

Roots pretending to be theme vowels: e/i in Slovenian

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What do theme vowels do?

- Theme vowels are purely ornamental, inserted post-syntactically (Embick 2010, Oltra-Massuet 1999, Calabrese 2015 and Gribanova 2015).
 - ▶ Theme vowel is “a piece of morphology that carries no syntactic information, such as agreement or case, and makes no contribution to meaning.” (Marvin 2002: 95)
- For Slavic, several authors have shown that at least some theme vowel classes strongly correlate with certain argument structures (Jabłonska 2007, Taraldsen Medová & Wiland 2018, Biskup 2019).

- Some TV-classes seem to not correlate with a specific argument structure, e.g. a/a
- (1) a. jok-a-ti, jok-a-mo 'to cry, we cry'
b. kuh-a-ti, kuh-a-mo 'to cook, we cook'
c. donir-a-ti, donir-a-mo 'to donate, we donate'
- Some TV-classes show a strong correlation with argument structure.

The e/i-class

(2) *drv-e-ti*, *drv-i-mo* 'to rush, we rush'

Some special properties of this class:

- the biggest class of unaccusatives

The e/i-class

(3) *drv-e-ti*, *drv-i-mo* 'to rush, we rush'

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- the biggest class of unaccusatives
- the only TV preserved in adjectival I-participles
- in inchoative-causative pairs, the inchoatives belong to this class
- uniform TV-stress

What do we do with the e/i-class?

- The goal of this talk is to account for the behavior of the e/i-class.
- Seemingly unrelated debate on the status of derivational affixes conducted within the framework of Distributed Morphology.
 - ▶ Traditionally, derivational affixes were assumed to be the spellout of categorising heads.
 - ▶ Lowenstamm (2014): derivational affixes as transitive roots, which can select either other roots or specific categories.

The "theme vowel" e/i is an instance of a derivational affix and is as such transitive root.

Roadmap

1 Slovenian verb

2 The data

- Unaccusatives
- TV preservation in adjectival I-participles
- Inchoatives
- Stress

3 Analysis

- How it works

4 Conclusions

Introduction: Slovenian verb

- Verbs can have the same theme vowels in finite and non-finite forms, but they do not have to.
- The form of the root can be the same in finite and non-finite forms, but it does not have to be.

root	TV	T & Agr		TV class
sp	a	ti	to sleep	a/i
sp	i	mo	we sleep	
mes	i	ti	to kneed	i/i
mes	i	mo	we kneed	
kop	a	ti	to dig	a/a
kop	a	mo	we dig	
br	a	ti	to read	a/e
ber	e	mo	we read	
ved	e	ti	to know	e/e
v	e	mo	we know	

Introduction: Slovenian TV-classes

- The size of classes is determined based on 3000 most common verbs in Slovenian¹
 - ▶ We left out three extremely irregular verbs (*biti* 'to be', *imeti* 'to have' and *iti* 'to go').

TV-class	Example (inf&pres.1.pl)	N of Verbs	% out of 3000
a/a	del-a-ti, del-a-mo 'work'	1048	34.93 %
i/i	del-i-ti, del-i-mo 'share'	864	28,80%
0/e	pas-0-ti, pas-e-mo 'graze'	378	12.60%
ni/ne	mi-ni-ti, mi-ne-mo 'pass'	299	9.97%
e/i	zven-e-ti, zven-i-mo 'sound'	143	4.77%
a/je	or-a-ti, or-je-mo 'plough'	125	4.17%
e/e	um-e-ti, um-e-mo 'know'	45	1.5%
a/i	bež-a-ti, bež-i-mo 'flee'	37	1.23%
a/e	br-a-ti, ber-e-mo 'read'	35	1.17%
0/ne	sta-0-ti, sta-ne-mo 'cost'	25	0.87%

¹Database of the project: Hyperspacing the Verb: The interplay between prosody, morphology and semantics in the Western South Slavic verbal domain

The general picture

- The two largest classes are the a/a class and the i/i class, followed by 8 other, smaller classes.
- Empirical evidence for the claim in Marvin (2002) that i/i and a/a are the default theme vowels in Slovenian.

TV-class	Example	N of Verbs	% out of 3000
a/a	delati, delamo 'work'	1048	34.93 %
i/i	deliti, delimo 'share'	864	28,80%
o/e	pas0ti, pasemo 'graze'	378	12.60%
ni/ne	miniti, minemo 'pass'	299	9.97%
e/i	zveneti, zvenimo 'sound'	143	4.77%
a/je	orati, or-je-mo 'plough'	125	4.17%
e/e	umeti, umemo 'know'	45	1.5%
a/i	bežati, bežimo 'flee'	37	1.23%
a/e	brati, beremo 'read'	35	1.17%
o/ne	sta0ti, stanemo 'cost'	25	0.87%

- Most TV-classes can contain verbs with different argument structures
- But when we only focus on unaccusatives, e/i turns out to be the most dominant class.

Unaccusatives in Slovenian: How to identify them?

- For Slovenian, the reduced relatives test was established as the most reliable diagnostics by Ilc and Marvin (2016; and references therein)

Only unaccusative verbs allow (active) I-participles in reduced relative clauses.

Reduced relative test

- Passive n/t-participles vs. (active) l-participles in transitives:

- (6) a. Otroci, prikaza-n-i v primeru, so
children.NOM.PL show.PASS.PTCP-M-PL in example AUX
izmišjeni.
made-up
'Children, shown in the example, are made up.'
- b. * Otroci, prikaza-l-i v primeru ...
children.NOM.PL show.ACT.PTCP-M-PL in example

Reduced relative test

- Passive n/t-participles vs. (active) l-participles in unergatives:

(7) a. * Otroci, telefonira-n-i svojim staršem, so
children phone.PASS.PTCP-M-PL self parents AUX
zdaj šli spat.
now go sleep

Intended: 'Children, who phoned their parents, have now gone to sleep.'

b. * Otroci, telefonira-l-i svojim staršem, ...
children phone.ACT.PTCP-M-PL self parents

Intended: 'Children, who phoned their parents, have now gone to sleep.'

Reduced relative test

- Passive n/t-participles vs. (active) l-participles unaccusatives:

- (8) a. * Ljudje, ostarjeni v prejšnjem
people become-old.PASS.PTCP-M-PL in previous
stoletju, so danes v pokoju.
century are today in retirement
- b. Ljudje, ostareli v prejšnjem stoletju,
people become-old.ACT.PTCP-M-PL in previous century
so danes v pokoju.
are today in retirement
- 'People grown old in the past century are retired today.'

Reduced relative test

- Ilc & Marvin (2016) compose a list of 51 verbs, which is, as they themselves note, the most comprehensive list of unaccusatives for Slovenian.
- Not compiled based on corpus data.
- In fact, this test cannot be easily implemented in a corpus search.
- Speakers' judgements often vary.

Adjectival I-participles

- Ilc & Marvin (2016) further state that they focus on the eventively used I-participles and distinguish them from “purely adjectival stative participles”.
- That is, participles can be used as adjectives:

(9) odrasli otroci
grow-up.ACT.PTCP-M-PL children
'grown-up children'

(10) napisana knjiga
perf-write.PAS.PTCP-F-SG book
'written book'

Testing for unaccusativity with adjectival l-participles

- Proposed in Aljović (2000) for Bosnian/Croatian/Serbian (BCS):

Only active l-participles of unaccusatives can also be used as adjectives, whereas participial adjectives from transitive verbs are derived from the passive participial suffix -(e)n/t.

- BCS examples are taken from Aljović (2000)

- (11) a. * padnu-t-i /pa-l-i anđeli (BCS)
 fall.PASS.PTCP-PL /fall.ACT.PTCP-PL angels
- b. * pade-n-i /pad-l-i angeli (Slo)
 fall.PASS.PTCP-PL /fall.ACT.PTCP-PL angels
 'fallen angels'

- Adjectival participles from unergatives & transitive verbs

- (12) a. * telefonira-n-i / *telefonira-l-i gosti (BCS)
 phone.PASS.PTCP-PL / phone.ACT.PTCP-PL guests
- b. * telefonira-n-i / *telefonira-l-i gostje (Slo)
 phone.PASS.PTCP-PL / phone.ACT.PTCP-PL guests
 *'telephoned guests' (=guests who telephoned)
- (13) a. * prikaza-l-i otroci (Slo)
 show.ACT.PTCP-M-PL children
- b. prikaza-n-i otroci (Slo)
 show.PAS.PTCP-M-PL children
 'children who are/were shown'

Applying the test to corpus

- Adjectival participles have full adjectival paradigms, unlike verbal participles, which means we can tease them apart and hence search for them in a corpus.
- We searched the Slovenian national corpus Gigafida for l-participle forms which end in the genitive/locative dual/plural form of the adjectival declension (i.e., verbal forms ending in *-lih*)
- We excluded all non-derived adjectives, e.g. *debel-ih* 'fat.gen.pl'

Results: 111 verbs

We then applied the reduced relative test.

- 2 exclusions: *gniti* 'to rot' and *napredovati* 'to advance'.
 - ▶ Note that both are imperfective.

(14) Gnilo sadje smo že kompostirali.
rotten fruit AUX already compost
'We already composted the rotten fruit.'

(15) * Sadje, gnilo na mizi, smo vrgli stran.
fruit rotten.IMP.ACT-PART on table AUX throw away
'We threw away the fruit that had rotten on the table.'

- The issue with imperfectivity.
 - ▶ Are imperfective verbs not unaccusative or do we have an issue with the test?

What to do with the results?

- We are left with 109 unaccusative verbs.
 - ▶ We classified them wrt TV-class.
- We compare these verbs to the 3000 most common verbs in Slovenian
 - ▶ Classified wrt to TV-class.
 - ▶ Annotated for argument structure (specifically, whether they *can* get an accusative argument).

Results

TV-CLASS	% UNACC V (N=109)	% ALL V (N=3000)	RATIO UNACC/ALL VERB CLASSES	RATIO UNACC/VERB CLASSES WITH UNACC	% OF VERBS WITH ACC (N=3000)
e/i	52.25%	4.17%	12.54	2.67	24.60%
∅/ne	4.50%	0.83%	5.41	1.15	56.00%
e/e	5.41%	1.5%	3.60	0.77	64.44%
ni/ne	15.32%	4.8%	3.19	0.68	65.28%
∅/e	20.72%	9.97%	2.7	0.44	75.17%
a/je	0	12.6%	0		78.31%
a/a	0	34.87%	0		73.33%
a/e	0	1.17%	0		91.43%
a/i	0	1.23%	0		43.24%
defective ⁵	0	0.07%	0		0%
i/i	0	28.8%	0		86.23%

A couple of observations based on unaccusatives

- 1 No unaccusative verbs belong to the two largest TV-classes in Slovenian (a/a and i/i, previously described as the default theme vowels in Marvin 2002).
- 2 The two big TV-classes tend to get accusative arguments quite frequently (73.33% and 86.23%, respectively).
- 3 The e/i-class stands out since more than one half of the unaccusative sample falls into it and it is generally also not associated with accusative arguments (only 24.60% of this group can get an accusative argument).

So let's talk about e/i.

4 things about the e/i class

- unaccusativity
- TV preserved in adjectival I-participles
- inchoative-causative pairs
- uniform TV-stress

TV preservation in adjectival l-participles

- E/i-class: TVs are preserved in past and adjectival l-participles
- Other classes: TVs either get an unexpected form or do not appear in the adjectival l-participle.

Infinitive	Past participle	Adjectival l-part.	TV class
dozor- e -ti 'ripen-tv-inf'	dozor- e -l 'ripen-tv-ptcp'	dozor- e -lo sadje 'ripen-tv-ptcp fruit'	[e/i]
zard- e -ti 'blush-tv-inf'	zard- e -l 'blush-tv-ptcp'	zard- e -l dojenček 'blush-tv-ptcp baby'	[e/i]
mi- ni -ti 'go-by-tv-inf'	mi- ni -l 'go-by-tv-ptcp'	mi- nu -lo leto 'go-by-tv-ptcp year'	[ni/ne]
ugas- ni -ti 'put-out-tv-inf'	ugas- ni -l 'put-out-tv-ptcp'	ugas- 0 -lo upanje 'put-out-tv-ptcp upanje'	[ni/ne]
umr- e -ti 'die-tv-inf'	umr- 0 -l 'die-tv-ptcp'	umr- 0 -l pacient 'die-tv-ptcp patient'	[e,e]
odras- 0 -ti 'grown-up-tv-inf'	odras- ə -l 'grown-up-tv-ptcp'	odras- ə -l pes 'grown-up-tv-ptcp dog'	[0,e]
zaosta- 0 -ti 'fall-behind-tv-inf'	zaosta- 0 -l 'fall-behind-tv-ptcp'	zaosta- 0 -l tekač 'fall-behind-tv-ptcp runner'	[0,ne]

The e/i-class: Inchoatives

- A well-known contrast between deadjectival inchoative & deadjectival causative verbs in their theme vowels (e.g. Marvin 2002).

- (16) a. bel -e -ti
white -TV -INF
'to become white'
- b. bel -i -mo
white -TV -1.PL
'we become white'

- (17) a. bel -i -ti
white -TV -INF
'to make x white'
- b. bel -i -mo
white -TV -1.PL
'we make x white'

Inchoatives

- Don't necessarily behave like unaccusatives since they don't all pass the unaccusativity test.

- (18) a. * Modrel obraz je izkazoval
become-blue.IMP.ACT.PTCP face AUX show
pomanjkanje kisika.
lack oxygen
Intended: 'The face turned blue has shown a lack of oxygen.'
- b. Pomodrel obraz je izkazoval
become-blue.PERF.ACT.PTCP face AUX show
pomanjkanje kisika.
lack oxygen
'The face turned completely blue has shown a lack of oxygen.'

- Still in line with the general tendency for the e/i-class to not get an accusative argument.

Inchoatives & Causatives

- If theme vowels do not carry semantic or syntactic features, it is rather coincidental that inchoatives and causatives systematically pattern differently wrt theme vowels:
 - ▶ Inchoatives are always in the e/i class.
 - ▶ Causatives, which get an external and an accusative argument and the interpretation 'make somebody/something x', consistently fall into the i/i class.
- These two groups also show consistent differences with respect to stress.

Stress of inchoatives (and the e/i-class in general)

- Verbs in Slovenian are stressed either on the last syllable of the root or on the theme vowel:

- (19) a. goljuf-á-ti 'to cheat'
b. korák-a-ti 'to tread'

- The e/i class displays extremely uniform behavior with respect to stress.
- 97% of all the e/i verbs (in the 3000-verb sample) have the theme vowel stressed in both finite and non-finite forms.
 - ▶ Only one verbal root which accounts for all the exceptions: *víd-e-ti*, *víd-i-mo* 'to see, we see' and its prefixed derivatives.
 - ★ Belongs to different TV-classes in many widespread dialects (e.g., 0/e in Ljubljana and i/i in Styria)
 - ★ This verb also stands out since it typically gets an accusative argument.

Stress in inchoative e/i-verbs & their causative i/i pairs

- Inchoative verbs consistently get stress on the theme vowel.
- Causative verbs have an alternating stress pattern with the stressed theme in the non-finite forms and stressed root in the finite forms.

- (20) a. bel -é -ti
white -TV -INF
'to become white'
- b. bel -í -mo
white -TV -1.PL
'we become white'

- (21) a. bél -i -ti
white -TV -INF
'to make x white'
- b. bel -í -ti
white -TV -INF
'to make x white'
- c. bél -i -mo
white -TV -1.PL
'we make x white'

The e/i-class as a standout

- The e/i-class is a standout with respect to argument structure and stress compared to other theme vowel classes.
- Standard understanding of theme vowels, i.e. the proposal that theme vowels are purely ornamental, inserted post-syntactically (Embick 2010, Oltra-Massuet 1999, Calabrese 2015 and Gribanova 2015).
- Other (major) classes in Slovenian are well-behaved, so other theme vowels can stay ornamental.

But what about e/i?

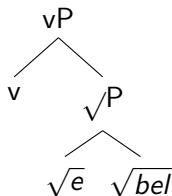
Our analysis: Assumptions

- 1 The standard DM assumption that roots do not carry information about the category, but that the category is determined by a categorial head (Marantz 1997).
- 2 Derivational affixes are transitive roots, which can select either other roots or categories (Lowenstamm 2014).
 - ▶ As other roots, derivational affixes have semantic and/or phonological content, while categorial heads are typically phonologically empty (since either all or most 'traditional' nominalizers, verbalizers and adjectivizers are now roots).

Our Analysis

It's a root-selecting root!

(22)



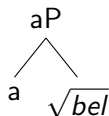
- We take e/i to be a derivational affix (and therefore a root) of the root-selecting kind.
- Under the assumed analysis (Lowenstamm 2014) this means the two roots form a so-called radical core.
- It is only this radical core that is then verbalized (we leave the higher functional structure aside here).

Accounting for TV stress

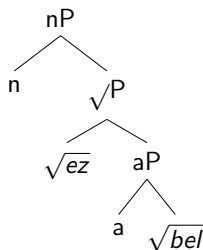
'Deadjectival' inchoative verbs are not really deadjectival, but deradical.

- Categorical heads trigger spell-out (Marvin 2002, Simonović 2020).
- Stress from earlier phases gets preserved.
 - ▶ Example: Stress preservation in -ež nominalizations, for example in *bél-ež* 'white wall paint', which preserves the stress of *bél* 'white' (Simonović 2020).

(23)



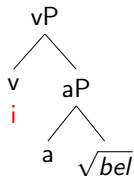
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Stress in inchoatives

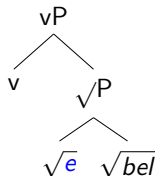
- While causatives are (reasonably) stress-preserving, inchoatives are not.
- This is because inchoatives contain a radical core.
- Simonović (2020): Radical cores trigger stem-final stress.

(25) a. bél-i-ti
white-TV-INF
"to make x white"



(26)

b. bel-é-ti
white-TV-INF
"to become white"



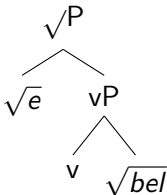
(27)

- Also stress-preserving are verbs from comparatives: *krájš-š-i* 'shorter' - *krájš-a-ti* 'to shorten', *dálj-š-i* 'longer' - *dáljš-a-ti* 'to lengthen'

$\sqrt{e/i}$ does not attach to a categorised structure

Stress confirms the analysis that the affix/root e/i attaches directly to the root.

(28) *Hypothetical structure:



- ▶ E/i is the highest root in the radical core and therefore gets stressed.
- This is consistent with 97% of the e/i group.

● Exception: *víd-e-ti* 'to see', *víd-i-mo* 'we see'

- ▶ A 'stray' root analysis for this single item, where $\sqrt{e/i}$ is combined with the noun *vid* 'sight'.

Potential issue: 'Deadjectival' verbs with overt adjectivizers

- There exist e/i verbs with overt adjectivizers, such as *-en* in *led-en-é-ti* 'to freeze' (*led-en* 'icy')
- Simonović (2020): exceptional 'stray' roots in root complexes.
 - ▶ BUT: 'Stray' roots are used unsystematically, sometimes without attested corresponding adjectives.
 - ▶ Indeed what we find.

(29) a. drev-**en**-é-ti
'to become stiff'
b. drv-én
'stiff, wooden'
c. ??drev-én
expected: 'wooden'

(30) a. črv-**av**-é-ti
'to become maggot infested'
b. črv-ív
'worm infested, maggoty'
c. *črv-av

- We also predict that at least some deradical inchoatives will show a root structure not attested in the causative pair.

- (31) a. *rd-é-ti* 'to become red' (related to *rd-eč* 'red'),
b. **rd-i-ti* 'to make red'
c. *rdeč-i-ti* 'to make red'
- (32) a. *vdov-é-ti* 'to become a widow(er)'
b. *vdov-a* 'widow.f'
c. *vdov-ec* 'widow.m'
d. **vdovč-e-ti*

Why e/i and not just e?

- How about the *i*?
- The root under discussion is just like ‘regular’ roots and can display root allomorphy.
- In this case it is conditioned by the finiteness of the higher functional structure.
 - ▶ Similar derivational affix: *ov/u*, e.g., in *pot-ov-a-ti* ‘to travel’, *pot-u-je-mo* ‘we travel’.
 - ▶ Similar regular root: *kl/kol*, e.g., in *kl-a-ti* ‘to slaughter’, *kol-je-mo* ‘we slaughter’.

Why unaccusatives?

- The verbalization of this radical core is then no different than the verbalization of a simplex root.
- The unaccusativity of the e/i-class is not a consequence of the e/i-root.
- Rather the unaccusativity is due to the structure under which it is embedded – we take this to be a v^{become} -head in the sense of Harley (2009), see also Folli & Harley (2007).

Why no theme vowel?

The short answer is that we don't need them.

- One option: If we take that theme vowels are purely ornamental morphemes, that is, morphemes that are inserted in the PF due to language specific requirements on well-formedness (Embick & Noyer 2007).
 - ▶ Theme vowels in Slovenian are stem-final, linking the typically consonant-final roots with consonant-initial inflectional morphology.

The upshot?

Verbs belonging in the e/i-class can be treated on par with all other verbs in Slovenian with respect to theme vowels.

- The e/i-class should be excluded from TV-classes.

If e is a root, why do we only find it in verbs?

We don't. There are potential other contexts:

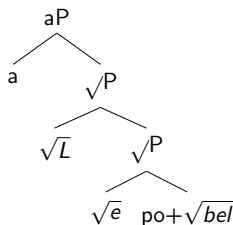
- In some derived nouns of neuter or masculine gender meaning human characterized by some negative property:

- (33) a. počasn-[ε], počasn-é-t-a 'a slowly moving person' (related to *počásen* 'slow'),
b. usran-[ε], usran-é-ta 'a coward, shitty person' (related to *usran* 'dirty, shitty').

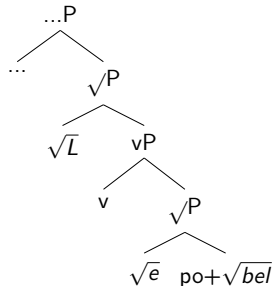
Why is e/i preserved in adjectival I-participles?

The fact that no theme vowels are tolerated in adjectival I-participles indicates that there is a root-selecting I.

(34) Adjectival I-participles



(35) Verbal I-participles



Conclusions

- We considered the intricate relation between theme vowels, stress and argument structure.
- On the empirical side we expanded the list of unaccusatives in Slovenian and provided a refined two-step diagnostic for unaccusativity.
- We identified the e/i-class as dominant and focused on this class.
- We presented arguments for singling out the theme vowel class e/i and reanalyzing its theme vowel as a derivational affix which selects roots.
- Other theme classes are assumed to remain ornamental.
 - ▶ But we identified a least one potential candidate for a similar analysis (the extremely transitive a/e-class)

Thank you!

This talk was brought to you by ...

Hyperspacing the Verb: The interplay between prosody, morphology and semantics in the Western South Slavic verbal domain

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