Against conjoined and PREC constraints: a case from Podhale Goralian

This paper investigates the adequacy of three versions of Optimality Theory (OT) on the basis of an opaque process interaction found in an understudied local variety of Polish. Specifically, I analyse a process called Final Tensing, which exhibits both underapplication and overapplication, from the perspective of Local Constraint Conjunction (LCC; Smolensky 1997), OT with candidate chains (OT-CC; McCarthy 2007), and Derivational/Stratal OT (DOT; Kiparsky 1997, Rubach 1997). It is shown that LCC fails but both OT-CC and DOT deliver the correct results. Nevertheless, I argue on conceptual grounds that the DOT account is superior to the OT-CC account and thus the latter should be rejected.

The underinvestigated and endangered variety of Polish called Podhale Goralian (Rubach and Łuszczek 2019; Łuszczek 2022) exhibits an alternation between *ɔ ~ o*.

(1) a. Before voiced obstr. b. Before sonorants c. No *ɔ ~ o* before voiceless obstr.

gen.sg.	*nom.sg.*	*gen.sg.*	*nom.sg.*	*gen.sg.*	*nom.sg.*
[bɔg-a]	[bok] ‘God’	[bɔr-u]	[bor] ‘bog’	[bɔk-u]	[bɔk] ‘side’
[grɔb-u]	[grop] ‘grave’	[gnɔj-a]	[gnoj] ‘dung’	[pɔt-u]	[pɔt] ‘sweat’

These data are governed by two generalisations. First, underlying lax /ɔ/ is turned into tense [o] before word-final voiced obstruents (1a; compare (1c) and non-nasal sonorants (1b). Second, obstruents are devoiced word-finally (1a).[1] The processes responsible for these changes are Final Tensing (2a) and Final Devoicing (2b).

(2) a. Final Tensing: $ɔ \rightarrow o \; / \; \_\_ \; C_{([+voice])}\#$ b. Final Devoicing: [+obstr] → [-voice] / __ #

Words such as /bɔg/ → [bok] ‘God’ in (1a) show that Final Tensing (2a) is counterbled by Final Devoicing (2b) and hence overapplies: we have a tense [o] before a word-final [-voice] consonant.

Podhale Goralian also exhibits Voice Assimilation (VA), which mandates that obstruents agree in voicing. VA applies both inside words and across word boundaries, however, for the purposes of this discussion, only the latter context is relevant. Consider the data in (3), which take the words in (1c) and put them into a phrase.

(3) Voice Assimilation

a. *UR*	b. *Word level*	c. *Sentence level*
/bɔk/	[bɔk] ‘side’	[bɔ*g*##daxu] ‘side of roof’
/pɔt/	[pɔt] ‘sweat’	[pɔ*d*##davida] ‘David’s sweat’

The phrases in (3c) document that underlyingly voiceless word-final obstruents become [+voice] when followed by a [+voice] obstruent in the next word: we witness Voice Assimilation across word boundaries. These voiced obstruents create the context for Final Tensing because we obtain a sequence of lax [ɔ] plus a word-final [+voice] obstruent. However, the observation is that Final Tensing does not apply in (3c): the attested surface form of, for example, [bɔg##daxu] ‘side of roof’ has a lax [ɔ] rather than a tense [o] in the first word of the phrase. This shows that Final Tensing is counterfed by Voice Assimilation and hence underapplies: we have a lax [ɔ] before a word-final [+voice] consonant.

Modelling the interaction of Tensing (2a) with Devoicing (2b) and Assimilation (3c) poses a challenge for standard OT. First, it is well-known that standard OT struggles with counterbleeding interactions (McCarthy 1999; Baković 2007), and the case of Final Tensing is no different. Second, a standard OT analysis of data such as [bɔ*g*##daxu] ‘side of roof’ (3c) is unworkable either because the constraint enforcing Voice Assimilation unavoidably triggers the constraint responsible for Final Tensing. Consequently, the incorrect Tensing-candidate will always win with desired candidate with a tense vowel.

Because the opacity in (1a), as in /bɔg/ → [bok] ‘God’, is local to the domain of the syllable, a logical way to salvage the constraint-based analysis of Final Tensing is to employ LCC. Specifically, the conjoined constraint $\{*[\text{-ATR}]\&\text{Ident}[\pm\text{voice}]\}_{\sigma}$ bears on the analysis of Final Tensing’s overapplication because it militates against concomitant violations of *[-ATR] and IDENT[±voice] within a single syllable, which are exactly the constraints violated by the undesired mapping /bɔg/ → *[bɔk] ‘God’ but not by the desired mapping /bɔg/ → [bok] ‘God’. Therefore, LCC correctly selects the

[1] The *ɔ*’s and the root-final voiceless obstruents in (1c) are underlying because they do not alternate and their distribution is unpredictable, so, for example, [bɔk] ‘side’ is encoded as /bɔk/.

opaque candidate over its transparent contender. However, LCC fails with the data coming from the postlexical domain and documenting Final Tensing's underapplication, such as /bɔk##dax-u/ → [bɔg##daxu] 'side of roof'. The reason is that there is nothing in the conjoined constraints {*[-ATR]&Ident[±voice]}$_{\sigma}$ that would prevent Tensing from occurring in phrases. Consequently, the analysis of Final Tensing in terms of LCC is flawed empirically and hence must be rejected.

Both types of opacity are amenable to an analysis couched in terms of either OT-CC or DOT. First, OT-CC delivers a comprehensive analysis by deriving both types of opacity exhibited by Final Tensing, that is, overapplication and underapplication, from a single PREC constraint, PREC(IDENT[-ATR], IDENT[±voice]), and its interaction with the remaining constraints that are relevant. Second, DOT likewise delivers a comprehensive analysis of Final Tensing's over- and underapplication. The success of this analysis rests on DOT's tenet of level distinction and minimal constraint reranking between levels. In particular, on the one hand, Final Tensing's overapplication is explained by postulating that Final Devoicing, which wipes out the context for Tensing, is inactive at level 1 and thus cannot thwart Tensing in words such as //bɔg// → [bok] 'God'. On the other hand, the reason why Tensing underapplies in sentence-level phonology, as shown by /bɔk##dax-u/ → [bɔg##daxu] 'side of roof', is that Tensing is deactivated at level 3 and hence cannot feed on the outputs of Voice Assimilation.

Since both analyses work, the natural question to ask is which one is better. Since both are descriptively adequate, this question can be answered only by comparing the different analytical tools used by OT-CC and DOT. On the one hand, Derivational OT delivers the correct analysis by directly restating the rule-based derivations in terms of standard OT constraints that are activated at different derivational levels. On the other hand, OT-CC obtains the correct results by indirectly restating the rule-based derivations in terms of candidate chains and by stipulating precedence relations on the order of specific forms in these chains via a non-standard constraint: PREC(IDENT[-ATR], IDENT[±voice]). In other words, both theories employ serial derivation, but the difference is that Derivational OT does that in a direct and explicit way while OT-CC does that in an indirect and implicit way. The trade-off that OT-CC is forced to espouse for its lack of a direct restatement of serial derivation entails the introduction of a new and hence non-standard class of PREC constraints. It is far from obvious if these constraints are an adequate addition to OT. The reason is that PREC constraints neither regulate phonological structure by imposing well-formedness requiriments, which is the task of markedness constraints, nor do they relate different types of phonological representation, such as the UR and the SR (which is the domain of IO faithfulness constraints) or pairs of surface representations (which is the domain of OO faithfulness constraints). Rather, PREC constraints reference other constraints (i.e. faithfulness constraints) and impose restrictions on the order in which these constraints must be violated in a multi-form candidate chain. Thus, PREC constraints constitute not only a completely new family of constraints, but also a family that is fundamentally different from other families of constraints, standard or new, such as markedness constraints, IO and OO faithfulness constraints, conjoined constraints, etc. This is an issue because constraints that do not reference phonological structure are intrinsically not grounded in phonetics or/and typology. In contrast, DOT employs the standard markedness and faithfulness families of constraints and hence its structure of the CON component is impervious to any criticism that does not at the same time apply to standard OT. I conclude that DOT is conceptually more attractive than OT-CC.

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