Coalescence as autosegmental spreading and delinking

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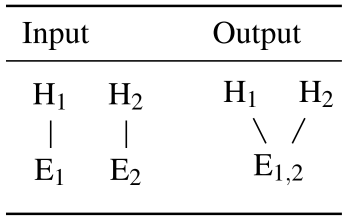
I argue that phonological coalescence, where two elements seemingly fuse into one, is not a homogeneous phenomenon but rather a set of superficially similar patterns that nevertheless require different explanations. I identify three distinct types of coalescence and propose analyses, formalized within the framework of Extended Stratal Containment (ESC; Trommer 2011), that decompose them into a combination of independent processes of autosegmental delinking and spreading, in each case triggered by a different pair of constraints.

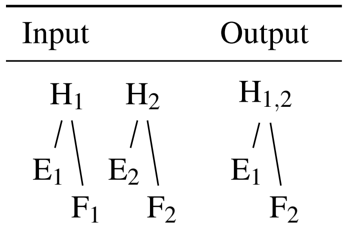
Background Since the earliest accounts of phonological coalescence, opinions have been divided as to whether it should be viewed as a combination of deletion and assimilation (Aoki 1974; Chumbow 1982; Snider 1989) or whether it is necessary to postulate a distinct process of genuine fusion for at least some cases of coalescence (Chomsky & Halle 1968; Stahlke 1976; Faraclas 1982; Donwa-Ifode 1985; Awobuluyi 1987; de Haas 1988; Bámiṣilè 1994; Pater 1999; Cain 2000). Although in Optimality Theory, it is customary to analyse coalecence as a two-to-one mapping, this approach has been challenged by McCarthy (2007), who conjectures that in terms of the features that tend to be preserved, coalescence parallels assimilation processes, whereas in terms of the positions that are likely to be affected, it parallels deletion. Furthermore, a direct equivalent of the two-to-one mapping possible in Correspondence Theory is not available in Containment Theory, where the generator component of grammar is only allowed to perform a limited set of operations (insertion of nodes and association lines, and marking association lines as phonetically unrealized).

Types of coalescence Instances of coalescencence can be broadly divided into two types, which I dub *terminal* and *non-terminal* coalescence. Terminal coalescence affects two elements immediately dominated by separate 'hosts', that is, higher-level phonological units. In the output structure, one lower-level element is associated to two hosts, (1). Although a string in which terminal coalescence has applied may be phonetically indistinguishable from one in which it has not, this type of coalescence can be recognized on the basis of phonological behaviour. When two elements have undergone terminal coalescence, they behave as a single unit for the purposes of later processes. In non-terminal coalescence, the output structure contains just one host element in place of the underlying two. Typically, the output host dominates a subset of the features underlyingly associated to one of the hosts and a subset underlyingly associated to the other one, (2). I further subdivide non-terminal coalescence into *compensatory coalescence*, which I analyse as a subclass of a broader phenomenon of autosegmental stability under deletion (Goldsmith 1976*a*,*b*; Mascaró 1986; Prunet 1986; Wetzels 1995; Vaux 1998) and *assimilatory coalescence*, understood as an instance of counterbleeding (Kiparsky 1973) or self-destructive feeding (Baković 2007, 2011) on environment. I postulate compensatory coalescence for languages in which the counterbled assimilation rule that would have to be formulated under the latter account makes wrong predictions for other forms in the language, is cross-linguistically unattested or never occurs without concomitant deletion.

(1) *Terminal coalescence*



(2) *Non-terminal coalescence*



Analysis An account of compensatory coalescence (e.g. in Indonesian nasal substitution, /mə**ŋ**+**p**ilih/ → [mə**m**ilih] 'to choose'; Lapoliwa 1981) follows automatically from the factorial typology of basic constraints assumed in ESC, which adopts the MAX(feature) approach to faithfulness (Lombardi 1997, 1998). The deletion part of the process is triggered by a markedness constraint that can be satisfied by the deletion of the host element (here, *NC̥; Pater 1999), prohibited by a faithfulness constraint (here MAX[•]), which must therefore be ranked lower. If a faithfulness constraint requiring the preservation of a feature dominated by the host (here

MAX[+nasal]) outranks a constraint preventing the insertion of association lines (DEP $_{+\text{nas}}$), as well as other constraints that might prohibit reassociation, the feature docks onto another, retained host, creating the impression of coalescence, (3). This constraint hierarchy permits an account of compensatory coalescence but does not explain the directionality or locality of reassociation. These have to be controlled by markedness constraints prohibiting feature combinations, constraints on locality of association and intervention and faithfulness constraints protecting the edges of a feature span. The presence of these constraints in the factorial typology diminishes the likelihood of non-local coalescence but does not eliminate it completely. Since such patterns are attested (e.g. in Dhivehi; Cain 2000, or Chaha; Banksira 2013), this is a welcome result.

(3)

[+nas] [+vd] [−vd] ŋ p	*NC̥	MAX (+nas)	DEP[+nas]	MAX (•)
a. [+nas] [+vd] [−vd]	*!			
b. [+nas] [+vd] [−vd]		*		*
☞ c. [+nas] [+vd] [−vd]			*	*

For a successful analysis of assimilatory coalescence (e.g. in Modern Greek /to**n** **p**aˈtera/ → [to **b**aˈtera] 'the father' (ACC.SG), that is, assimilation made opaque by deletion, the constraint that triggers the assimilation has be a positively-formulated constraint (which I argue belongs to the SHARE family; McCarthy 2011) that is sensitive to phonetically unrealized structure. When feature spreading is triggered by a constraint of this kind, it is unaffected by the deletion of the triggering segment, which is still present in the output form, (4).

(4)

… [+nas] [+vd] [−vd] … n t	NCC	MAX(•)	(NC)[+vd]
a. [+nas] [+vd] [−vd]	*!		*
b. [+nas] [+vd] [−vd]		*	*!
☞ c. [+nas] [+vd] [−vd]		*	

Finally, I analyse terminal coalescence (responsible, e.g. for geminate integrity and full alterability, Leben 1980; Steriade 1982; Hayes 1986; Schein & Steriade 1986; Keer 1999, as well as the lowering of a sequence of high tones rather than a single tone by Meeussen's rule in Zezuru Shona; Myers 1997) as triggered by a version of the OCP constraint, in which adjacency is mediated via the tier of the host elements. Although in ESC, MAX(feature) constraints are usually sufficient, the analysis of this coalescence pattern requires the introduction of IDENT constraints, which make it possible to link spreading and deletion by triggering spreading of the dependent element onto a host from which an identical element has been deassociated, (5).

(5)

[σ σ σ] H₁ H₂	σH OCP σH	ID σH	MAX (H)	DEP σH
a. [σ σ σ] H₁ H₂	*!			
b. [σ σ σ] H₁ H₂		*!	*	
☞ c. [σ σ σ] H₁ H₂			*	*
d. [σ σ σ] H₁ H₂			*	**!

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