on whether the mutation-inducing particle is introduced into the derivation alongside the trigger word ("local type") or the target word ("agreement type"). I argue that both subtypes are found in Irish (illustrated in (2a) and (2b), where ***{L}*** and ***{E}*** represent the lenition- and eclipsis-inducing phonological features, respectively).

(2a) *an**{L}*** + *bróg* -> *an* ***bh****róg* (mutation features inserted with *an)*

(2b) *ár* + ***{E}****-bróg* -> *ár* ***mb****róg* (mutation prefix on *bróg*)

By recognising this distinction, my analysis readily yields an explanation for some of the complex subphenomena observed in the Irish mutation data, including trigger-target non-adjacency and coronal blocking effects.

For example, local type mutation requires that the mutation trigger be linearly adjacent to the target word, but with agreement type mutation there is no such requirement. Agreement mutation therefore allows for the possibility of trigger-target non-adjacency:

(3) *ár* *dhá* ***mb****róg*

our.(trigger) two **E**.shoes

'our two shoes'

Coronal blocking is the blocking of mutation when two coronal consonants come together at a word or morpheme boundary:

(4) *a****n*** ***t****eanga/****th****eanga*

the.(trigger) language/***L**.language

'the language'

This effect is found in a subset of mutation environments in Irish, which I argue is identical to the set of local type mutation environments. I propose that the incorporation of floating features is blocked within the phonology module when a mutation target shares a [+coronal] feature with a linearly preceding segment (cf. Ní Chíosáin 1991). In local type mutation, the trigger word and mutation-inducing features are spelt out simultaneously, meaning this blocking process can intervene before the target consonant is mutated. In agreement type mutation, however, the mutation-inducing features latch onto the target consonant before the preceding word is spelt out, meaning the mutation process is unaffected by coronal blocking.

Keywords: morphosyntax; phonology; grammatical interfaces; modularity; Celtic linguistics

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