

The Phonology-Syntax Interface

Interactions Between Theory and Analysis

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Abstract

This class will focus on how different morphosyntactic analyses impact what the interface and the phonology are called upon to explain, as well as how different phonological analyses impact what the morphosyntax is called upon to explain. We will discuss how DM and Nanosyntax may differ in their predictions regarding phonological domains, and how underspecified autosegmental underlying representations of vocabulary items compare to allomorphic and readjustment rule analyses of surface variation. Phenomena to be discussed include pronominal and verbal syntax, allomorphy, and phonology.

Part 1

How our presuppositions can shape our analyses.

- ▶ What is a lexical item?
 - Morphosyntactic properties.
 - Syntacticosemantic properties.
 - Phonological properties.
- ▶ How are syntactic objects built?
- ▶ How and when are syntactic objects morphologized?
- ▶ How and when are morphemes phonologized?

What is a lexical item?

Determining Underlying Representations

What is stored in the lexicon?

- ▶ When a lexical item is phonologically invariant, syntactically invariant, and semantically invariant.
 - Does this ever really occur? Let's assume for argument's sake that this is the case for English *un-*.
 - What does its morphological structure look like in DM and in Nano?
 - What does its phonological underlying representation look like?
- (1) e.g., *unhappy* [ʌnhæpij], *unlawful* [ʌnlɑf], *undo* [ʌnduw], *untie* [ʌntaj], *unbirthday* [ʌnbɪθdeɪ].

Determining Underlying Representations

What is stored in the lexicon?

When a lexical item is phonologically variant, but invariant in the syntax and semantics.

- ▶ Does this ever really occur? Let's assume for argument's sake that this is the case for French *bel/beau*.
- ▶ What does its morphological structure look like in DM and in Nano?
- ▶ What does its phonological underlying representation look like?

(2) e.g., *un bel* [bɛl] *ami* 'a handsome friend.M', *un beau* [bo] *garçon* 'a handsome boy.M'.

Determining Underlying Representations

What is stored in the lexicon?

When a lexical item is phonologically invariant, but variant in the syntax and/or semantics.

- ▶ Does this ever really occur? Let's assume for argument's sake that this is the case for English *verbing*.
 - ▶ What does its morphological structure look like in DM and in Nano?
 - ▶ What does its phonological underlying representation look like?
- (3) e.g., *chair* 'seat.NOMINAL', 'manage a meeting.VERBAL', *run* 'an act of running.NOMINAL', 'perform the action of running.VERBAL', *verb* 'a verb.NOMINAL', 'create a verb by zero derivation.VERBAL'.

How are syntactic objects built?

The syntax

What is merged?

What is moved, and why?

The syntax

What is merged?

- ▶ Nano: Features, complex left branches (separate workspaces)

What is moved, and why?

The syntax

What is merged?

- ▶ Nano: Features, complex left branches (separate workspaces)
- ▶ DM: Features or Feature Bundles, complex left branches (separate workspaces)
 - This seems to come out to the same thing structurally, I think, as one could say that all DM feature-bundles are left branches, but are operationally distinct.

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The syntax

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What is moved, and why?

- ▶ Nano:
 - What: Constituents, targeted or pied-piped.
 - Why: Due to the lexicalization algorithm. Also to check features?

The syntax

What is merged?

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What is moved, and why?

- ▶ Nano:
 - What: Constituents, targeted or pied-piped.
 - Why: Due to the lexicalization algorithm. Also to check features?
- ▶ DM: Features or Feature Bundles, complex left branches (separate workspaces)
 - What: Constituents: phrases or heads, targeted or pied-piped.
 - Why: To check features. Also lowering, local dislocation, fusion, fission.

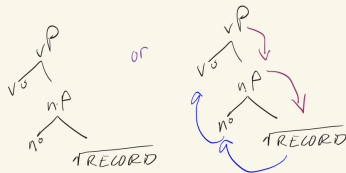
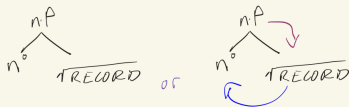
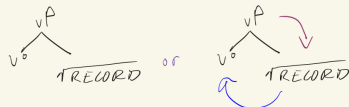
How and when are syntactic objects
morphologized?

What DM thinks about vocabulary insertion

The received position

- Vocabulary items target heads.
 - Syntactic heads can be simplex or complex.
- (4) a. They **record** [ɹɛkɔɪd] albums.
 b. They played a **record** [ɹɛkɪd].
 c. Can you **record** [ɹɛkɪd] me? This one is finished.
- Vocabulary items target constituents. (e.g., Radkevich (2010))

Note the phonological effect, and the possible morphological complexity of the 'root'. See Arad (2005) for discussion of this regular pattern.



What DM thinks about allomorphy

Morphologically-conditioned allomorphy

(5) a. You are **good**.

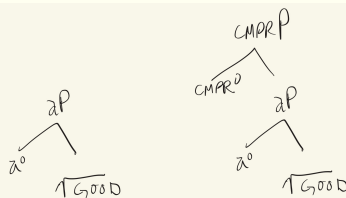
b. I am **better**.

$\sqrt{\text{GOOD}} \Leftrightarrow [\text{ɡʊd}] / a^0$

$\sqrt{\text{GOOD}} \Leftrightarrow [\text{bet}] / a^0 + \text{CMPR}^0$

$a^0 \Leftrightarrow []$

$\text{CMPR}^0 \Leftrightarrow [\text{əɪ}]$



What DM thinks about allomorphy

Phonologically-conditioned allomorphy

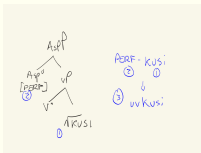
- Kwamera Perfective allomorphy (Paster, 2006, 32-33)

- (6) a. r-p-ua ia-p-**in**-ata ia-p-**in**-osi
3sg-COND-state 1exc-COND-PERF-see 1exc-COND-PERF-hit
'If I had seen it, I would have hit it'
- b. in r-**uv**-kusi kafete
he/she 3sg-PERF-weave mat
'She wove a mat'

PERF $\Leftrightarrow$ [in] / V_{|A|} (V_[+low])

PERF $\Leftrightarrow$ [uv] / elsewhere

Linearization, then Vocabulary Insertion

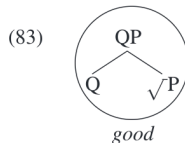
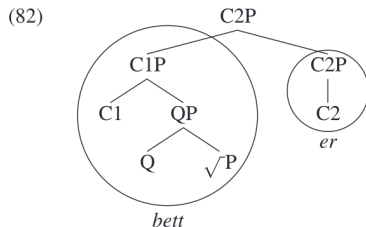


What Nanosyntax thinks about allomorphy

Morphologically-conditioned allomorphy

Technically, there isn't any.

- (7) a. You are **good**.
b. I am **better**.



(Caha et al., 2019, 505)

What Nanosyntax thinks about allomorphy

Phonologically-conditioned allomorphy

- Kwamera Perfective allomorphy (Paster, 2006, 32-33)

- (8) a. r-p-ua ia-p-**in**-ata ia-p-**in**-osi
3sg-COND-state 1exc-COND-PERF-see 1exc-COND-PERF-hit
'If I had seen it, I would have hit it'
- b. in r-**uv**-kusi kafete
he/she 3sg-PERF-weave mat
'She wove a mat'

Open questions

- When can spell-out see the phonology in Nanosyntax?
- If lexicalization can see the phonology, what else can it see? Why or why not?

How and when are morphemes phonologized?

What DM thinks about phonology

The PF branch

Syntax is sent to PF in phases.

(lowering, fission, fusion)

Linearization.

Spell-out inserts VIs from the most to least embedded node in the tree.

- ▶ Allomorphy is a phase-internal operation.
- ▶ Allomorphy may also be subject to linear adjacency, especially in the case of PCA.

Phonology

- ▶ DM itself says nothing about phonology, but assumes that it applies at the end of each phase.

What Nanosyntax thinks about phonology

PF equivalent?

- ▶ The Lexicalization algorithm?
- ▶ Are there restrictions on the size and shape of a lexical item?
 - In other words, are there restrictions on what parts of the tree can be part of the same overwriting operation?

Phonology

- ▶ Nanosyntax itself says nothing about phonology.
- ▶ Is phonology subject to cyclic spell out in a way that is derivable from the Nanosyntactic algorithm?
- ▶ Does Nanosyntax allow for something like ‘phases’?

A nice example of cyclic phonological effects

Chukchansi 'templatic' phonology

- (9) Past Tense verb forms : different shapes of roots [V-PAST]
 - a. CVC /wan/ → [wa.n—it] 'just gave'
 - b. CV:C /ma:x/ → [ma:.x—it] 'just collected'
 - c. CVCC /ʔaml/ → [ʔam.l—it] 'just helped'
- (10) Causative : single shape (iambic foot) [[V] CAUSE-PAST]
 - a. CVC /wan/ → [wa.na:-.la-t] 'just made X give'
 - b. CV:C /ma:x/ → [ma.xa:-.la-t] 'just made X collect'
 - c. CVCC /ʔaml/ → [ʔama:.le-t] 'just made X helpe'
- (11) Di-syllabic forms : No change to UR [[V] CAUSE-PAST]
/tʃʰedma/ → [tʃʰed.ma-.la-t] 'just made X think'

(Guekguezian, 2017, 82)

What every morphosyntactician needs to know
about phonology but is afraid to ask.

What *is* allomorphy?

Allomorphy *large*

- ▶ Any alternation to the surface form of a morpheme.
- ▶ A fairly useless notion, as it lumps regular phonology (9) and suppletion (10) into the same group.

(12) Flapping
[ðəkær ətæktærm]
The cat attacked Adam.

(13) Suppletion
One **person**. Two **people**.

Allomorphy *narrow*

- ▶ The insertion of distinct underlying representations conditioned by the morphosyntactic (13), lexical ((14), to be questioned sometime this week), or phonological environment (remember the Kwamera Perfective in (8)).
- ▶ The notion of *Readjustment Rules* is also often appealed to here : rules that mix phonological and morphosyntactic information (morpheme-specific phonology).

(14) /ɪ/ → [æ] / [PAST] (sing, ring ...)

How do we know if it's allomorphy?

It's allomorphy *only if* it's not phonology.

- ▶ Lexicalization = memorization of information that is not derivable.
- ▶ If it's phonology, it's derivable, and therefore not allomorphy.
- ▶ Yes, you may also memorize things you have derived (Bermúdez-Otero & Trommer, 2012). This is not relevant here.

What theory of phonology is correct?

- ▶ Autosegmental Phonology of some sort.
- ▶ Substance Free Phonology of some sort.
- ▶ Syllable structure of some sort.
- ▶ Metrical structure of some sort.

Constraints vs Rules?

- ▶ Neither rule-ordering nor constraint-evaluation are theories of phonology, but theories of processing.
- ▶ The important part of phonology is the structure you put in your representations, and the ways in which the structure must behave depending on its environment.

How do we know if it's allomorphy?

Malayalam agentive /-ikk/ (add an external argument)

(15) a. Transitive (Agentive)

avan kalam pottⁱkk-um
he.nom pot.acc break.fut

‘He will break the pot.’

b. Transitive (Agentive)

ammu ced i-kal nana^{ccu}
Ammu.nom plant-pl.acc water.pst

‘Ammu watered the plants.’

c. Causative

maṛa kriṣib^foomi nana^{yiccu}
rain.nom farmland.acc make-wet.pst

‘Rain caused the field to get wet.’

d. Transitive + Causative

cinnu [ammuvi-ne koṇḍi] ced i-kal nana^{ppiccu}
Chinnu.nom [Ammu-acc with]_{PP} plant-pl.acc make-water.pst

‘Chinnu made Ammu water the plants.’

How do we know if it's allomorphy?

By knowing the (morpho)phonology of the language

- ▶ Do not assume if something *looks unnatural* or *looks irregular* that it is.
- ▶ Regularity = application whenever the appropriate environment is present.
- ▶ Regularity $\neq$ statistically important.
- ▶ Regularity $\neq$ every time a surface X appears.
 - A surface [k], for example, can be derived from an underlying /k/, /t/, /T/, /ŋ/ etc...

By being wary of our mental FLAB

(16) Familiar Language Abstraction Bias (FLAB)

A linguist's degree of fluency in a language L is inversely proportional to the degree of abstractness that linguist will entertain for analyses of L.

Newell (under review)

Necessary phonological tools

(Under)specification = lexicalization

- ▶ Morphemes can be underspecified for syllabic space (floating segments).
- ▶ Morphemes can be syllabic space (CV / mora / syllable).
- ▶ Segments can be underspecified for features (e.g., voice, place).
- ▶ Morphemes can be floating features (e.g., nasal (|L|), tone (|H/L|), labial (|U|))
- ▶ And combinations of the above.

Chaha (Lowenstamm, 1996)

(16) Feminine palatalization of a-final Imperatives

	Root	masc.	fem.	
a.	√qTA	qITa	qICä	
b.	√xdA	xIda	xIjä	
c.	√b ^h kA	b ^h ika	b ^h ik ^h ä	
d.	√gfA	gIfa	g ^h ifä	
e.	√kbA	kIba	k ^h ibä	
f.	√smA	sIma	sImä	*šImä
g.	√dIfA	dIfa	dIfä	*jIfä
h.	√brtA	bärta	bärkä	
i.	√qrba	qämba	q ^h ämbä	

Necessary phonological tools

Positional effects

Word-initial and post-coda onsets are strong (Coda Mirror (Ségéral & Scheer, 2008)).

Geminates (incl. long vowels, which often = stressed vowels) are strong.

Intervocalic and coda Cs are weak (sometimes in different ways).

Word-final Cs are often *not* codas.

RT and sC clusters are *not* complex onsets.

Coratino

- (17) a. 'rotə 'wheel' / rət'eddə 'wheel-DIM'
b. 'povərə 'poor' / povə'riəddə 'poor-DIM'
c. 'orə 'hour' - or'ettə 'hour-DIM'

(Bucci, 2013, 2018)

Necessary phonological tools

Substance-Free Phonology : Don't be fooled by phonetics

- ▶ Segments with different URs can have the same phonetics.
- ▶ Segments that have the phonetics of obstruents can be phonological sonorants (and vice-versa)
- ▶ Stress has no stable phonetic correlate, and can be realized as vowel quality or even consonant length.

Brazilian Portuguese

	base	prefixed	prefix forms	gloss
a.	[ˈgratu]	[ĩˈgratu]	[ĩ]	grateful, ungrateful
b.	[feˈlis]	[ĩfeˈlis]	[ĩ]	happy, unhappy
c.	[aˈtʃivu]	[inaˈtʃivu]	[in]	active, inactive
d.	[ˈutʃiw]	[iˈnutʃiw]	[in]	useful, useless
e.	[leˈaw]	[ileˈaw]	[i]	legal, illegal
f.	[moˈ a aw]	[imoˈ a aw]	[i]	moral, immoral
g.	[h eˈaw]	[i h eˈaw]	[i]	real, unreal

Conclusions of Part 1

Know your syntax

- ▶ Your syntactic constituents will determine your lexicalization possibilities.
- ▶ Your syntax will determine the timing of spell out.

Know your phonology

- ▶ Your phonology will determine whether an alternation is allomorphy *narrow* or not.
- ▶ If it's not allomorphy, your lexicalization algorithm doesn't have to deal with it.

Know your interface

Next, we will:

- ▶ Look more at the evidence for cyclic spell out/phonological domains.

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