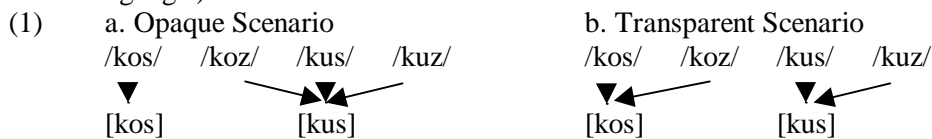


Opacity as Improvement of Recoverability

Opacity takes place when an otherwise regular phonological process fails to apply in some forms of the language or when a process applies unexpectedly (Kiparsky 1973, 1982; Rubach 1984). In Polish (Gussmann 1980, Rubach 1984, Szpyra 1992), mid back vowels raise to high in closed syllables before an underlyingly voiced obstruent: /koz/→kus ‘goat’ (gen.pl), /rog/→ruk ‘horn’ (nom.sg.masc.) but, normally, there is no raising before an underlyingly voiceless obstruent: /kos/→kos ‘scythe’ (gen.pl.), /rok/→rok ‘year’ (nom.sg.masc.). (There is also raising before sonorants but since it is restricted to native vocabulary, I will treat it as a separate process.)

Polish raising is problematic to classic Optimality Theory (Prince & Smolensky 1993). OT is *output-oriented*: a phonological process brings output forms into conformity with high-ranking markedness constraints. The existence of the /kos/→kos mapping in Polish with no raising indicates that there is either no markedness constraint against [kos], or it is low-ranked. But then, why does /koz/ go all the way to [kus] undergoing both devoicing and raising? It should just devoice and map onto [kos]. To put it differently, in classic OT it remains unexplained why otherwise identical vowel-obstruent clusters with underlyingly voiced and voiceless obstruents should map differently (but see McCarthy 2000).

In this talk I provide an explanation for the restriction of raising to underlyingly voiced obstruents that has implications going well beyond this phenomenon. The explanation starts from the observation that opacity leads to a more recoverable distribution of mergers in a system of mappings (cf. Gussmann 1976; Kaye 1974, 1975; Kisseberth 1976). In an opaque scenario (1a), unlike in a corresponding transparent scenario (1b), there exists an output that stands in a bi-unique relation with its input. (Scenarios contain possible but not necessarily the existing words of the language.)



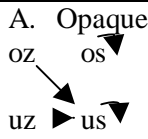
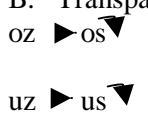
In Polish, the bi-unique mapping (/kos/→[kos]) is a result of raising in forms with underlyingly voiced obstruents (/koz/→[kus] *[kos]). Due to raising, the underlying contrast in voicing /kos/ vs. /koz/ is preserved (/kos/ vs. /koz/ → [kos] vs. [kus]) at the expense of neutralizing the underlying contrast in vowel height (/koz/ vs. /kuz/→[kus]). Thus, achieving bi-uniqueness (1a) must take precedence over retaining the height contrast (1b) – a distinction that I will obtain from constraint ranking.

Constraints demanding preservation of contrast can only be formalized under the assumption that no /input/→[output] mapping takes place in isolation; all such mappings are part of a system (cf. Flemming 1995, Padgett 1997). Formally, this must mean that candidates are sets of mappings, which I will call *scenarios*.

The core of the proposal is a family of anti-neutralization PRESERVECONTRAST constraints, relativized to an input property P (see (2)) interacting with a constraint on bi-uniqueness, PC-BIUNIQUE (see (3)).

- (2) PC(P): Two underlying words distinct in a given property P, remain distinct on the surface (not necessarily in P).
- (3) PC-BIUNIQUE: At least one token in a scenario stands in a bi-unique input-output relation.

In Polish, achieving a more recoverable distribution of mergers takes precedence over retaining the height contrast. Hence, PC-BIUNIQUE >> PC(high):

(4)	Scenarios	/koz/	PC-BiUNIQUE	PC(high)
Λ	A. Opaque 	kus /kos/→kos /kuz/→kus /kus/→kus		*
	B. Transparent 	kos /kos/→kos /kuz/→kus /kus/→kus	*!	

Scenario A wins as it contains a bi-unique mapping, thus improving recoverability of the scenario.

Polish raising is an example of contrast dislocation. Due to final devoicing, the obstruent voicing contrast cannot be realized on the surface on the same segment as underlyingly. Instead, it is minimally dislocated in the string of segments and realized on the preceding vowel (/koz/ vs. /kos/ → [kus] vs. [kos]). Friulian vowel lengthening before “devoiced” obstruents (Baroni & Vanelli 2000, Hualde 1990, Repetti 1992) provides another example of this type. I will show that PC theory gives a principled explanation for contrast dislocation based on the interplay of contrasts in a system.