• This week: read McCarthy's 2002 "Comparative Markedness", now on the MIT server.
• Yokuts in Sympathy due Wednesday.

Continuing the discussion of opacity in terms neutral to the rule/constraint debate

1. The up side of unraveling opaque interactions (as against leaving them unanalyzed):
The following Yokuts opaque generalizations emerge:

• Monovocalicity:
Yokuts verb roots are monovocalic: underlying V's (that is, all except epenthetic i) are distributed within a Yokuts root so as to suggest that there is no more than one V quality per root, even in disyllabic ones. Apparent exceptions arise from Lowering and Epenthesis.

2 syllable roots UR: *hoyo:, pana:, opo:t, paxa:t,* ***hibi:y, ʔili:****, yawal,* ***cuyu:, sudu:k, bili:s, ʔuku:c****, koʔo:*

2 syllable roots SR: *hoyo:, pana:, opo:t, paxa:t,* ***hibey, ʔile:,*** *yawal,* ***cuyo:, sudo:k, biles, ʔuko:c****, koʔo:*

• Height conditions RH; RH is exceptionless.
Vowels agree in rounding if and only if they agree in underlying height to the first vowel in the word. Apparent exceptions (*sognut, so:gal*) arise from the effect of Lowering.

• One rounded V per word
No rounded vowel occurs underlyingly beyond the initial vowel of the word. All other rounded vowels arise from Harmony. To capture this, one must refer to Harmony.

• No [e]
The vowel e is limited in distribution (occurs as long e: or as short e in closed syllables only). That's because it doesn't exist in UR (in an OT version that adheres to RoB this is stateable as *e, an output oriented constraint). [e(:)]results from /i:/, lowered to [e:], shortened to [e] in _.

2. Why all this might not matter: we don't know if these generalizations are accessible to learners. Gunnar Hansson: Current state of Yokuts dialect Yowlumne is that VH applies only to surface high suffixal vowels, preceded by surface high vowels: *mushun* but *huboshin, logwal*. not *logwol*. (forms invented by me, based on Hansson's talk.) Speakers seem to have learned that surface non-high vowels trigger VH on a lexically idiosyncratic basis: the change in the system relative to Newman's Yokuts consists of eliminating these lexical idiosyncracies. This could be due to the circumstances of language death or it could be indicative of what was happening already when Yokuts was a living language.

Kuroda, Kisseberth, Archangeli (early Yokuts phonologists) never did provide the evidence that the speakers learn the intricate system of regularities that they - the linguists - had discovered.

If the generalizations in (1) are not accessible, they should not be part of Yokuts grammar. We have to leave the learnability issue unresolved.

3. Opacity can be productive, frequent, helpful and not randomly distributed
   a. Certain opaque systems are very frequently encountered and seem productive.
   b. Certain opaque interactions are helpful to the system, if not the learner
   c. Certain other opaque systems seem not to occur, a fact that's unexpected under the hypothesis that opaque systems are random debris left by out-of-control sound change.

4. Useful opacity (b):

a. **anti-merger considerations**: opaque interactions preserve an underlying contrast, whereas corresponding transparent ones do not.

E.g. As a result of the opaque interaction between RH and Lowering, Yokuts c'omhun is uniquely recoverable as /c'u:mhun/. A transparent interaction of RH and Lowering would have yielded [c'omhin], indistinguishable from UR /c'omhin/ or /c'o:mhin/.

b. **distantial faithfulness**: one class of counterfeeding scenarios preserve a smaller distance between Input and Output than corresponding feeding scenarios.

E.g. a→ e, e→ i, i→j/_V, all 3 applying in counterfeeding order, in Basque (Kenstowicz and Kisseberth1978). Measured in F1 distance, the actual UR-SR mappings compare as follows with the UR-SR mappings of the transparent interaction:

Transparent	Opaque
/a/ → [j]	/a/ → [e]
/e/ → [j]	/e/ → [i]
/i/ → [j]	/i/ → [j]

5. Productive opacity (a): counterfeeding chains
Below is a survey based on Elliott Moreton's Compendium of Synchronic Chain Shifts.
The interest of this is to illustrate (3.a) and to suggest that the more common chain shifts involve single dimensions of contrast. All references in Moreton.

Dimension	Language	Mapping	Comment
F1	Basaa	ɛ -> e -> i ɔ -> o -> u	
	Lena Spanish	i -> e -> a/ _u	why _u?
	Nzebi	a -> ɛ -> e -> i ɔ -> o -> u	
	Etxarri Navarrese	e-> i -> ij o -> u -> uw	
Duration of palatal constriction	Barrow Inupiaq	ɨgl -> igl -> igʎ	
	Polish	kɨ -> k^ji -> tʃi	
Duration of [+round]	Icelandic	aCr# -> aCur# -> öCur	
	Palauan	u: -> u -> ə	
Duration of [+nasal]	Sea Dayak	ŋga -> ŋa -> ŋã	
V-Duration	Beduin Hijazi	a -> i -> Ø	
Nucleus-Duration	Chemehuevi	V1V2 -> V -> Ø	
	Hidatsa	V1V2 -> V -> Ø	
	Karok	V:: -> V: -> V	
	E.Arabic	V:h# -> V:# -> V#	and Vh#?
C-Duration	Catalan	nt# -> n# -> Ø	
	Mwera	mp -> mb -> m	
	Finnish	pp, tt, kk -> p, t, k -> v, d, Ø	
	Irish	ptk -> fhx -> Øh?	
Sonority	Nzema	nt -> nd -> nn	?
VOT	English	p^h, t^h, k^h -> p, t, k, -> b, d, g	?

Not all counderfeeding works like this: in other cases we can't identify a unified dimension.

Dimension	Language	Mapping	Comment
Number of segments?	Yagua	V1hV2 -> V1V2 -> V2V2	
Duration of V1+C?	Wintu	ɛCCa -> ɛCa -> iCa	
	Wikchamni	o…i -> u …i -> u…u	
	Yawelmani	u: …a -> o: …a -> o:…o	
	Tarascan	ae -> ee -> e	duration?
	Dutch	ktn -> kn -> kŋ	duration?

6. No random distribution (c): Kenstowicz and Kisseberth
   a. Voicing assimilation bleeding interaction with epenthesis. E.g Hebrew
      DT -> TT; but **dt, tt -> det, tet**
      • No counterbleeding cases: **dt -> tt -> tt**
      • Counterbleeding mapping **dt -> tt -> tet** neutralizes more than bleeding **dt -> det**
      • By contrast, in Yokuts:
      counterbleeding **u:Ci -> u:Cu ->o:Cu** neutralizes less than bleeding **u:Ci -> o:Ci**

      Moral suggested by KK: counterbleeding possible insofar as it preserves contrasts.

   b. Palatal umlaut's blocking interaction with RH in Turkish
      PU: uj -> ɨj;
      RH: oCɨ -> oCu, uCɨ-> uCu
      PU and RH: oCujɨ -> oCɨjɨ
      This is neither bleeding nor counterbleeding. The relevant point is that KK are unaware of cases like oCɨju, which are in an abstract way similar to dt -> tet.

Sympathy summary

7. One case discussed: Hebrew
   a. epenthesis in CC#
      melk -> melex
   b. ʔ deletion unless ʔ = onset
      qaraʔ -> qara
   c. Interaction: counterbleeding in the context
      deʃʔ -> deʃeʔ -> deʃe

8. The other: Beduin Arabic
   a. Raise [a] in open syll
      katab -> kitab
   b. Glide -> V, when non-adjacent to V
      badw -> badu
   c. Interaction: counterfeeding in the context

9. The intermediate representation in a serial opaque derivation:
   deʃʔ -> **deʃeʔ** -> deʃe
   badw -> **bad.w** -> bad.u -> ba.du

   The intermediate representation is one step closer to UR, hence more faithful.

10. The basic idea in Sympathy: the winning candidate is selected, in part, for looking more like a faithful candidate, compared to the transparent candidate, which looks less like the faithful. Even when this more faithful candidate ≠ UR, it is one that better satisfies some correspondence constraint.

    deʃʔ -> **deʃeʔ** -> deʃe. Compare transparent *deʃ*, which resembles the more faithful *deʃeʔ* less.
    badw -> **bad.w** -> bad.u -> ba.du. Compare *bidu*: it resembles less the more faithful *bad.w*.

11. The sympathetic (❀) vs. winning vs. transparent candidates in Sympathy Theory

deʃʔ		❀MAX V	*CC#	DEP V	ʔ/_V	❋MAX C
a	❀**deʃeʔ**			*	*!	
b	☞deʃe			*		*
c	deʃ	*!				*
d	deʃʔ		*!		*	*

The constraint selecting the sympathetic ❀-candidate: ❋MAX C
The constraint selecting the opaque winner: ❀MAX V
The transparent candidate *deʃ* loses because it preserve fewer of the V's of the ❀-candidate.

badw		❀Ident high	SSP	*Coda	*[-high]/_.	❋Ident syll
a	❀**bad.w**		*	*		
b	☞ba.du				*	*
c	bi.du	*!				*
d	bad.u			*!		*

The constraint selecting the sympathetic ❀-candidate: ❋Ident syll
The constraint selecting the opaque winner: ❀Ident high
The transparent candidate *bi.du* loses because it resembles less (wrt height) the ❀-candidate.