

# Outline

- 1 Intro
- 2 Day 1: SPE and sons
- 3 Day 2: The prosodic hierarchy and morphology
- 4 Day 3: Morphology within OT
- 5 Day 4: GP and CVCV-phonology
- 6 Day 5: DM-inspired approaches**

## Affixes as roots?

Let's read together Lowenstamm's (2014) first two paragraphs (example ordering does not follow Lowenstamm's):

This chapter is devoted to the elucidation of a puzzle: under current assumptions, Distributed Morphology (henceforth DM) stalls when confronted with a great classic of English grammar, possibly the most central fact around which the theory of SPE was built, Stress Shift. English Stress Shift, documented [below], is the phenomenon whereby stress can be seen to move progressively rightward as affixes are added to a base.

(88)      átom, atómic, atomícity

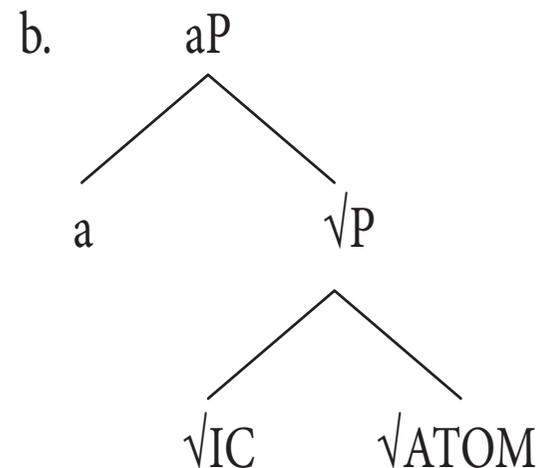
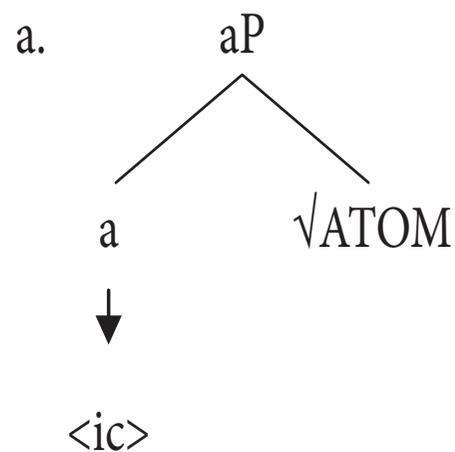
I claim that two assumptions, both unnecessary, indeed foreign to DM, are responsible for the apparent inability of DM to handle Stress Shift. When those assumptions are discarded and DM is left to draw on the resources of its own conceptual toolbox, not only can it handle Stress Shift; it can actually do a better job of it than previous theories. The two assumptions to be done away with appear in (2).

- (89)      a.      “derivational” affixes are categorial exponents  
          b.      domains of Phasal Spell-out are the same thing as the cycles of SPE

## Affixes as roots?

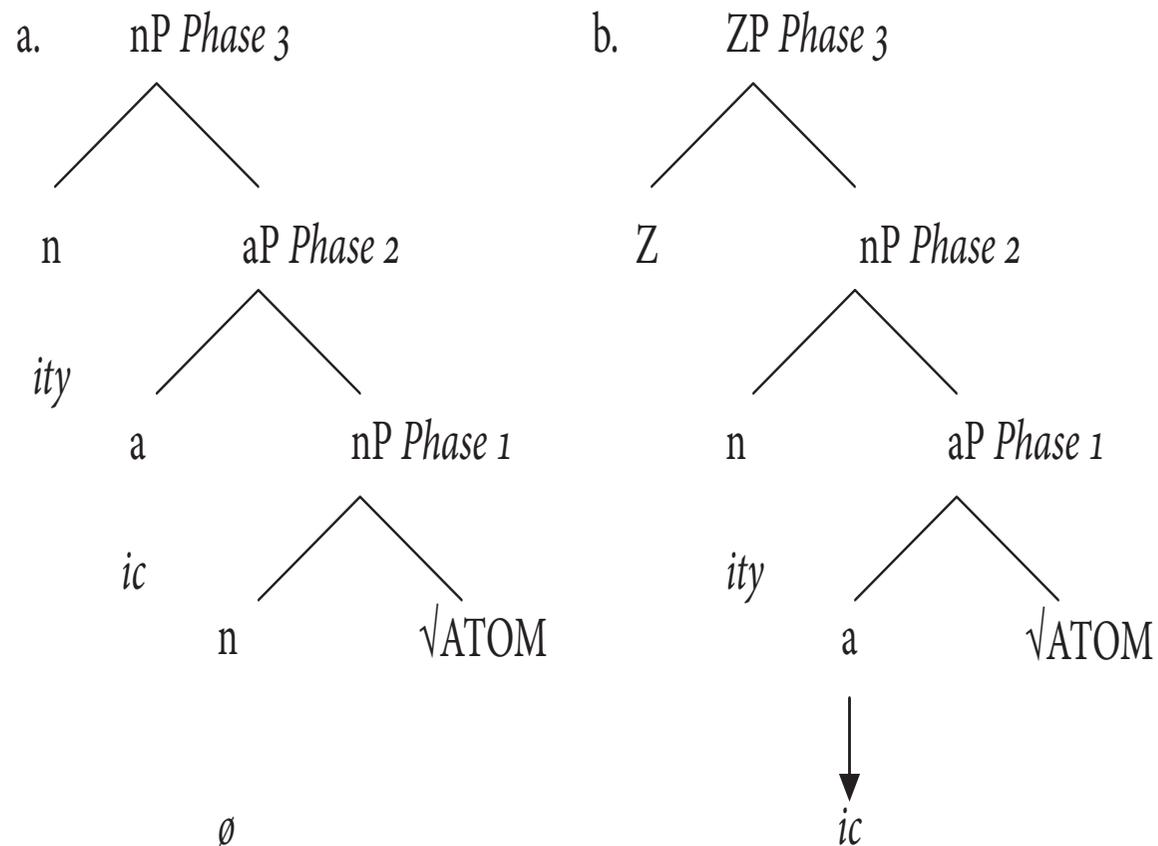
- The reader understands, immediately, what the problems are in DM-based theories.
- Also, Lowenstamm's explicit claim is that derivational affixes must not be analyzed as categorial exponents.

(90) Two different analytical paths:



## Affixes as roots?

(91) Stress shift fails in DM



## Affixes as roots?

According to Lowenstamm (2014:235-236) both Marvin (2003) and Embick's (2010) approaches fail to account for stress shift in *atómicity*:

	a. $[_{aP} a [_{nP} n \sqrt{ATOM}]]$	b. $[_{aP} a \sqrt{ATOM}]$
Marvin (2003)	*[ÁDəmikiDǐ]	*[ÁDəmikiDǐ]
Embick (2010)	*[ÁDəmikiDǐ]	*[ət <sup>h</sup> ÓmikiDǐ]

## Affixes as roots?

Two assumptions since SPE (Lowenstamm 2014:239-240):

- The structure of complex words such as *atomicity* is similar to this: [N ity [Adj ic [N atom ]]], that is the noun *atomicity* contains the adjective *atomic*, which contains the noun *atom*.
- Differential behavior of the two classes of affixes: all theories assume “that the manner of attachment or location of affixes are properties of the affixes themselves: again, some attach close; some don’t; some are cyclic; others are not, etc.”

## Affixes as roots?

As Lowenstamm observes, DM approaches treat different affixes (level 1 vs. level 2 affixes) in the same way:

(92) Different affixes, same structure in DM

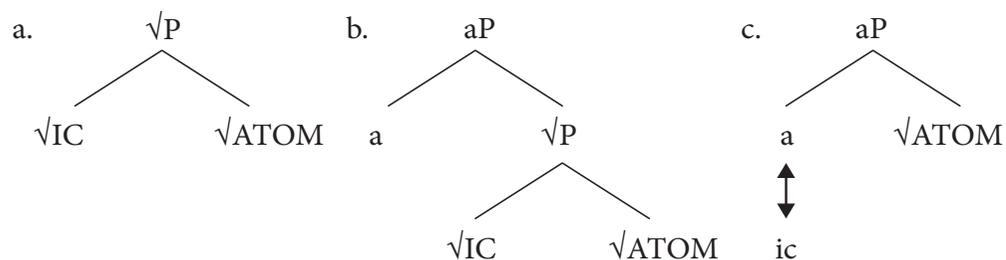
- a. [[ [govern<sub>V</sub>] ment<sub>N</sub>] al<sub>Adj</sub>      b. [a [n [v √]]]
- [[ [object<sub>V</sub>] ion<sub>N</sub>] able<sub>Adj</sub>
- [[ [lead<sub>V</sub>] er<sub>N</sub>] less<sub>Adj</sub>
- [[ [represent<sub>V</sub>] ation<sub>N</sub>] ary<sub>Adj</sub>

In other words:

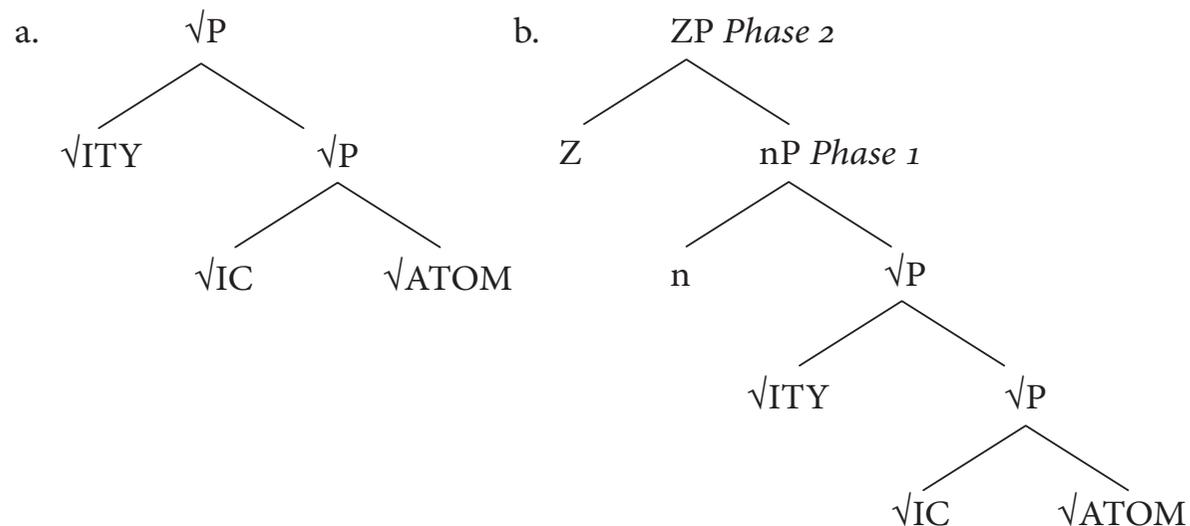
(93) “[I]n pre-Phasal Spell-out theories, domains of phonological interpretation (cycles) are projected from properties of affixes. In DM, in sharp contrast, domains of phonological interpretation (phases) are defined in strictly categorial fashion, and irrespective of what particular Vocabulary Item may eventually ornate a given category.”

# Affixes are roots

(94) Affixes are roots

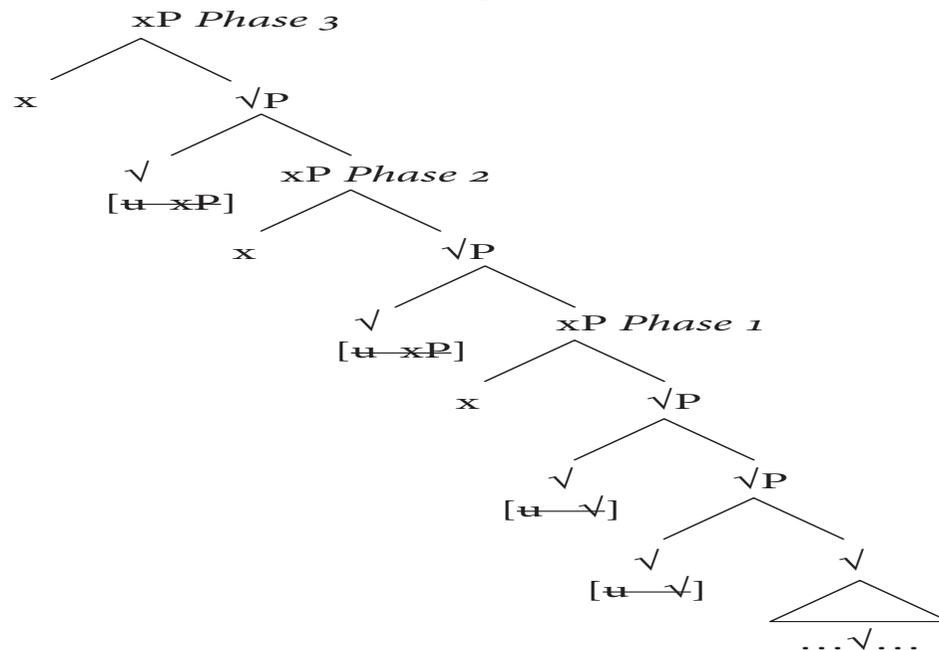


(95) *Atomicity* contains *atomic*, *atomic* contains *atom*



# Affixes are roots

The structure of *atomicitylessness*:



- (96)
- a. Formal similarity between this structure and the results of Lexical Phonology.
  - b. Level/Class 2 affixes outside Level/Class 1 affixes
  - c. In Lowenstamm's model, a third type of affixe is introduced: one which selects for [uX] (see Lowenstamm 2014:250-255)

## Affixes as roots

(97) *-ment* is such a third type of affixes:

√	vP
liga-ment	an=nul-ment
monu-ment	be=little-ment
medica-ment	en=throne-ment
frag-ment	dis=courage-ment
instru-ment	ap=praise-ment
seg-ment	de=fraud-ment
supple-ment	en=force-ment

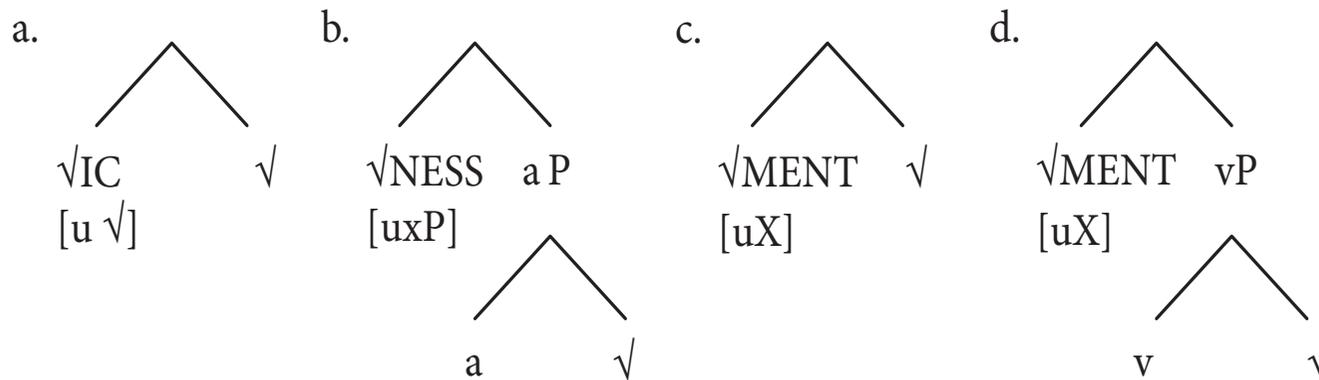
(98) Cyclic phonology is limited to Phase 1:

- a. Roots are the domains of application of phonological rules.
- b. Rules apply on the most deeply embedded root, then reapply on the domain defined by the next adjacent higher root, and so forth.

# Affixes are roots

The typology of affixes as roots:

Feature	Relationship to a root	Involvement in cyclic phonology	Example
[u√]	always local	always	(71a)
[uxP]	never local	never	(71b)
[uX]	a) possibly local	yes, in such case	(71c)
	b) possibly non-local	no, in such case	(71d)



## Newell's analysis

We face the old, well-known problem of class 1 vs. class 2 affixes in English (Newell 2016:1):

- (99)
- a. The class-membership of a given affix is a feature that not only must be memorized, but is also a morphological diacritic.
  - b. This diacritic is necessary iff there is no other relevant distinction between the two groups of affixes.

## Newell's analysis

Representational difference between class 1 and class 2 affixes:

a.	-	C	V		‘-al’ (parental)	
		ə	l	ø		
b.	-	C	V	C	V	‘-er’ (teacher)
		ø	e	ɹ	ø	

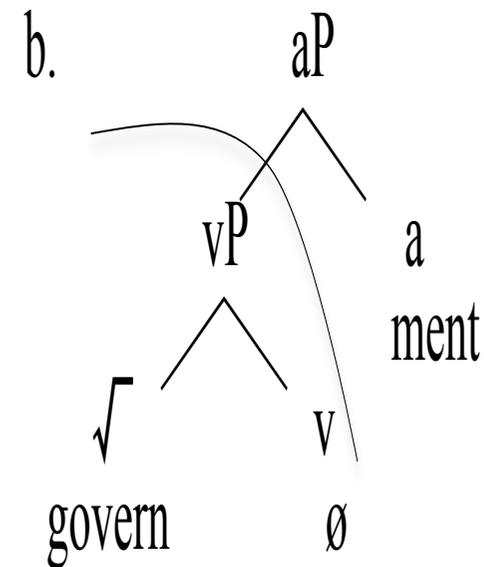
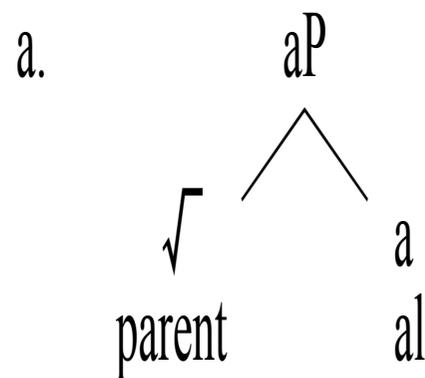
To this representational difference, Newell needs to use extrametricality in order to account for lack of stress shift of Level 2 affixes.

## Newell's analysis

Recall SPE analysis:

- (100) a. parent+al  $\rightarrow$  English Main Stress Rule  $\rightarrow$  [paréntal]  
 b. govern#ment  $\rightarrow$  English Main Stress Rule  $\rightarrow$  [góvern]ment

(101) Standard DM analysis:



## Newell's analysis

Newell reviews Lowenstamm's (2014) analysis, which we have just discussed, and concludes the section: “Lowenstamm (2014), like all previous analyses of Level 1/Level 2 distinctions, proposes that **different subsets of the class of derivational affixes are lexically specified to be inside or outside of a phonological domain.** This type of proposal is argued below to miss a certain generalization that demonstrates that this cannot be the case, and that allows for a cleaner analysis of ‘lexical’ classes.” (Newell 2016:12)

## Newell's analysis

Sequence of Level 2 affixes causes the emergence of multiple domains (Newell 2016:19-20):

(102) Governmentless

- a.  $[[\text{govern}]_{\sqrt{\emptyset}}]_{\text{v}} \rightarrow (\text{g}\Delta\text{v}\text{ə})\langle\text{n}\rangle$
- b.  $[[[\text{govern}]_{\sqrt{\emptyset}}]_{\text{v}} \text{ment}]_{\text{n}} \rightarrow (\text{g}\Delta\text{v}\text{ə})\langle\text{n}\rangle\langle\text{ment}\rangle$
- c.  $[[[\text{govern}]_{\sqrt{\emptyset}}]_{\text{v}} \text{ment}]_{\text{n}} \text{less}]_{\text{a}} \rightarrow (\text{g}\Delta\text{v}\text{ə})\langle\text{n}\rangle\langle\text{ment}\rangle\langle\text{ləs}\rangle$

(103) The C-initial affixes have no motivation to be syllabified with the previous domain (see also Raffelsiefen 1999):

C	V	C	V	C	V	C	V	-	C	V	C	V	C	V	-	C	V	C	V
<b>g</b>	<b>Δ</b>	<b>v</b>	<b>ə</b>	<b>ɹ</b>	<b>∅</b>	<b>n</b>	<b>∅</b>		<b>m</b>	<b>ɛ</b>	<b>n</b>	<b>∅</b>	<b>t</b>	<b>∅</b>		<b>l</b>	<b>ə</b>	<b>s</b>	<b>∅</b>

(Extrametrical elements are bolded.)

## Newell's analysis

So-called Level 1 affixes all begin with floating vowels.

(104) Parental

$[[\text{parent}]_{\checkmark} \emptyset ]_n ]_a \sim [[\text{parent}]_{\checkmark} \text{al}]$

C	V	C	V	C	V	C	V	-	C	V	
								—			
p	ə	r	ɛ	n	∅	t			ə	l	∅

Floatingness and empty position come for free within CVCV phonology!

Note that “only when a phonological element from outside the phase is merged inside the phonological domain of the first phase will the extrametricality determined at the first phase be impacted.” (Newell 2016:18-19)

# Newell's analysis

## (105) Governmental

[[[[[govern]<sub>v</sub> ∅ ]<sub>v</sub> ment ]<sub>n</sub>] al]<sub>a</sub>

a. C V C V C V C V - C V C V C V

| | | | | | | | | | | | | |

g ʌ v ə ɹ ∅ n ∅ m ε n ∅ t ∅

b. C V C V C V C V - C V C V C V C V

| | | | | | | | | | | | | |

g ʌ v ə ɹ ∅ n ∅ m ε n ∅ t ə l ∅

- (106)
- Upon association of the vowel of -al with the final empty vocalic position associated with -ment, the latter is no longer final within its domain according to the Revised Peripherality Condition.
  - The two affixes have been merged phonologically.
  - The syllable -men- is no longer extrametrical, thus must be footed and receives stress according to MSR.

## Newell's analysis

(107) Documentary vs. documentarian

[[[document]√ary]<sub>v</sub>an]<sub>n</sub>

a. C V C V C V C V C V C V C V C V

| | | | | | | | | | | | | | | →

d ə k ø j u m ə n ø t ə ɹ i j ø

b. C V C V C V C V C V C V C V C V C V C V

| | | | | | | | | | | | | | | \ | |

d ə k ø j u m ə n ø t ɛ ɹ i j ə n ø

Newell's analysis does away with the longstanding idea that there are lexical levels in English.

## Newell's analysis and previous accounts

Newell claims hers and Lowenstamm's accounts are absolutist, that is accounts where the Level 1/Level 2 distinction is not morphological or lexical.

Logical possibilities:

- (108) a. No affix triggers a morphosyntactic or phonological cycle = Lowenstamm (2014)
- b. All affixes trigger a cycle = Newell (2016)
- c. Only Level 1 affixes are cyclic, as promoted by a theory such as Halle & Vergnaud (1987) (Which we did not discuss)
- d. Only Level 2 affixes are cyclic, as in Kaye (1995).

# Faust (2014)

## Feminine markers in Modern Hebrew<sup>1</sup>

	Singular	Plural	
a.	pax-it	pax-iy-ot	'can'
b.	xan-ut	xan-uy-ot	'shop'
c.	rakév-et	rakav-ot	'train'
d.	pin-a	pin-ot	'corner'

[t] (regularly) appears on *-a* suffix before adjectival *-i*<sup>2</sup>

	Singular		Adjective	
a.	pin-a	'corner'	pin-at-i	'of the corner'
b.	noc-a	'feather'	noc-at-i	'feather-like'
c.	tkuf-a	'period'	tkuf-at-i	'periodic'
d.	hatxal-a	'beginning'	hatxal-at-i	'initial'

# Faust (2014)

[t] appears on -a suffix in the Construct State (=CS)

	Free State (=FS)		CS	
a.	pin-a	'corner'	pin- <b>at</b> rexov	'street corner'
b.	noc-a	'feather'	noc- <b>at</b> barvaz	'duck feather'
c.	tkuf-a	'period'	tkuf- <b>at</b> mitun	'period of recession'
d.	hatxal-a	'beginning'	hatxal- <b>at</b> seret	'beginning of a movie'
e.	dilém-a	'dilemma'	dilém- <b>at</b> otipron	'Euthyphro's dilemma' <sup>i</sup>

[t] does not appear on -a suffix in seemingly phonologically identical N+Adj

a. CS (N <sub>head</sub> -N <sub>modifier</sub> )		b. FS (N+Adj)	
pin- <b>at</b> kal-a	'bride-corner'	pin- <b>a</b> kaš-a	'difficult corner'
noc- <b>at</b> xasid-a	'stork-feather'	noc- <b>a</b> xamud-a	'cute feather'
tkuf- <b>at</b> šan-a	'period of 1 year'	tkuf- <b>a</b> šon-a	'different period'

# Faust (2014)

The representation of the feminine suffix -a /at/ (Faust 2014:319)

/at/ does not have its own skeletal support; /t/ remains afloat

m	a	d	r	i	x	+	a	t	}	[madrix-a] 'guide (fm.)'	
						/					
C	V	C	V	C	V	C	V				

The floating /t/ finds support in the skeleton of an additional suffix

h	a	t	x	a	l	+	a	t	+	i
						/	\			
C	V	C	V	C	V	C	V	+	C	V

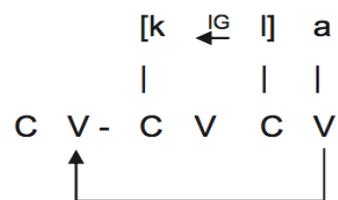
=> [hatxal-at-i] 'initial' (< hatxal-a 'beginning')

# Faust (2014)

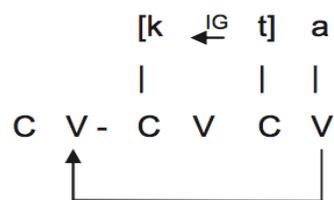
Modern Hebrew has an initial CV in the representation of its words:

Modern Hebrew, Type II

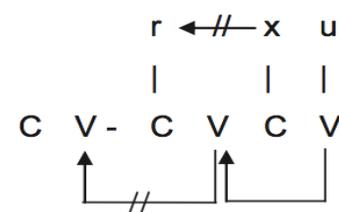
a. klaf 'card'



b. ktav 'writing' <sup>5</sup>



c. \*rxuš => rexuš 'property'



## Faust (2014)

Gaps in the appearance of -t: when it appears, [t] docks onto the initial CV of the following word if this is a N:

The floating /t/ docks on the initial CV of the following word (in bold)

p	i	n	a	t		k	a	l	a
				\					
CV-C V C V +						CV-CVCV => pinat kala 'bride corner'			

[t] is blocked before Adjectives:

The floating /t/ does not dock onto the initial CV of the following adjective

p	i	n	a	t		k	a	š	a	t
				\						
CV-C V C V +						CV-CVCV => *pinat kaša (cf. (12a), N+Adj)				

# Faust (2014)

The difference in behaviour must be found in cyclicity, as usual:

Skeletal and phasal make-up of N vs.  $N_{\text{head}}+N_{\text{modifier}}$

a. N pina 'corner'

$$\begin{array}{cccc} p & i & n & a & t \\ | & | & | & | & \\ CV & - & CV & C & V \end{array} \}_{\text{ProsW}}$$

b. N+Adj => pina kaša 'tough corner'

$$\begin{array}{cccc} p & i & n & a & t & & k & a & š & a \\ | & | & | & | & & & | & | & | & | \\ \{CV & - & C & V & C & V \} & \{CV & - & CV & C & V \} \end{array} \}_{\text{ProsW}}$$

c.  $N_{\text{head}}+N_{\text{modifier}}$  pinat kala 'bride corner'

$$\begin{array}{cccc} p & i & n & a & t & & k & a & l & a & t \\ | & | & | & | & & & | & | & | & | & \\ \{CV & - & CV & C & V & + & CV & - & CV & C & V \} \end{array} \}_{\text{ProsW}}$$

## Faust (2014)

Faust brings additional evidence in favour of the distinction between N+N and N+Adj:

Summary of comparison between N+N and N+Adj

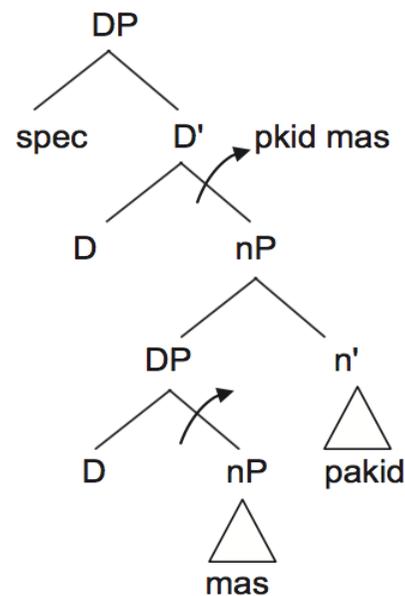
<i>Difference</i>	$N_{head}-N_{modifier}$	$N+Adj$
a. Non-compositionality	common	much less so
b. Allomorphy	$N_{head}$ , never $N_{modif}$	niether N nor Adj
c. Definite article	$N_{head}$ <b>or</b> $N_{modif}$	<b>N and Adj</b>
d. Number of phonological words	one	two

# Faust (2014)

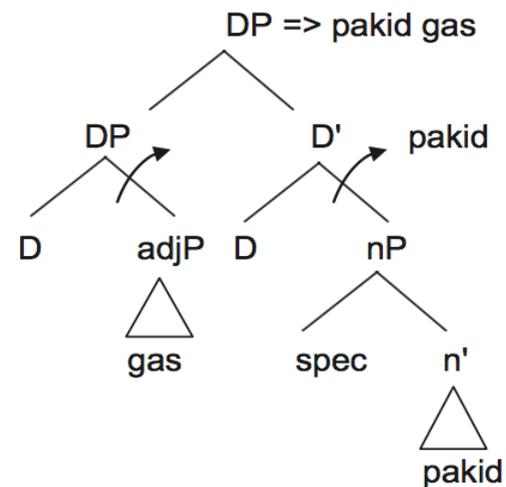
Syntactic differences between the Construct State and N+Adj sequences:

Comparison of N+N and N+Adj

a. N+N *pkid mas* 'tax clerk'



b. N+Adj *pakid gas* 'rude clerk'



## Faust (2014)

(109) ‘Why is the access to a following initial CV blocked in N+Adj?’

Faust (2014:330) claims that “[t]he answer is that the feminine suffix is never in the same phase as the following adjective, and therefore may not interact phonologically with it. The phenomenon thus constitutes a phonological equivalent to the Phase Impenetrability Condition (Chomsky, 2001), by which the material in one phase is not accessible to further operations.”

References of today's class:

- Faust, N. 2014. Where it's [at]: A phonological effect of phasal boundaries in the construct state of Modern Hebrew. *Lingua* 150: 315-331.
- Lowenstamm, J. 2014. Derivational affixes as roots, no exponence: Phasal spell out meets English stress shift. In *The Syntax of Roots, the Roots of Syntax*, (eds) A. Alexiadou, H. Borer & F. Schafer. Oxford: OUP.
- Newell, H. 2016. English Lexical Levels are not Lexical. Ms. UQAM.