The Cycle and Lexical Phonology (sketch)

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Words from Icelandic and Catalan have presented cases that appear to show rule-ordering paradoxes (Kenstowicz, 1994).

Catalan

	'grind'	'sell'
3sg.	mol	bɛn
2sg.	mol-s	bɛn-s
1sg.	mol-k	bɛŋ
3sg. past	mul-íə	bɛn-íə

★ Provide a rule-ordering account of the above.

Now consider the forms below. Note that the underlying form of 'twenty' is assumed to be /bint/.

bint-ə́	'twentieth'
bin	'twenty'
bim pans	'twenty breads'
biŋ kaps	'twenty heads'

★ What does this data say about the ordering of the rules you provided?

Sundanese

In Sundanese, nasalized vowels are predictable.

1.	akar	'root'	10.	anõm	'young'
2.	abot	'heavy'	11.	luhur	'high'
3.	amĩs	'sweet'	12.	mãhãsiswa	'student'
4.	handap	'light'	13.	mãke	'to use'
5.	awon	'bad'	14.	mãrios	'to examine'
6.	konẽŋ	'yellow'	15.	mĩãk	'to stand aside'
7.	mãhĩr	'skillful'	16.	nĩʔĩr	'to pierce'
8.	mõhẽhẽd	'poor'	17.	mãhãl	'to be expensive'
9.	mərri	'duck'	18.	kumãhɨ	'how'?
			19.	mãlak	(hypothetical)

Now consider the data below which show singular and plural forms. The plural forms are infixed with either [-ar-] or [-al-] (do not worry about which for now) after the initial consonant.

singular	plural	
kusut	karusut	'messy'
gətol	garətol	'diligent'
combrek	calombrek	'to dry'
nũgar	nãlũgar	'to dig up'
nĩʔĩs	nãrĩʔĩs	'to cool oneself'
mõẽkən	mãrõẽkən	'to dry'

★ Does your current analysis make the right predictions? How can the infixation word formation process be organized with respect to the phonology to derive the plural forms?

Icelandic

Icelandic has a processes of [u]-epenthesis

dag+ur	'day m.nom.sg.'	bæ+r	'farm m.nom.sg.'
tek+ur	'take 2/3sg.pres.ind.'	næ+r(ð)	'reach 2/3sg.pres.ind.'

It also has a process of j-deletion.

bylj+ar	‘snowstorm gen.sg.’	krefj+i	‘request 2pl.’
bylj+ir	‘snowstorm nom.pl.’	krefj+a	‘request 3pl.’
bylj+i	‘snowstorm acc.pl.’	krefj+um	‘request 1pl.’
bylj+a	‘snowstorm dat.pl.’	kref	‘request 1sg.’
bylj+um	‘snowstorm dat.pl.’	kref+ur	‘request 2/3sg.’
byl	‘snowstorm acc.sg.’		
byl+s	‘snowstorm gen.sg.’		
byl+ur	‘snowstrom nom.sg.’		

★ What kind of relationship (interaction/ordering) are these two processes in?

Icelandic also exhibits a process of u-umlaut.

barn	‘child’	börn-um	dat.pl.
svangt	‘hungry’	svöng-u	dat.sg.
kall-a	‘I call’	köll-um	‘we call’

The data below suggests how u-umlaut interacts with u-epenthesis.

/harð+um/	hörðum	‘hard dat.pl’
/kalla+um	köllum	‘call 1sg’
/dag+r/	dagur	‘day nom.sg’
/hatt+r/	hattur	‘hat nom.sg’
/hatt+um/	höttum	‘hat dat.pl’

★ How do the two processes interact?

There is also a syncope process in Icelandic. While this process applies before case and derivational endings, it does not before the enclitic articles -inn and -ið.

	‘hammer’	‘acre’	‘head’	‘day’	‘kettle’	‘gods’
nom.sg.	hamar	akur	höfuð	dag+ur	ketil+l	regin
dat.sg.	hamr+i	akr+i	höfð+i	dag+i	katl+i	ragn-a
inf.	hamr+a					
dat.pl.		ökr+um			kötl+um	rögn+um
def.nom.sg.	hamar#inn	akur#inn	höfuð#ið	dag+ur#inn		

★ Now what does the analysis look like?

1 Lexical phonology

1.1 Overview

Kiparsky argues that this is not enough (see Pesetsky 1979 for an earlier proposal along the same lines). Different sub-grammars apply at different levels of morphology (in the lexical component), and an additional sub-grammar (postlexical) applying after the syntax. (WFR= Word Formation Rule.)

Lexicon		English example
	Root	
LEVEL 1	P-rules ↓ ↑ WFR, if any	stress, trisyllabic shortening primary inflection (umlaut, ablaut, irregular past-tense) and derivation (-al, -ous, -th, im-)
LEVEL 2	P-rules ↓ ↑ WFR, if any	compound stress secondary derivation (un-, -ness, -er) and compounding
LEVEL 3	P-rules ↓ ↑ WFR, if any	laxing secondary inflection (regular plural and past-tense)
SYNTAX		
Postlexical phonology	postlexical rules	flapping, aspiration, …

Should the root pass through the Level 1 rules first or go straight to WFR? Not clear.

1.2 Cyclicity in the lexical component

- Within each level, the phonological rules apply after each morphological operation (thus the bidirectional arrows above).
- Evidence/examples: WFRs can be sensitive to derived phonological properties: e.g. -ize, which don't apply to stems with final stress (e.g. *públic* vs. *públicize*). Kiparsky's interpretation is that stress rules apply to the stem on the previous cycle.

- Internal brackets are erased after each level, so WFRs and phonological rules don't have access to morphological information from the previous level. Postlexical rules don't have access to any bracketing.
- Evidence/examples: Postlexical rules are automatic in the sense that they don't admit of lexical exceptions, and don't care about morphological information.

Strict Cycle Condition

The idea is to allow lexical rules (at least those that change feature values, rather than filling in underspecified ones) to apply only to environments newly made, by either a morphological operation or a phonological rule in the same cycle. This phenomenon is known as *non- derived environment blocking* (NDEB).

Here are two classic examples, Finnish and Sanskrit, from Kiparsky.

1.2.1 Finnish

Ignore various other rules: vowel harmony, degemination, a/o …

to X	*Let him/her X!*	*'active instructive infinitive II'*	*she/he was Xing*	
halut+a	halut+koon	halut+en	halus+i	'want'
n et+a	noet+koon	noet+en	nokes+i	'smudge(?)'
piet+æ	piet+køøn	piet+en	pikes+i	'pitch'
filmat+a	filmat+koon	filmat+en	filmas+i	'film'
ll+a	l+k n	ll+en	l+i	'be'
aja+a	aja+k n	aja+en	aj +i	'go'
puhu+a	puhu+k n	puhu+en	puhu+i	'speak'

So t $\longrightarrow$ s / ____ i . Can we modify the rule to deal with these cases?

tila	'room'	lahti	'Lahti'	valti n	'public'
æiti	'mother'	mæti	'roe'		
silti	'however'	lim naati	'lemonade'		
paasi	'boulder'				
sinæ	'you (sg.)'				
kuusi	'six'				

Another rule is needed to account for this vowel alternation:

joke+na	'river' essive sg.	joki	'river' nom.sg.
mæke+næ	'river' essive sg.	mæki	'hill' nom. sg.
æiti+næ	'mother' essive sg.	æiti	'mother' nom.sg.
kahvi+na	'coffee' essive sg.	kahvi	'coffee' nom.sg.

How should the two rules be ordered, given these data? (ignore h/k alternation)

vete+næ	'water' essive sg.	vesi	'water' nom.sg.
kæte+næ	'hand' essive sg.	kæsi	'hand' nom. sg.
yhte+næ	'one' essive sg.	yksi	'one' nom. sg.

★ What's the problem in [vesi]?

1.2.2 Sanskrit

'ruki' rule of Sanskrit: s ⟶ ʂ / {r, u, k, i} ____

da+daː+si	'you give'	bi+bhar+ʂi	'you carry'
kram+sja+ti	'he will go'	vak+ʂja+ti	'he will say'

Now consider:

	bisa	'lotus'
	busa	'mist'
	barsa	'tip'
	saːs	'instruct'
ablaut	/sas+ta/ → sista → [siʂ+ʈa]	participle
	ghas	'eat'
V-deletion	/ga+ghas+anti/ → dʒa+ks+anti → [dʒa+kʂ+anti]	3 pl.

★ How is this like Finnish?

Icelandic again

Let's try to apply Lexical Phonology to Icelandic (from Kiparsky 1984). Recall the problem from Anderson: we have to order u-umlaut before syncope (/bagg+ul+i/ → [bögg+l+i]—counterbleeding) but we also have to order syncope before u-umlaut (/alin+um/ → [öln+um]—feeding)

★ Shifting to Lexical Phonology, is syncope lexical or postlexical? u- umlaut? u-epenthesis?

★ Let's try to resolve the ordering paradox using Lexical Phonology. We should do derivations for: *dag+ur, dag+ur#inn, byl+ur, hamar#inn, akur, ökr+um, bögg+l+i, stað#num.*

★ Some more data—are they consistent with our analysis?

	Nikulás	'Nicholas'
/dag+r#inn/	dagurinn	'the day nom.sg.'
/lifr#inn/	lifrin	'the ? nom.sg.'

References

Kenstowicz, Michael (1994). *Phonology in Generative Grammar*. Blackwell Publishers.