Lexical economy, optimization and the indeterminacy of underlying representations

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1 The problem

(1) Lexical economy (Yip 1996: 766)
a. economy of individual lexical entries
b. economy of phoneme inventory
c. economy of phonotactic combinations
d. economy of paradigms

In Optimality Theory all non-alternating structures are assumed to be fully specified in the lexicon (Prince & Smolensky 1993, Inkelas 1994). See also Burzio (1996, 1999, 2000), Kager (1999):

"...if no alternations occur in a morpheme's shape, the learner will never postulate an input deviating from the actual observable output form. Due to *Lexicon Optimization*, the input simply equals the output unless there is reason to deviate." (Kager 1999: 414)

"It is easy to see that (...) the actual input *equals* the actual output. The reason is that any input different from the output (...) would only add violations of IO-F without ever avoiding any other violation in return. (...) Now the claim illustrated for P&S (...) appears to be non-distinct from the (...) claim that there is only surface representation and no UR." (Burzio 2000: 55)

Harrison & Kaun (2000, 2001): UR ≠ SR, UR is not fully specified.

Problems:
🕭 Under the standard view, LO challenges traditionally held views on lexical economy.
🕭 Underlying representations (URs) cannot be predicted.
¿ Do we have to introduce constraints on underlying structures into OT and abandon Richness of the Base?
¿ Abandon URs?

Answer:
No. LO is just not the right mechanism to predict underlying representations in paradigms.
LO optimizes evaluation but not URs.
LO can be saved if we reconsider the nature of constraints.

Structure of paper:
- intro to Lexicon Optimization and lexical economy
- OT predictions for complementary distribution (English tensing)

- OT predictions for non-alternating pattern-conform structure (Turkish harmony)
- OT predictions for epenthesis (German glottal stops)
- OT predictions for paradigms (English, Yapese)
- Discussion

2 Lexicon Optimization versus economy

(2) Richness of the Base (Smolensky 1996:3)
The source of all systematic cross-linguistic variation is constraint reranking. In particular, the set of *inputs* to the grammars of all languages is the same. The grammatical inventories of a language are the *outputs* which emerge from the grammar when it is fed the universal set of all possible inputs.

(3) Lexicon Optimization (Prince & Smolensky 1993)
Suppose that several inputs $I_1, I_2, I_3, ..., I_n$ when parsed by a grammar G lead to corresponding outputs $O_1, O_2, O_3, ..., O_n$, all of which are realized as the same phonetic form ϕ – these inputs are all phonetically equivalent with respect to G. Now one of these outputs must be the most harmonic, by virtue of incurring the least significant violation marks: suppose this optimal one is labelled O_k. Then the learner should choose, as the underlying form for ϕ, the input I_k.

(4) Lexicon Optimization

	Constraint A	B	C	D
a. $I_1 \sim O_1$	*!		*	
b. $I_2 \sim O_2$		*!	*	
c. $I_3 \sim O_3$			*!	
☞ d. $I_k \sim O_k$				*

(5) Inkelas' (1994) alternation-sensitive restatement of LO:
Given a set $S = \{S_1, S_2, ..., S_i\}$ of surface phonetic forms for a morpheme M, suppose that there is a set of inputs $I = \{I_1, I_2, ..., I_j\}$, each of whose members has a set of surface realizations equivalent to S. There is some $I_i \in I$ such that the mapping between I_i and members of S is the most harmonic, i.e. incurring the fewest marks in grammar for the highest ranked constraints. The learners should choose that I_i as the underlying representation for M.

(6) Schematic tableau for alternation-sensitive Lexicon Optimization

			Constraint A	B	C	D
a.	I_1 ~	S_1	*!		*	
		S_2		*		*
b.	I_2 ~	S_1		*!	*	
		S_2				*
c.	I_3 ~	S_1			*!	
		S_2				*
☞ d.	I_4 ~	S_1				
		S_2				*

(7) Resulting predictions for underspecification:

	Predictable	Unpredictable
Alternating	underspecified	specified
Nonalternating	*specified*	specified

Ratio for specification of non-alternating segments: underlyingly underspecified segments incur violations of anti-insertion constraints which fully specified segments do not have. Hence, fully specified UR's are preferred.

(8) Generally held view:

	Predictable	Unpredictable
Alternating	underspecified	specified
Nonalternating	*underspecified*	specified

3 Does LO really make these predictions?

It all depends on your constraints.

3.1 Underspecification of distinctive features

(9) Radical Underspecification (Archangeli 1988)

	i	e	ɑ	o	u
high	+				+
low			+		
back				+	+

(10) Correspondence (McCarthy & Prince 1995)

Given two related strings S_1 and S_2. Correspondence is a relation $\Re$ from the elements of S_1 to those of S_2. An element $\alpha \in S_1$ and any element $\beta \in S_2$ are referred to as correspondents of one another when $\alpha \Re \beta$.

(11) Correspondence constraints (McCarthy & Prince 1995: 264)

a. Max-IO: Every segment in S_1 has a correspondent in S_2. ('No deletion!')
b. Dep-IO: Every segment in S_2 has a correspondent in S_1. ('No insertion!')
c. Ident(F): Let α be a segment in S_1 and β be any correspondent of α in S_2.
If α is [γF] then β is [γF].
('Correspondent segments are identical in feature F.')

(12) Max/Dep(F)

a. Max(F): Every feature in S_1 has a correspondent in S_2.
b. Dep(F): Every feature in S_2 has a correspondent in S_1.

(13) Evaluation with Dep(F) constraints and binary features

	Dep[high]	Dep[back]	Dep[round]	*[+back]	*[+high]	*[+low]
a. /V/ ~ [e]	*!	*	*	*	*	*
☞ b. /e/ ~ [e]				*	*	*

(14) Evaluation with Dep(F) constraints and unary features

	Dep[high]	Dep[back]	Dep[round]	*[back]	*[high]	*[low]
☞ a. /V/ ~ [e]						
? b. /e/ ~ [e]						

(15) Only Identity requested for (binary) features

	Ident[high]	Ident[back]	Ident[round]
☞ a. /V/ ~ [e]			
☞ b. /e/ ~ [e]			

(16) Comparing identity and dependency (binary features)

	Ident(F)	Dep(F)
a. /V/ ~ [e]		*
b. /e/ ~ [e]		
c. /i/ ~ [e]	*	*

With binary features and Identity constraints the learner has a choice.
With unary features and Max/Dep there is no choice.

3.2 Complementary distribution

(17) *æ*-tensing in Belfast English (Harris 1990: 91)

Tense *æ* (i.e.[aː])

a. pass, path, laugh, man, Sam

Lax *æ* (i.e.[æ])

b. tap, bat, match, back

c. panel, ladder, wagon

(18) Constraints (Benua 1995 on New York-Philadelphia English):

a. *æ*-TENSING : $*$æC]$_\sigma$.

('No *æ* in syllables closed by fricatives or voiced consonants.')

b. *TENSE-low: 'Low vowels are lax.'

c. IO-IDENT(tense): Let α be a segment in the input, and β be a correspondent of α in the output. If α is [γtense] then β is [γtense].

(19) Example tableau for the tense vowel

	æ-TENSING	*TENSE-low	IO-IDENT
a. pæs	*!		
☞ b. paːs		*	

(20) Example tableau for the lax vowel

	æ-TENSING	*TENSE-low	IO-IDENT
☞ a. æsɪd			
b. aːsɪd		*!	

(21) Lexicon Optimization in Belfast with unary [tense] and MAX/DEP(F)

i.	*æ*-TENSING	*TENSE-low	DEP(tense)	MAX(tense)
a. /pæs/ ~ paːs		*	*!	
☞ b. /paːs/ ~ paːs		*		

ii.	*æ*-TENSING	*TENSE-low	DEP (tense)	MAX (tense)
a. /aːsɪd/ ~ æsɪd				*!
☞ b. /æsɪd/ ~ æsɪd				

Unary [tense] yields an underlying difference between [æsɪd] and [paːs].

(22) LO of *æ*-tensing data with IDENT(F) only

i.	*æ*-TENSING	*TENSE-low	IO-IDENT
☞ a. /pAs/ ~ paːs		*	
b. /pæs/ ~ paːs		*	*!
☞ c. /paːs/ ~ paːs		*	

ii.	*æ*-TENSING	*TENSE-low	IO-IDENT
☞ a. /Asɪd/ ~ æsɪd			
b. /aːsɪd/ ~ æsɪd			*!
☞ c. /æsɪd/ ~ æsɪd			

Allophonic relation is entirely encoded in the grammar, not in the Lexicon.

Since grammar completely predicts tenseness, specification in the lexicon is redundant – even worse: indeterminable!

☛ If there is a choice between a fully specified and an underspecified form, Lexical Economy prefers the underspecified form to reduce memory load – not EVAL/LO.

Side step: Is this assumption warranted? I.e., does grammar account for both environments?

Little experiment with Belfast students: 'Learning Deutsch'
Five natives from Belfast, German proficiency from ∅ – A-levels.

(23)	German	Target pronunciation	Realisation
a.	Schlaf	[ʃlaːf]	[ʃlaːf]
	Spaß	[ʃpaːs]	[ʃpaːs]
b.	Hans	[hans]	[haːns]
	rasch	[ʀaʃ]	[ɹ̣aːʃ]
	schlaff	[ʃlaf]	[ʃlaːf]
	nass	[nas]	[naːs]
c.	Rat	[ʀaːt]	[ɹ̣æt]
	Stab	[ʃtaːp]	[ʃtaːb]

æ-tensing is *æ*-laxing as well. Hence, ROTB confirmed: Input doesn't matter. UR?

3.3 Features predictable by a general pattern

(24) Turkish backness and roundness harmony

		nom.sg.	nom.pl.	gen.sg.	gen.pl.
a.	'rope'	ip	ip-lʲer	ip-in	ip-lʲer-in
b.	'girl'	kɨz	kɨz-lar	kɨz-ɨn	kɨz-lar-ɨn
c.	'face'	yüz	yüz-lʲer	yüz-ün	yüz-lʲer-in
d.	'stamp'	pul	pul-lar	pul-un	pul-lar-ɨn
e.	'hand'	elʲ	elʲ-lʲer	elʲ-in	elʲ-lʲer-in
f.	'stalk'	sap	sap-lar	sap-ɨn	sap-lar-ɨn
g.	'village'	kʲöy	kʲöy-lʲer	kʲöy-ün	kʲöy-lʲer-in
h.	'end'	son	son-lar	son-un	son-lar-ɨn

(Clements & Sezer 1982: 216)

Pattern-Responsive Underspecification (Harrison & Kaun, 2001)

(25) Turkish novel reduplications (Harrison & Kaun, 2001)

a.	kibrit	kibrit-kabrɨt	*kibrit-kabrit	'match'
	bütün	bütün-batɨn	*bütün-batün	'whole'
b.	mali	mali-muli	*mali-mulɨ	'Mali'
	butik	butik-batik	*butik-batɨk	'boutique'

Existence of disharmonic stems shows that harmony is inactive in stems.

(Clements & Sezer 1982)

Alternation of harmonic stems shows underspecification of second vowel in harmonic stems.
(Harrison & Kaun, 2000, 2001)

(26)

	IDENTI/R	ALIGN[BK]	IDENTB/R
☞ a. /kibrIt/ ~ kibrit-kabrɨt	*	*	**
b. /kibrIt/ ~ kibrit-kabrit	*	**!	*
c. /kibrit/ ~ kibrit-kabrɨt	**!	*	**
☛ d. /kibrit/ ~ kibrit-kabrit	*	**	*

Problems:

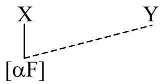
- ☹ Harrison & Kaun's analysis generates a contrast between underspecified and specified inputs, i.e., does not comply with ROTB.
- ☹ LO still predicts fully specified URs for harmonic stems.

3.3.1 A solution

No insertion violations for harmonic but static segments and a different approach to harmony.

Feature geometry/autosegmental phonology: assimilation = double association of feature.

(27)



OT conclusion: assimilation = less markedness violations! (Beckman 1997)

(28)

	IO-IDENT$_{stem}$	*[+back]	*[-back]	IO-IDENT
a. [-bk] [-bk] k i b r i t			**!	
☞ b. [-bk] k i b r i t			*	

☛ Problem: why not maximal underspecification in case of adjacent homorganic vowels? This would produce *kibritkabrat*.

Underspecification is guided by active phonological constraints within a language.

(29) Why is the second vowel not completely underspecified?

	IDENT$_{stem}$	IDENT(height)	*BACK	*HEIGHT
a. [-bk] [-bk] [-bk] [-bk] /k i b r i t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			**!	**
💣 b. [-bk] [-bk] /k i b r i t/ ~ k i b r i t [+hi] [+hi]			*	*
💣 c. [-bk] [-bk] /k i b r V t/ ~ k i b r i t [+hi] [+hi]			*	*
☹ d. [-bk] [-bk] /k i b r V t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			*	**!

(30) Wrong prediction for reduplication:
/k i b r V t/ → *kibrit-kabrat

We need an 'anti-harmony-constraint'!

(31) *Multiple Correspondence (*MC) (Lamontagne & Rice 1995:218)
Elements of the input and the output stand in a one-to-one correspondence relationship with each other.

(32) $*F_1 >> *MC >> *F_2$ (F_1 spreads, F_2 does not.)

(33) Does *MC do the job?

	IO-ID$_{stem}$	*[+back]	*[-back]	*MC
a. [-bk] [-bk] [-bk] /k i b r i t/ ~ k i b r i t			*	*
☹ b. [-bk] [-bk] /k i b r I t/ ~ k i b r i t			*	*
c. [-bk] [-bk] /k i b r I t/ ~ k i b r i t			*	*
d. [-bk] [-bk] /k I b r i t/ ~ k i b r i t			*	*
💣 e. [-bk] [-bk] /k i b r i t/ ~ k i b r i t			*	
f. [-bk] /k I b r I t/ ~ k i b r i t			*	*

(34) UniqueLink (U-LINK): Every feature is exclusively associated to one segment in the output.

(35) U-LINK and URs of non-alternating harmonic forms in Turkish

	IDσ$_1$	ID(height)	*COLOUR	U-LINK	*HEIGHT	ID(colour)
[-bk] [-bk] [-bk] [-bk] a. /k i b r i t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			**!		**	
[-bk] [-bk] ☠ b. /k i b r i t/ ~ k i b r i t [+hi] [+hi]			*	**!	*	
[-bk] [-bk] ☠ c. /k i b r V t/ ~ k i b r i t [+hi] [+hi]			*	**!	*	
[-bk] [-bk] ☞ d. /k i b r V t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			*	*	**	
[-bk] [-bk] ☞ e. /k i b r i t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			*	*	**	

¶ Formulation of constraints is crucial to generate the right UR.
¶ We still haven't got the right UR (d).

To generate the right UR, we need an economy constraint.

(36) *SPEC (Prince & Smolensky, 1993): 'Underlying material must be absent.'
☛ Problem: One constraint on URs among many surface constraints (Inkelas 1994).

(37) Correspondence theoretic reformulation:
INDEP (Independence): Assume an element x in representation S_2. Every x in S_2 should not have a correspondent y in S_1.
'Surface structure does NOT correspond to underlying structure.'

Cf. Alderete's (2001a,b) OO-Anti-Faithfulness

Alderete (2001a,b) argues that IO anti-faithfulness cannot exist for several reasons: a) Max, Ident etc. anti-faithfulness in the IO dimension pose a learning problem,
b) the typology of attested observable anti-faithfulness effects consists of ani-faithfulness to lexical material only, not to grammatical material.

Formal difference between Independence and Alderete's Anti-faithfulness:

INDEP: 'For every *x* in S_2 it is the case that there is no *y* in S_1.'
¬DEP: 'It is not the case that for every *x* in S_2 there is a *y* in S_1.'
Accordingly truth conditions or constraint violations are different.
For Alderete the constraint is satisfied if one element in S_2 doesn't have a correspondent in S_1, that is it is evaluated representation-wise, while INDEP is evaluated element-wise (segment, feature, association line). I.e., if there are two segments *x*, *y* in S_2 and one *y'* in S_1, the constraint is violated once.

Restricting IO-Anti-Faithfulness to Dependency circumvents the learnability problem and the typological problem.

(38)

	ID$_{stem}$	ID(hi)	*COLOUR	U-LINK	INDEP
a. [-bk] [-bk] [-bk] [-bk] /k i b r i t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			**!		** **
☠ b. [-bk] [-bk] /k i b r i t/ ~ k i b r i t [+hi] [+hi]			*	* *!	** **
☠ c. [-bk] [-bk] /k i b r V t/ ~ k i b r i t [+hi] [+hi]			*	* *!	* *
☞ d. [-bk] [-bk] /k i b r I t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			*	*	* **
e. [-bk] [-bk] /k i b r i t/ ~ k i b r i t [+hi] [+hi] [+hi] [+hi]			*	*	**! **

The grammar still doesn't choose between a UR with 1st V specified or UR with 2nd V specified. (Krämer 2003: Edge faithfulness is Anchoring. Feature anchoring at edges incurs violation mark for /kIbrit/ ~ [kibrit] but not for /kibrIt/ ~ [kibrit])

Two goals:
- exclude complete feature sharing, i.e., restrict shared features to VH features;
- Predict underspecification;
- Predict underspecification of 2nd V, not 1st.

Achieved through:
- Anti-feature sharing constraint on surface (U-LINK);
- Anti-Faithfulness constraint INDEP;
- Positional faithfulness.

3.4 Epenthesis

Prince & Smolensky: Potential Input/CCC/ -> [CVCVCV] -> /CVCVCV/ UR

Potential Input/VVV/ -> [CVCVCV] -> /CVCVCV/ UR
in insertion grammar

German glottal stop occurs at the beginning of words and at the left edge of feet (Wiese 1996/2000, Alber 2001).

(39)

a.	[ʔeː.kəl]	Ekel	'disgust'
	[ʔiŋ.vɐ]	Ingwer	'ginger'
	[ʔɛçt]	echt	'real'
b.	[(ʔʊn).(ʔɛçt)]	unecht	'unreal'
c.	[(ká.ɔs)]	Chaos	'chaos'
d.	[ka.(ʔóː.tɪʃ)]	chaotisch	'chaotic'

Basic analysis adopted from Alber (2001).

(40)

	MAX	ONSET$_{foot}$	DEP	INDEP
? a. /ʔɛçt/ ~ [ʔɛçt]				*
? b. /ɛçt/ ~ [ʔɛçt]			*	

(41)

	MAX	ONSET$_{foot}$	DEP	INDEP	ONSET
☞ a. [ka.(ʔóː.tɪʃ)]			*		
b. [ka.(óː.tɪʃ)]		*!		*	*
c. [ká.tɪʃ)]	*!				
d. [(ká.ʔɔs)]			*!		
☞ e. [(ká.ɔs)]					*
f. [(kás)]	*!				

No reason to assume /kaʔɔs/. Hence: /kaɔs/ is taken as input for [ka.(ʔóː.tɪʃ)] as well.

(42)

			MAX	ONSET$_{foot}$	DEP	INDEP	ONSET
☞ a.	/kaɔs/ ~	[ka.ɔs]					*
		[ka.(ʔóː.tɪʃ)]			*		
b.	/kaʔɔs/ ~	[ka.ɔs]	*!				*
		[ka.(ʔóː.tɪʃ)]					

(43)

	MAX	ONSET$_{foot}$	DEP	INDEP	ONSET
☞ a. /eːkəl/ ~ [ʔeː.kəl]			*		
☞ b. /ʔeːkəl/ ~ [ʔeː.kəl]				*	

No empirical reason to rank INDEP with respect to DEP, only wrt MAX.
Either UR is o.k. Lexical economy outside EVAL opts for (a).

→ Analysis so far does not account for distributional restrictions.

(44) Where glottal stop doesn't occur:

a. In onsets of unstressed syllables	*'tyː.ʔə
b. In coda position	*'taʔ.kə
c. In complex onsets and codas	*ʃʔʀaŋʔ

ROTB demands for an account of these distributional facts:
a. *ʔ* cannot be lexical *or*
b. Markedness restrictions hold against *ʔ* in these positions

(45) SPECIFY: 'Output segments have to have feature specifications.'

(46)

i. /tyʔə/	SPECIFY	FAITH PLACE	*PLACE
a. tyː.ʔə	*!		
b. tyː.tə			*

ii.	SPECIFY	FAITH PLACE	*PLACE
a. [ka.(ʔóː.tɪʃ)]	*!		
💣 b. [ka.(tóː.tɪʃ)]			*

(47) Implicational constraint co-ordination (Crowhurst & Hewitt 1997)
A ⇒ B 'If A is satisfied then B has to be satisfied too.'

(48) INDEP ⇒ *PLACE: 'Inserted segments are not specified for a place feature.'
(Cross-linguistically, some languages prefer as epenthetic segments segments which are part of the inventory, others choose the unmarked. (Cf. Axininca Campa and German))

(49)	INDEP⇒ *PLACE	MAX	ONSET$_{foot}$	SPECIFY	DEP	INDEP	ONSET
☞ a. /eːkəl/ ~ [ʔeː.kəl]				*	*		
b. /eːkəl/ ~ [teː.kəl]	*!						
c. /eːkəl/ ~ [eː.kəl]			*!				*
d. /ʔeːkəl/ ~ [ʔeː.kəl]				*!		*	
☞ e. /ʔeːkəl/ ~ [teː.kəl]						*	
f. /ʔeːkəl/ ~ [eː.kəl]			*!			*	*

With this grammar, /ʔeːkəl/ is no possible UR for [ʔeːkəl], hence not considered in LO.

(50)

/kaos-ɪʃ/	INDEP⇒ *PLACE	MAX	ONSET foot	SPECIFY	DEP	INDEP	ONSET
☞ a. [ka.(ʔó:.tɪʃ)]				*	*		
b. [ka.(tó:.tɪʃ)]	*!					*	*
c. [ka.(ó:.tɪʃ)]			*!				

With ROTB, epenthesis has to be analysed as such – i.e., a change to the UR.
Amendments to CON required.

3.5 Paradigms

(51) English plural formation

a. children	b. dɒgz	dogs
oxen	kæts	cats
geese	pɔ:z	paws

(52) Blowing up the English lexicon

	ASSIM	IDENT_{stem}	IDENT
a. /dɒg -z/ ~ dɒgz /kæt -z/ ~ kæts /pɔ: -z/ ~ pɔ:z			*!
b. /dɒg -s/ ~ dɒgz /kæt -s/ ~ kæts /pɔ: -s/ ~ pɔ:z			* *!
☞ c. /dɒgz/ ~ dɒgz /kæts/ ~ kæts /pɔ:z/ ~ pɔ:z			

(53) Yapese[1]

a. [lú:b] 'breath'
[lubá:g] 'my breath'

b. [ró:b] 'beard'
[robé:g] 'my beard' (Piggott 1999:64)

c. /root/ + /-ag / -eg/
d. /rootV/ + /-g/ i.e., /luba/, /robe/ + /-g/

(54) Yapese loss of final vowels

/luba/	NOFINALV	DEPIO	MAXIO
a. luba	*!		
b. luba□		*!	
☞ c. lub			*

[1] In (53d), the symbol *V* stands for any vowel that might be found in this position.

(55) Unexpected vowels

		NOFINALV	DEPIO	MAXIO
☞ a.	/lub/ lub +/ag/ lubag			
b.	/luba/ lub +/g/ lubag			*

(56) More Yapese

a. [lú:b] 'breath'
[lubá:g] 'my breath'
[lubá:m] 'your breath'
b. [ró:b] 'beard'
[robé:g] 'my beard'
[robé:m] 'your beard' (Piggott 1999:64)

(57)Unexpected vowels II

		NOFINALV	DEPIO	MAXIO
☞ a.	/lub/ lub +/ag/ lubag			
	/rob/ rob +/eg/ robeg			
b.	/luba/ lub +/g/ lubag			*
	/robe/ rob +/g/ robeg			*

(58)Unexpected vowels III

	UR		Output	DepIO	MaxIO	Ident
☞ a.	/lub/		lub			
		+/ag/	lubag			
	/rob/		rob			
		+/eg/	robeg			
b.	/luba/		lub		*	
		+/g/	lubag			
	/robe/		rob		*	
		+/g/	robeg			
c.			lub			
	/lub/	+/ag/	lubag			
	/rob/		rob			
			robeg			*
d.			lub		*	
	/luba/	+/g/	lubag			
	/robe/		rob		*	
			robeg			
☞ e.	/lub/		lub			
	/lubag/		lubag			
	/rob/		rob			
	/robeg/		robeg			

☛ Prediction: speakers store each surface form - contrary to paradigmatic economy.
☛ Vowel deletion is reanalysed as allomorphy.

Does InDep change the picture?

4 Conclusion

(59) Lexical economy (Yip 1996: 766)
- a. economy of individual lexical entries
- b. economy of phoneme inventory
- c. economy of phonotactic combinations
- d. economy of paradigms

(60) Evaluation metric for grammars
- a. Naturalness: phonological processes are 'natural', typologically backed;
- b. Simplicity: the simplest grammar is the best (few rules/constraints);
- c. Transparency: I-O mapping is as direct as possible.

➲ OT adheres to (60c), defies (60b) (granted, see tensing experiment), (60a) is implicit guiding principle for individual analyses (see McCarthy 2003)

➲ LO defies (59a,b,d). (We didn't look at 59c) Though, (59a,b) only at first sight.

➲ Lexicon Optimization does not make the generally assumed predictions for URs. Due to: nature of features, nature of Con

➲ Manipulation of constraints does not change the predictions consistently either.

➲ Additional assumptions conflicting with LO are needed outside EVAL?

Abandon URs or abandon LO? Or both?

Burzio (2000 and elsewhere), Szentgyörgyi (2004): Abandon URs.

Though: UR-less approach is founded on LO prediction that /UR/ = [SR], which is not born out (see the Harrison & Kaun experiment).

Don't abandon anything – change the analysis!

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