Phonological Opacity and Underspecification in Narvik Norwegian

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Some recent research (e.g. Sanders 2003, Green 2004) argues that there are no genuine cases of phonological opacity, that processes which seem phonologically opaque are either morphologically conditioned or only diachronically relevant. In this talk, we will counter this claim by presenting a case of massive phonological opacity found in a Northern Norwegian dialect, spoken in the town of Narvik. The interactions found in this language also pose a serious challenge to approaches towards opacity in Optimality Theory; there are multiple interactions some of which must make reference to underspecification. We will propose an analysis in terms of a revised version of Turbidity Theory (Goldrick 2000, Revithiadou 2005) within a Containment-based model of Optimality Theory (van Oostendorp 2006).

The opacity found in Narvik Norwegian revolves around coronal retraction. Common to many Norwegian dialects is a process which retracts the coronals /t, d, n, s/ to [ʈ, ɖ, ɳ, ʂ] after /r/, which deletes (see examples in (1)). This process is postlexical, occurring also across word boundaries. Retraction is independent of /r/ deletion; all coronals in clusters must agree in posteriority (see (2)), and a second trigger is /ʃ/ (see (3); note that [ʃ] is the only segment which also occurs underlyingly while [ʈ, ɖ, ɳ] are merely contextual variants). /r/-deletion thus counterbleeds posterior harmony.

Narvik adds a twist to this pattern in having a second source of retroflex segments: The surface geminates /d, n/ retract after a short low back vowel /ɑ/, optionally also after /ɔ, ʉ/ (examples in (4)). These retroflexes do not spread, however: Subsequent /s/ will not be realized as [ʂ]. Geminate retraction thus counterfeeds posterior harmony (compare the forms in (5)). Finally, note that it is only /s/ which fails to retract in this context; other coronals readily do so (examples in (6)).

An analysis must therefore not only be able to handle multiple opaque interactions, all of which are postlexical (and hence purely phonological), but must also account for why /s/ fails to retract in some contexts, while /t, d, n/ do retract. We analyze this in terms of feature specifications. Since /s/ and /ʃ/ contrast, they are specified for [posterior]; other coronals are underspecified for this feature. Only on the surface will they be realized as [±posterior]. Retraction of /t, d/ is not unfaithful to underlying feature specifications, but retraction of /s/ would result in neutralization. There are thus two types of harmony, surface harmony, which excludes /s/, and 'deep' phonological harmony which can violate faithfulness.

We formalize our findings in a modified version of Turbidity Theory (for an overview, see the diagram in (7)). Opacity can be accounted for straightforwardly in this model, as it distinguishes between two levels of representation, the projection and the pronunciation level, each candidate being a projection/pronunciation pair. Material which is projected participates in interactions; counterbleeding opacity occurs when this material is not pronounced. Counterfeeding opacity, on the other hand, occurs when material is only pronounced but not projected; since it is not part of the phonological representation, which contains projected material only, it cannot participate in interactions. Underspecification effects result from constraints on projection: If input features are not projected, segments are not specified for this feature at the projection level. Only at the pronunciation level will such redundant values be filled in. This is the case with surface harmony, blocked by /s/, which already carries a value for [posterior], while phonological harmony occurs at the projection level, forcing harmony also for already specified segments.

In sum, the Narvik data strongly support the view that phonological opacity and contrastive underspecification are real phenomena, despite their highly problematic status in Optimality Theory. Turbidity Theory offers a new way of addressing these problems.

Examples:

(1) /r/-deletion counterbleeds retraction

/bɑrn/	[bɑːɳ]	‘child’
/sʉːr+t/	[sʉːʈ]	‘sour (n.sg.)’
/mur+som/	[mʊʃːɔm]	‘funny’
/ver dɑːg/	[væː ɖɑːg]	‘every day’

(2) Posterior harmony in clusters

/bɑrn+s/	[bɑːɳʃ]	‘child (gen.)’
/et bɑrn soːvər/	[ɛt bɑːɳ ʃoːvər]	‘a child is sleeping’
/børst son/	[bœʃʈ ʃɔnː]	‘brush like that’

(3) Posterior harmony: also triggered by /ʃ/

/kɑnʃə/	[kɑɳːʃə]	‘perhaps’
/lønʃ som/	[lœɳːʃ ʃɔm]	‘lunch that’

(4) Geminate retraction in Narvik

/mɑn/	[mɑɳː]	‘man’
/pɑnə/	[pɑɳːə]	‘forehead’
/klɑd/	[klɑɖː]	‘draft’
/hʉn/	#[hʉɳː]	‘dog’

(5) Geminate retraction counterfeeds posterior harmony

/et murd som/	[ɛt muɖː ʃɔm]	‘a murder which’	*but*
/en klɑd som/	[eːn klɑɖː sɔm]	‘a draft which’	
/bɑrns droʃə/	[bɑːɳʃ ɖɻɔʃːə]	‘child’s taxi’	*but*
/mɑns droʃə/	[mɑɳːs drɔʃːə]	‘man’s taxi’	

(6) Geminate retraction feeds surface harmony with /t, d, n/

/klɑd+ən/	[klɑɖːɳ]	‘the draft’
/hɑntɑːk/	[hɑɳːʈɑːk]	‘handle’
/mɑn dæt/	[mɑɳː ɖætː]	‘man falls’

(7) A turbid model of phonological representations