

/aɪ/-raising, Stratal Phonology, and the life cycle

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The process of prefortis /aɪ/-raising found in many dialects of English, specially in North America (Davis & Berkson 2021), notoriously overapplies before flapped /t/: e.g. *writer* [ʤaɪrɪ] ~ *rider* [ʤaɪrɪ] (Joos 1942, Chambers 1973). This apparently opaque interaction has been observed even in dialects where raising remains in its gradient phonetic stage (Kwong & Stevens 1999), and even in dialects where raising is diachronically younger than flapping (Fruehwald 2013). These facts pose a major *prima facie* challenge to modular feedforward architectures of grammar and to the theory of the life cycle of phonological processes (Bermúdez-Otero 2007, 2015): young gradient processes should be transparent and should not be counterbled by older categorical rules.

Bermúdez-Otero (2014) offered a solution couched in the framework of Stratal Phonology (Kiparsky 2000; Bermúdez-Otero 2010, 2018). He proposed that /aɪ/-raising first arises as a gradient phonetic enhancement of prefortis clipping, which itself initially arose as a phonetic enhancement of the laryngeal contrast (Gussenhoven 2007, 2017; cf. Moreton 2004, Moreton & Thomas 2007). Long ago, however, prefortis clipping underwent stabilization and domain narrowing to become a noncyclic stem-level process. Gradient phonetic /aɪ/-raising appears to overapply before flapped /t/ because, in reality, it targets categorically clipped tokens of the diphthong, and clipping itself, being stem-level, is counterbled by phrase-level flapping. Once phonologized, however, /aɪ/-raising may itself go on to undergo stabilization and eventually climb up to the stem level by rule telescoping.

Bermúdez-Otero's (2014) account of /aɪ/-raising makes certain subtle predictions that are corroborated by more recent discoveries. Notably, /aɪ/-raising in its mature categorical form typically sustains lexical exceptions (Vance 1987, Fruehwald 2007), and it is therefore predicted to undergo cyclic misapplication in accordance with a theorem of Stratal Phonology known as Chung's Generalization (Bermúdez-Otero & McMahon 2006: §3.4, Kiparsky 2007, Bermúdez-Otero 2012: 31-33). The predicted cyclic misapplication effects were strikingly absent from classical descriptions like Chambers (1973), but they have now been observed: e.g. Moreton (2016) describes a Mississippi dialect that exhibits normal stress-conditioned nonapplication of raising in *citation* and *titanic*, but cyclic overapplication in *typology* and *Hittitology*. The contrast between *titanic* and *typology* is explained by an approach to stem-level cyclicity based on nonanalytic listing: this correctly predicts that such effects will be sensitive to the relative token frequency of base and derivative (Bermúdez-Otero 2012: 34-39; see also Dabouis 2017).

In addition, Bermúdez-Otero's (2014) account entails the absence of type-B dialects, in which /t/-flapping bleeds /aɪ/-raising (Kaye 1990; cf. Joos 1942). Yet recent research has documented the existence of speakers who do produce alternations like *write* [ʤaɪt] ~ *writer* [ʤaɪrɪ] (Berkson et al. 2017, Bissell & Carmichael 2022). In Bermúdez-Otero's (2014) model, however, such alternations do not reflect a bleeding derivation; rather, they arise at the initial stage in a diachronic cline of rule generalization (Bermúdez-Otero 2015: 393-395; see also Hall 2022) in which raising is at first circumscribed to monosyllabic feet: i.e. *wipe* [wʤaɪp] ~ *viper* [vaɪpɪ] (Bermúdez-Otero 2017: §37-§41). This alternative explanation has been vindicated in at least one instance: Fort Wayne, Indiana (Davis et al. 2019).

Thus, as in similar cases (e.g. Bailey 2021), /aɪ/-raising, though apparently recalcitrant at first, turns out to provide striking support for Stratal Phonology and the life cycle of phonological processes.

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