

## Preserving Synchronic Parallelism: Diachrony and Opacity in Polish

Despite its many strengths, Prince and Smolensky's (1993) Optimality Theory (OT) cannot account for certain types of phonological opacity. Many modifications to OT have been proposed to analyze opacity within OT (constraint conjunction (Smolensky 1993), sympathy (McCarthy 1999), etc.), but none have gained as wide support as OT itself. What these theories have in common is an underlying assumption about opacity: that it is synchronically productive and thus requires a synchronic analysis. I propose that the conflict between opacity and parallelism can be solved by abandoning this problematic assumption. I provide experimental evidence from Polish which suggests that one of the more celebrated cases of opacity in the literature is not productive, *contra* most analyses of modern Polish (Gusmann 1980, etc.). Then I construct an analysis which maintains parallelism in synchronic grammar, diachronically derives opacity in the Polish lexicon, and accounts for the lack of synchronic productivity of opacity in Polish.

Like many Slavic languages, Polish devoices word-final obstruents. Polish also raises /o/ to [u] when it occurs before underlying word-final voiced oral consonants. The two processes can interact opaquely, with Devoicing masking the environment for Raising:

- (1)
- |                |                 |             |
|----------------|-----------------|-------------|
| <i>gr</i> [up] | <i>gr</i> [ob]y | ‘grave(s)’  |
| <i>r</i> [ut]  | <i>r</i> [od]y  | ‘origin(s)’ |
| <i>st</i> [uk] | <i>st</i> [og]i | ‘stack(s)’  |

In serial phonology, these data are accounted for by ordering Raising before Devoicing. Such a solution does not work for a strictly parallel version of OT. The tableau in (2) highlights this problem. The correct (opaque) output [grup] can never emerge as the winner in any ranking of these constraints, because it violates all the same constraints that transparent [grop] violates, plus more. That is, [grop] harmonically bounds [grup].

(2)

	/grob/	*[-son,+voi]#	IDENT-[voi]	*[o][C,-nas,+voi]#	IDENT-[hi]
a.	grup		*		*!
b.	grop		*		

I began this research by designing an experiment in which nonsense nouns in the plural were aurally presented within sentences to native speakers of Polish. The subjects were asked to produce a related sentence which forced the use of the masculine singular. The nonsense nouns were designed to be opaque in the singular if the subject had productive Raising. Two speakers have been tested (with more planned), and neither has shown evidence for productive Raising in these nonsense words. In addition, there are many extant Polish words (both native and borrowed) which inexplicably do not exhibit Raising:

- (3)
- |                    |            |                   |          |
|--------------------|------------|-------------------|----------|
| <i>gl</i> [o]b     | ‘globe’    | <i>t</i> [o]r     | ‘path’   |
| <i>epiz</i> [o]d   | ‘episode’  | <i>h</i> [o]l     | ‘lobby’  |
| <i>nekrol</i> [o]g | ‘obituary’ | <i>grucz</i> [o]t | ‘gland’  |
| <i>cz</i> [o]tg    | ‘tank’     | <i>kowb</i> [o]j  | ‘cowboy’ |
| <i>h</i> [o]td     | ‘homage’   |                   |          |

To account for the experimental results, Raising must be removed from the synchronic grammar. But Raising does exist in the overwhelming majority of the Polish lexicon, and this must be accounted for too. Relying on the hypothesis of lexicon optimization (LO; Prince and Smolensky 1993; see Kiparsky 1968 for a prescient version of LO), which claims that speakers posit underlying forms that are as faithful to the surface form as possible, I construct a framework of serially ordered OT phonologies, with frequent LO. Sound change is reflected in OT as constraint reranking between two historical stages of the grammar. With Raising

historically preceding Devoicing, the effects of Raising are ‘memorized’ through LO first. Then Devoicing is added to the grammar through constraint reranking. Raising is immediately deactivated precisely because the type of opacity between Raising and Devoicing cannot exist in OT (as seen in (2)). But since the effects of Raising have already been lexically encoded by LO, Raising still permeates the vocabulary.

This analysis predicts that cases of opacity which cannot be accounted for in strictly parallel OT should also fail to be productive and should have lexical exceptions. A cursory examination of the literature supports this prediction, but more extensive empirical research is required to solidify this claim. But even if some case of productive exceptionless opacity can be found, further study might reveal that the ‘opaque’ generalization in question is not opaque at all (e.g. Bruening 2000 on Tiberian Hebrew). The analysis presented here also has significant theoretical implications. It places a hefty burden on serial theories of phonology, in which productive synchronic opacity is not only predicted, but expected. In addition, this analysis streamlines the OT framework by eliminating extraneous (not independently motivated) modifications designed solely to account for opacity.