The too-many-solutions problem in OT; solutions on the market

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Third approach: Wilson's (2001) Targeted Constraints

Goal of this meeting

We will discus s another approach to the Too-many-solutions problem: *Targeted Constraints*. This is a special type of constraint. A targeted constraint relates a special type of marked configuration (poorly-cued consonants ≈ weak consonants) to a specific repair (deletion of the weak consonant).

Steps in the presentation

- Wilson's approach
- McCarthy's criticism
- Outline of an alternative

Targeted Constraints

Many languages do not tolerate intervocalic consonant clusters: VC_1C_2V. Suppose that this is repaired by deletion of one of the consonants. Standard OT predicts that the more marked consonant will be deleted. One of the factors determining markedness is place: generally it is assumed that labial and dorsal are more marked than coronal. So we have: *PL(lab,dor).

Wilson suggests that the following is universally true (p. 148):

First consonant deletion

> Across languages, deletion processes that apply to intervocalic biconsonantal clusters consistently delete the first consonant (schematically, $VC_1C_2V \rightarrow VC_2V$).

Note: the FCD as stated here can easily be falsified. In many cases the *second* consonant is deleted in an intervocalic cluster. But, as far as I know, in all these cases the members of the cluster are not identical in terms of sonority. So we will assume that the FCD holds in clusters whose members have the same sonority degree. We will come back to this in our discussion of McCarthy's discussion of the FCD.

The general structure of the problem:

Markedness constraint M incorrectly causes deletion of second C (p. 149)

VC_1C_2V	CLUSTERCOND	MAX	M
a. VC_1C_2V	*!		
☞ b. VC_2V		*	*!
🔔 c. VC_1V		*	

CLUSTERCOND and MAX inevitably pass the decision about which of the two candidates is optimal (i.e. which of the two consonants is deleted) to other constraints. 'Thus this hierarchy generates an unattested type of deletion process, according to which markedness ... rather than position governs which consonant deletes.' (p. 150).

A concrete instance of this problem

(1) **Diola-Fogny**

/let+ku+jaw/	lekujaw	'they won't go'
/kutɛb sinaŋas/	kutɛsinaŋas	'they carried the food'
/ɛkɛt bo/	ɛkɛbo	'death there'

(2) **West Greenlandic**

/qanik+lerpoq/	qanilerpoq	'begins to approach'
/ukijuq+tuqaq/	ukijutuqaq	'old year'
/anguti+kulak/	angukulak	'he goat'

Incorrect deletion of non-coronal C in Diola (p. 151)

let+ku+jaw	CLUSTERCOND	MAX	*PL(lab,dor)	*PL(cor)
a. letkujaw	*!		*	*
☞ b. lekujaw		*	*!	
🕭 c. letujaw		*		*

This is an instance of the Too-many-solutions problem. Of all the conceivable responses to CLUSTERCOND elimination of the second consonant is not attested (all other things being equal, like sonority degree of the members of the cluster).
The source of the problem is the fact that the actual selection of the deleted consonant is insulated from any markedness constraint that prefers α over β.

> *Inventory-restricted first consonant deletion* (p. 167)
> Let α and β be any two consonants in the segmental inventory of language L. If L resolves intervocalic αβ and βα clusters by deletion, then it does so by consistently deleting the first member of the cluster (i.e. /VαβV/ → [VβV] and /VβαV/ → [VαV]).

Certain constraints target specific repairs;

> NOWEAKCONSONANT
> (*targeted contextual markedness constraint* (p. 160)
> Let *x* be any candidate and *α* be any consonant in *x* that is not released by a vowel. If candidate *y* is exactly like *x* except that *α* has been removed, then *y* is more harmonic than *x* (i.e. *y*Ħ*x*).

Wilson attempts a phonetic explanation: the *Weak element principle* (p. 159)

> *Weak element principle*
> A representation *x* that contains a poorly cued (or 'weak') element *α* is marked relative to the representation *y* that is identical to *x* except that *α* has been removed.

First consonant deletion in Diola (p. 165)

let+ku+jaw	⇒NOWEAKCONS	MAX	*PL(lab,dor)	*PL(cor)
a. letkujaw	lekuʜletku !		(letuʜletku)	lekuʜletku
☞ b. lekujaw		(letkuʜleku)	(letuʜleku)	
c. letujaw		letkuʜletu !		lekuʜletu
cumulative ordering	lekuʜletku	lekuʜletkuʜletu		

The fully faithful candidate [letkujaw] contains the poorly cued consonant [t]. Therefore, NOWEAKCONS asserts only that [letkujaw] is less harmonic than the candidate that is identical except that [t] has been removed: namely, [lekujaw]. Thus, the cumulative harmonic ordering below the highest-ranked constraint in the tableau is just an ordering of these two candidates: [lekujaw]ʜ[letkujaw]. The next constraint, MAX, asserts the opposite harmonic ordering of [lekujaw] and [letkujaw]. But this constraint, like all constraints, cannot change harmonic orderings that have already been fixed by higher-ranked constraints. What MAX can do, however, is decide the relative ordering of [letkujaw] and [letujaw], which are left unordered by NOWEAKCONS. The constraint places the faithful candidate above the unfaithful one: [letkujaw]ʜ[letujaw]. The cumulative harmonic ordering below MAX is formed by stringing together the two pairwise orderings just established: [lekujaw]ʜ[letkujaw]ʜ[letujaw]. This is a total ordering of the candidate set considered in the tableau, and at the top of the ordering lies the optimal candidate [lekujaw].

McCarthy's (2003b) criticism

McCarthy: 'TC seeks to explain why the mappings /kaba/ → *kaba* and /katba → *kata* cannot co-exist in a language, and TC shows that this follows from a limited set of constraints. But a larger – and more realistic – constraint set can affect this argument by promoting a loser to winner status. Specifically, … certain other constraints can protect *b* in the /kaba/ → *kaba* mapping without influencing deletion of *b* in the /katba → *kata* mapping. In that case, FCD no longer follows from the theory: the language has β's in the inventory but simplifies both /αβ/ and /βα/ by deleting β' (p. 6).

McCarthy: 'More generally, no M » F ranking is assurance that M is active over all relevant inputs; markedness or faithfulness constraints dominating M can render it inactive in specific circumstances. Because this is such a basic property of OT, there is and can be no easy generalisation from TC's basic typology to a more realistic CON.' (p. 6).

The constraint ONSET is a straightforward example. If ONSET outranks NOVCDOB, then the force of the ranking NOVCDOB » MAX-C is not felt in the /kaba/ → *kaba* mapping:

McC (p. 7): ONSET » IDENT(voice) » NOVCDOB » T-NOWKC » MAX-C: /kaba/ → *kaba*

/kaba/	ONSET	IDENT(voice)	NOVCDOB	T-NOWKC	MAX-C
☞ a. kaba			(ka.aʜkaba) (kapaʜkaba)		(kabaʜka.a) (kapaʜka.a)
b. ka.a	{kaba, kapa}ʜ ka.a!				
c. kapa		kabaʜkapa! (ka.aʜkapa)			
cumulative	{kaba, kapa}ʜ ka.a	kabaʜkapaʜ ka.a	*no change*	*no change*	*no change*

McCarthy (p. 7): 'Same ranking: /katba/ → *kata*'

/katba/	ONSET	IDENT(voice)	NOVCDOB	T-NOWKC	MAX-C
a. kaba			kataǂkaba! (kapaǂkaba)		(katbaǂkaba)
b. katba			kataǂkatba! (kapaǂkatba)	kabaǂkatba	
☞c. kata					(katbaǂkata)
d. kapa		{kaba,katba,kata}ǂ kapa!			(katbaǂkapa)
cumulative	*no change*	{kaba,katba,kata}ǂ kapa	kataǂ{katba,kaba}ǂ kapa	kataǂkabaǂ katbaǂkapa	*no change*

McCarthy (p. 7): 'The language described in (6,7) (= the two tableaux immediately above, BH) has voiced obstruents in the inventory, deletes voiced obstruents from clusters when the other consonant is not voiced or not an obstruent, and deletes the first consonant otherwise. According to FCD, languages like this do not exist, and the theory of targeted constraints is intended to explain why. The example in (6, 7) shows on the contrary that the targeted-constraints model **can** produce a language that is inconsistent with FCD if ONSET is included in the hierarchy. To put it another way, TC's factorial typology runs into difficulties when ONSET is added to the limited constraint set'.

Contiguity (Lamontagne 1996)

Lamontagne (1996) tries to develop a theory about possible sites for deletion and epenthesis, a popular topic in the last days of rule based approaches (compare Levin 1985 with Itô 1986, 1989 and you can sense the arrival of OT). He builds on an idea by Kenstowicz (1994) who claims that *contiguity factors* are an important force behind the locus of epenthetic vowels in Chukchee. In Lamontagnes's approach contiguity constraints are relativized to specific *prosodic domains*. In this theory a language which systematically deletes the first consonant in VC_1C_2V is a language in which *Domain-Contiguity* is high ranked.

(3) **Chukchee** (Kenstowicz 1994)

a. qonaɣ-rat 'set of plants'
   tumɣ[ə]-ret 'group of comrades'

b. umkuum 'brushwood'
   nəm[ə]-tku-n 'group of villages'

c. miml[ə]-qaca-n 'place near water'
   wejem[ə]-lq-ən 'teeming with rivers'

Kenstowicz (1994) notes that the underlying generalization in these data is that the locus of the epenthetic vowel is pegged to gaps between morphemes.

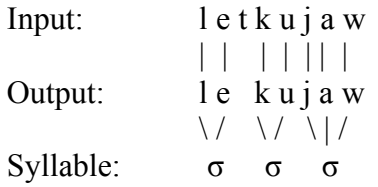
Another example is from **Axininca Campa**. Subminimal roots undergo various modes of augmentation. In some cases the language exhibits the epenthesis of an entire CV syllable. McCarthy and Prince note that *cases of augmentation of this sort are always root-external*.

/t^ho/ → t^hoTA 'kiss, suck'

Lamontagne extends contiguity to prosody. Contiguity is relativized to prosodic units (p. 12).

Example from syllable structure (p. 11), data on p. 2:
(4) **Diola Fogny**

/let-ku-jaw/	lekujaw	'they won't go'
/jaw-bu-ŋar/	jabuŋar	'voyager'
/na-lañ-lañ/	nalalañ	'he returned'



CONTIGUITY (p. 13)
For αγ in S_1 and βδ in S_2, if αℜβ and γℜδ,
then α is contiguous to γ iff β is contiguous to δ.

Relativized Contiguity Constraints (p. 14).
D(omain)-**CONTIG**(uity): *contiguity between correspondents within a domain D*.
For some domain D within S_2, all correspondents βδ in D must be contiguous.
Where D = {Syllable, Foot, PrWd, etc.}

let-ku-jaw	D-CONTIG
☞ lekujaw	
letujaw	*!

Lamontagne does not recognize the FCD. For him systematic deletion of C_2 is perfectly possible. Languages just choose between these two options; in some languages C_1 is systematically deleted, whereas in other languages C_2 is systematically deleted. (We will not go into his analysis of the systematic deletion of C_2).

Assuming that the FCD is true, we do not recognize the existence of languages where C_2 is systematically deleted. How, then, to account for these languages? Let us look at Lamontagne's example, Wiyot.

(5) **Wiyot** (p. 3)

/pucarag-lolisw-/	pucaragorišw-	'whistle a tune'
/kit-hus-/	kitus-	'finish fishing'
/dot-haphatk-/	dotaphatk-	'make a large package'

Notice that in all these examples C_2 is more sonorous then C_1. This is an environment where FCD does not necessarily apply (as is recognized by Wilson; before a sonorant, C_1 is not necessarily weak, because it might have relatively strong perceptual cues).

Important question: Are all VCCV clusters like this in Wiyot?

Lamontagne's proposal is a theory about the sites of deletion and insertion of both vowels and consonants.

Deletion of V_1 in hiatus (p. 3)
(6) **Iraqw**

/da:ngi-e:mo/	da:nge:mo	'twins'
/lama-e:mo/	lame:mo	'lies'
/wane-a/	wana	'maybe it is'
/diri-a ho:ta:n/	dira ho:ta:n	'we live here'

Deletion of V_2 in hiatus (p. 3)
(7) **Kashaya**

/malucma-îm'ic-ʔ/	malúc^{h}mabiʔ	'start to bake (pl)'
/c^{h}i-n'e-an'-I/	c^{h}ide:du	'carry along'
/ca^{h}no-wă-e šoc-I	cahnowá šoc-I	'listen, he's singing'

Question: how to account for this typology?

Question: Lamontagne also develops a theory of epenthesis sites. How to account for the typology predicted by this theory?