Ineffability and UR Constraints in Optimality Theory[*]

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INTRODUCTION

In Tagalog, a word cannot be created through –*um*– infixation if the result would contain an initial *mum* or *wum* sequence (Schachter & Otanes 1972, Orgun & Sprouse 1999, Klein 2005, Zuraw & Lu 2009).

1. Labial-sonorant OCP blocks –*um*– infixation (loan words from Orgun & Sprouse 1999:206)

a.	pejnt	p-um-ejnt	paint
b.	keri	k-um-eri	carry
c.	weijl	*w-um-ejl	wail
d.	meri	*m-um-eri	marry

Phonologically-conditioned ineffability is often limited to certain morphemes, and it is rife with exceptions. These characteristics are shared across many languages (Hetzron 1975, Orgun & Sprouse 1999, Fanselow & Féry 2002). See the appendix for examples from Turkish, Tuvan, and Norwegian.

Limited to certain morphemes. In Tagalog, labial OCP can be violated in prefixes, reduplicants, and roots. Only violations of labial OCP from –*um*– infixation result in ineffability.

2. Labial OCP doesn't block *ma*-prefixation or reduplication (Orgun & Sprouse 1999: 205)

a.	mulat	ma-mulat	*have one's eyes opened*
b.	walaʔ	ma-walaʔ	*be lost*
c.	mumug	mu-mumug-in	*will gargle*

3. Labial OCP doesn't block roots (Orgun & Sprouse 1999: 205)

a.	mumoʔ	*ghost*
b.	mumo	*particles of cooked rice*
c.	mumug-in	*gargle-present*

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Lexical exceptions. A licit *–um–* word that violates labial OCP, contrary to the generalization above.

4. Lexical exception with –um– (Zuraw & Lu 2009)

   wagajwaj   w-um-agajwaj   *wave*

Overview of account. To account for phonologically-conditioned ineffability and its exceptions, I propose a theory in which phonological constraints can interact with UR selection to cause ineffability.

5. Ineffability occurs when the grammar *does not* select a UR for some meaning.

This analysis is cast in a framework in which UR selection occurs during EVAL (UR-IN-EVAL: Wolf 2008 for an overview), making it a natural extension of accounts of allomorphy in which phonological constraints select between URs.

This analysis has two advantages over the MPARSE model of Prince & Smolensky (1993/2004).

6. It provides a means to account for exceptions to ineffability, while avoiding the ranking paradoxes of morpheme-specific MPARSE.

7. Exceptionality to ineffability is modeled as the result of exceptionally ranked lexical constraints — not morpheme-specific markedness or faithfulness constraints. (That is, exceptionality is kept confined to the lexicon.)

8. It provides a solution to a theoretical problem. Prince & Smolensky (1993/2004) stipulate that ineffable candidates contain input structure but lack output structure. Despite this, ineffable candidates must not violate faithfulness constraints. Under UR-IN-EVAL, Faithfulness constraints are vacuously satisfied without stipulation, since ineffable candidates lack URs.

THEORETICAL BACKGROUND

Input. The input to phonology is not underlying forms (URs), but morphosyntactic feature bundles (or meanings). The selection of URs takes place during EVAL (Wolf 2008 for an overview).

Meanings will be represented by English glosses in small caps (CARRY, GHOST), except for the meanings of *–um–* and *ma–*, which are simply represented by UM and MA.

UR constraints. UR constraints require a meaning to be realized by a particular UR (Zuraw 2000, Boersma 2001). UR constraints provide a straightforward way to model phonology's interaction with the lexicon.

9. UM → /um/ Assign a violation if the meaning is UM and the UR is not /um/.

10. CARRY → /keri/ Assign a violation if the meaning is CARRY and the UR is not /keri/.

11. GHOST → /mumoʔ/ Assign a violation if the meaning is GHOST and the UR is not /mumoʔ/.

A meaning with multiple SRs has multiple UR constraints. For example, the meaning POOR can be realized with or without tapping.

12. POOR → /ralita/ Assign a violation if the meaning is POOR and the UR is not /ralita/.

13. POOR → /dalita/ Assign a violation if the meaning is POOR and the UR is not /dalita/.

For each meaning, there is a finite set of UR constraints.

Candidates. The set of candidate URs consists of every UR specified in one of those constraints. Each of these is paired with candidate SRs, producing a candidate set of (UR, SR) pairs.

14. A partial candidate set for POOR.

	UR	SR
a.	/ralita/	[ralita]
b.	/dalita/	[dalita]
c.	/ralita/	[dalita]
d.	/dalita/	[alita]
	etc.	

Ineffability with UR constraints. The candidate set also contains candidates in which *the meaning is not realized at all*. When one of these deficient candidates is optimal, the result is ineffability. The underscores represent meanings without corresponding URs.

15. A partial candidate set for MARRY.

	UR	SR	Ineffable?
a.	/um+meri/	[mumeri]	*acceptable*
b.	/um/+__	[um]	*ineffable*
c.	__+/meri/	[meri]	*ineffable*
d.	__+__	Ø	*ineffable*

Despite being ineffable, many of the candidates still have non-null SRs. The idea of ineffable candidates with partial morphological structure has previously been proposed by Walker & Feng (2004) and Raffelsiefen (1996). In their analyses, ineffability results when a candidate with partial morphological structure is optimal.

Faithfulness. In the MPARSE model, the null parse cannot violate faithfulness constraints. If the null parse counted as deletion, it would nearly always lose to non-null candidates with partial deletion (Wolf & McCarthy 2009). The requirement that the null parse violates no faithfulness constraints is stipulative (for similar criticisms: Kager 1999, Orgun & Sprouse 1999, Nevins and Vaux 2003, Rice 2005). Wolf & McCarthy (2009) address this stipulation by redefining correspondence theory.

Under the UR-in-EVAL analysis, the requirement that an ineffable candidate violates no faithfulness constraints is satisfied without stipulation or redefinition of correspondence theory. Since ineffable candidates lack URs, they vacuously satisfy faithfulness constraints.

ANALYSIS OF TAGALOG

The general pattern. When a UR constraint is ranked below a markedness (or faithfulness constraint), a UR will not be selected if it occurs violations of the high-ranked constraints. In this case, OCP is ranked above the UR constraint for *–um–*.

16. OCP: Assign a violation for every two consecutive onsets, so long as both onsets are labial and sonorant.

17. MARRY+UM → ineffable

Input: MARRY

	UR	SR	MARRY→ /MERI/	CARRY→ /KERI/	OCP	UM→ /UM/	WAIL→ /WEJL/
a.	/um+meri/	[mumeri]			1_W	L	
b.	/um/+_____	[um]	1_W			L	
c.	_____+/meri/	[meri] ☞				1	
d.	_____+_____	Ø	1_W			1_W	

The reason the optimal candidate is (16c) and not (16b) is that ineffability occurs with (nearly) all instances of *–um–*. By linking ineffability to *–um–,* this generalization is captured (see the analysis of exceptions for more evidence for this).t

18. CARRY+UM → [kumeri]

Input: CARRY

	UR	SR	MARRY→ /MERI/	CARRY→ /KERI/	OCP	UM→ /UM/	WAIL→ /WEJL/
a.	/um+keri/	[kumeri] ☞					
b.	/um/+_____	[um]		1_W			
c.	_____+/keri/	[keri]	1_W				
d.	_____+_____	Ø	1_W	1_W			

Analysis of exceptions. Exceptionality comes from higher-ranked UR constraints.

19. OPEN+MA → [mamulat]

Input: OPEN

	UR	SR	MA→ /MA/	UM→ /UM/	OPEN→ /MULAT/	OCP
a.	/ma+mulat/	[ma+mulat] ☞				L
b.	/ma/+_____	[ma]			1_W	
c.	_____+/mulat/	[mulat]	1_W			L
d.	_____+_____	Ø	1_W		1_W	L

What about wumagajwaj? ‘wumagajwaj’ is problematic. If–*um*– ineffability comes from failure to spell-out *–um–*, then there should not be any root-specific exceptions, since roots are always spelled out, including in cases of ineffability.

One solution is to add UR constraints that can assign a single UR to multiple meanings. This sort of constraint is independently necessary for other phenomena, e.g. preposition+determiner suppletion in Romance (in French, 'à le' → 'au').

It should be noted that this sort of analysis can also handle exceptions in MParse.

M-Specific MParse

M-specific MParse is unavailable to account for the exceptions in Tagalog (see Wolf & McCarthy 2009 for a similar conclusion for Norwegian).

MParse. In an MParse analysis, a gap is the result of mapping an input to the null output /X/ ➔ Ø. There is only one gap candidate, the null output, and there is no such thing as a gap candidate with partial morphological structure.

The constraint MParse is violated by the null output and no other candidate. Wolf & McCarthy (2005:18) suggest morpheme-specific MParse as a way of accounting for exceptions to gaps. A constraint for reduplicant exceptionality in Tagalog:

20. MParse(red) — Assign a violation mark if the output is the null output, and the input contains red.

If a morpheme surfaces in an OCP environment, its MParse constraint will be ranked above OCP. An input containing this morpheme will not be ineffable, an undesirable result.

21. Reduplication occurs both in and outside of gaps (Orgun & Sprouse 1999)

9a	*m-um-i-misti na (um+red+misti)	it's misty now
9b	mu-mumug-in (red+gargle)	will gargle

22. Ranking paradox with MPARSE(RED)

	INPUT: /RED+MUMUGIN/			MPARSE (RED)	OCP
a.	/RED+mumugin/	[mumumugin]	☞		1
b.	/RED+mumugin/	ineffable		1W	L
c.	/um+RED+misti na/	[mumimistina]	💣		1
d.	/um+RED+misti na/	ineffable		1W	L
e.	/um+meri/ … /RED/	[mumeri … RED]	💣		1
f.	/um+meri/ … /RED/	ineffable		1W	L

UR-in-EVAL. In the UR-IN-EVAL analysis, the mappings "UM + RED + MISTY → /um-RED-misti/ → *ineffable*" and "RED + GARGLE → /RED-mumugin/ → [mumumugin]" are compatible.

The paradox is avoided on account of the fact that RED is always spelled out, even in the ineffable candidate (23e).

23. No ranking paradox with UR constraints. Ineffability for

	SR	UR		RED → /RED/	OCP	UM → /UM/
a.	/RED+mumugin/	[mumumugin]	☞		1	
b.	___+/mumugin/	[mumugin]		1W	L	
c.	/RED+mumugin/	Ø		1W	L	
d.	/um+RED+misti na/	[mumimistina]			2W	L
e.	/___+RED+misti na/	[mimistina]	☞		1	1
f.	/um+___+misti na/	[mumistina]		1W	1	L

EXAMPLE 2: TURKISH

24. No derived monosyllabic words (Ito & Hankamer 1989)

a.	/fa/	[fa]	the note 'fa'	CV ➔ CV
b.	/je/	[je]	eat!	CVC ➔ CVC
c.	/kon/	[kon]	alight! (to a bird)	(1σ underived)
d.	/jen/	[jen]	conquer!	
e.	/fa-m/	*ineffable* *[fam]	fa-1.sg.gen	CV-C ➔ gap
f.	/je-n/	*ineffable* *[jen]	eat-pass	(1σ derived)
g.	/fa-miz/	[famiz]	fa-1.pl.gen	CV-CV ➔ CVCV
h.	/je-n-r/	[jenir]	eat-passive-aorist	(2σ derived)

25. The aorist morpheme is exceptional (Ito & Hankamer 1989)

a.	/de-r/	[der]	eat-aorist	CV-C ➔ CVC
b.	/ye-r/	[yer]	say-aorist	(aorist)
c.	/de-n/	*ineffable* *[den]	say-pass	CV-C ➔ gap
d.	/ye-n/	*ineffable**[yen]	eat-pass	(passive)

26. Raffelsiefen (2004) reports that some musicians do not have a gap for the form "my do",

  a. This might be related to frequency (Albright 2003: fn 24)

  b. Ineffability is less common for high-frequency words (Albright 2008, Lofstedt 2010)

  c. Analyzing this exception requires a UR constraint like the one uses for "wumagajwaj"

27. Basic analysis — Ineffability results from blocking the spell-out the suffix /m/ or /n/ to satisfy the constraint $\text{WD-MIN}_{\text{DERIVED}}$

28. $\text{WD-MIN}_{\text{DERIVED}}$ — Assign a violation if the output contains a polymorphemic monosyllabic word. (Ito & Hankamer 1989, Downing 2006: 100-102)

29. Ranking: DO-1.SG → /dom/; AORIST → /r/ ≫ WD-MIN ≫ PASSIVE → /n/; SG.GEN → /m/

EXAMPLE 3: TUVAN

30. No intervocalic velars (Harrison 2000: 108)

a.	*či-gen	
	*[či-en]	eat-Past
	*[če-en]	
b.	či-p-gen	eat-CV-Past
c.	či-p aldɨm	eat-CV Aux-Past

31. Many roots are exceptional (Harrison 2000: 90)

a.	araga	alcohol	∃VGV (underived)
b.	čugaala-ar	speak-Future	
c.	agaar	air	
d.	igil	horsehead fiddle	
e.	*či-gen	eat-Past	∄V-G (derived)

32. Basic analysis — Ineffability results from blocking the spell-out the suffix –gen to satisfy the constraint *VKV.

33. *VKV — Assign a violation for every vowel-velar-vowel sequence in the output.

34. Ranking — ALCOHOL → /araga/, etc. ≫ *VKV ≫ PAST → /gen/

EXAMPLE 4: NORWEGIAN

35. No sonority sequencing violations (Rice 2007:202-203)

a.	/løft/	[løft]	lift!	CVCC ➔ CVCC
b.	/spis/	[spis]	eat!	(good coda cluster)
c.	/åpn/	*ineffable* *[åpn]	open!	CVCC ➔ gap
d.	/sykl/	*ineffable* *[sykl]	cycle!	(bad coda cluster)
e.	/padl/	*ineffable* *[padl]	paddle!	
f.	/å åpn-e/	[åp.ne]	to open	CVCC-e ➔ CVC.Ce
g.	/å sykl-e/	[syk.le]	to cycle	(no coda cluster)
h.	/å padl-e/	[pad.le]	to paddle	

36. Nouns are exceptional — sonority sequencing violations are repaired with epenthesis

a.	/sykl/	[sykel]	*[sykl]	*effable!*	bike	CVCC ➔ CVCeC
b.	/adl/	[adel]	*[adl]	*effable!*	nobility	(noun)
c.	/hindr/	[hinder]	*[hindr]	*effable!*	hinder	
d.	/sykl/	*ineffable* *[sykl]			cycle!	CVCC ➔ gap
e.	/padl/	*ineffable* *[padl]			paddle!	(verb)

37. Basic analysis — Ineffability results from blocking the spell-out of bare roots to satisfy SONSEQ.

38. SONSEQ — Assign a violation for every coda cluster with rising sonority, e.g., *dl, *kl, *pn. (Kristoffersen 2000, Rice 2003)

39. Ranking — BICYCLE → /sykl/ ≫ SONSEQ ≫ CYCLE → /sykl/

40. Norwegian also demonstrates the same ranking paradox as Tagalog. This ranking paradox is identified in Wolf & McCarthy (2009), and illustrated using the data below.

41. Noun…verb maps to a gap (Rice 2007: 204)

a. Sykl opp bakken — bike up the.hill

b. *Sykl ned bakken — bike down the.hill

Future work

42. Under the current theory, exceptions to ineffability are determined and learned on a UR-by-UR basis.

43. Empirically, exceptions to ineffability cluster together.

    a. Part of speech (Norwegian): nouns are exceptions.

    b. Root/affixhood (Tuvan, Turkish): bare roots are exceptions.

44. One way to capture these facts is to flesh out the theory to include morphological features.

    a. Faithfulness constraints that require spell-out of features (à la Wolf 2008).

    b. Using features permits reference to entire sets of URs (e.g., all URs that express femininity, all URs that have noun-features).

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