

An argument for the spell-out of non-terminals

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June 21, 2008

1 Spell out of non-terminals vs. the alternatives

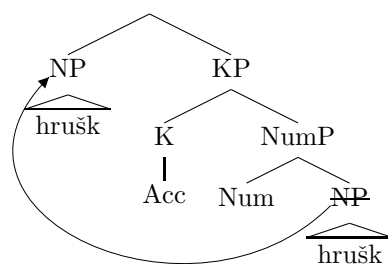
- Late insertion approaches to lexicon split on the question whether non-terminal nodes can undergo spell-out.
- Both terminals and Non-terminals: McCawley (1968), Starke (2005), Neeleman and Szendrői (2007)
- Classical DM (Embick and Marantz 2008)
- The underlying issue is, of course, not whether apart from all the tools that we have there is (in addition) an operation that spells out non-terminals. The issue is whether spell out of non-terminals allows us to get rid of some or all operations that are assumed to take place in Morphology Starke (2005).
 - Fine-grained syntax, spell-out of non-terminals and NO Morphology
 - Coarse grained syntax, spell out of terminals only, the Morphology Module
- While I really argue only for a small part of the package, the larger one is what one wants to see.

1.1 Non-terminals can be spelled out

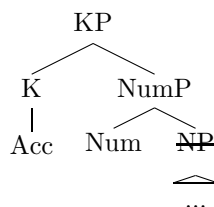
(1) An example of portmanteaux morphology: Czech Case/Number

- Petr snědl hrušk-u
Peter ate pear-acc.sg
'Peter ate a pear'
- hrušk-y hrušk-a
pear-gen.pl pear-nom.sg

(2)



(3) /u/ ⇒

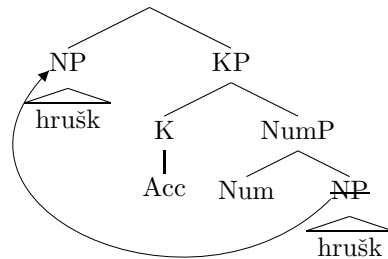


1.2 The alternatives

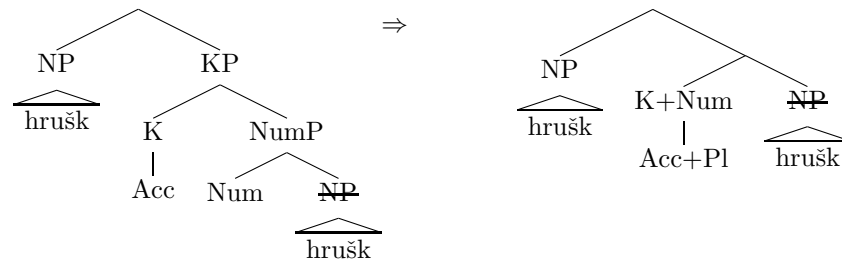
- There are three possible alternative solutions that do not use spell out of non-terminals.

1.2.1 Fusion

(4)



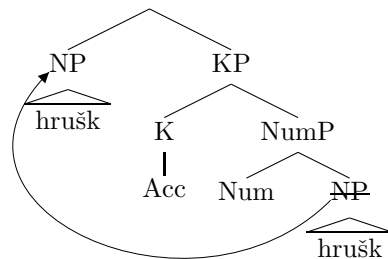
(5) Fusion



(6) /u/ ⇒ [Acc + Pl]

1.2.2 Phonology

(7)



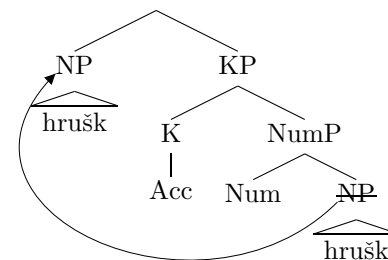
(8) /a/ ⇒ [Sg]

(9) /u/ ⇒ [Acc]

(10) Jakobson's Rule: V1 + V2 → V2

1.2.3 Zero

(11)



(12) /∅/ ⇒ [Sg]

(13) /u/ ⇒ [Acc]

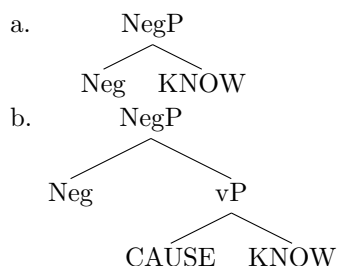
- I want to show why these alternatives fare worse than non-terminal spell-out, thus making a case for its existence.

2 Against Fusion

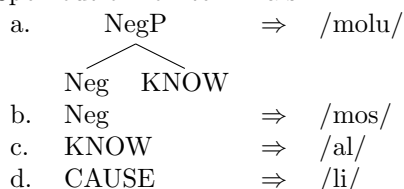
- By Occam's Razor, Fusion is undesirable.

- (14) Suppletive negative forms in Korean Chung (2005)
- | | | | |
|----|----------------------|------------------|---------------------|
| | non-negated form | regular negation | suppletive negation |
| a. | al- 'know' | *mos al- | molu- |
| b. | al-li- 'get to know' | mos al-li | *molu-li |

- (15) Syntactic structures

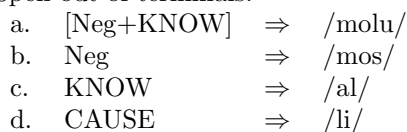


- (16) Spell out of non-terminals:



- The lexical entries above take care of the spell-out of the structures directly.

- (17) Spell out of terminals:



- When only terminals can undergo spell-out, we need Fusion:

- (18) Fusion: NegP ⇒ [Neg + KNOW]
- ```

 NegP
 / \
 Neg KNOW

```

- Fusion needs to care for things: sisterhood (not to get the causative form suppletive) and content of the nodes ('know' is suppletive, but 'eat' is not). These two properties are exactly the same properties which are associated with non-terminal constituents. Further, as Chung points out:

- Fusion happens iff there is a suppletive form
- Fusion happens before insertion

- 
- Operation that happens before insertion happens iff insertion provides a suppletive form
  - I now turn to classical Armenian to provide arguments against the other two solutions.

## 3 Classical Armenian

- (19) *Two Declension Paradigms of Classical Armenian*

|     | 'nation' sg. | 'nation' pl. | generation,sg. | generation, pl. |
|-----|--------------|--------------|----------------|-----------------|
| nom | azg          | azg-k'       | az-n           | az-in-k'        |
| acc | azg          | azg-s        | az-n           | az-in-s         |
| loc | azg-i        | azg-s        | az-in          | az-in-s         |
| gen | azg-i        | azga-c'      | az-in          | az-an-c'        |
| dat | azg-i        | azga-c'      | az-in          | az-an-c'        |
| abl | azg-ê        | azga-c'      | az-n-ê         | az-an-c'        |
| ins | azga-w       | azga-w-k'    | az-am-b        | az-am-b-k'      |

- nom. pl. = nom. sg. + k' (modulo the difference in the stem of *az-n*)
- ins. pl. = ins. sg. + k'
- k' functions elsewhere as a plural marker (*sirem* 'I love' vs. *sirem-k'* 'we love')
- Other plural forms are opaque
- A somewhat orthogonal problem is the right peripheral position of the plural -k'

(20) A declension paradigm of Finnish

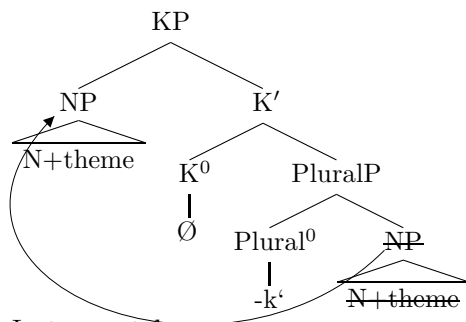
|             | 'bear' Singular | 'bear' Plural |
|-------------|-----------------|---------------|
| Nominative  | karhu           | karhu-t       |
| Accusative  | karhu-n         | karhu-t       |
| Genitive    | karhu-n         | karhu-j-en    |
| Partitive   | karhu-a         | karhu-j-a     |
| Essive      | karhu-na        | karhu-i-na    |
| Translative | karhu-ksi       | karhu-i-ksi   |
| Inessive    | karhu-ssa       | karhu-i-ssa   |
| Elative     | karhu-sta       | karhu-i-sta   |
| Illative    | karhu-un        | karhu-i-hin   |
| Adessive    | karhu-lla       | karhu-i-lla   |
| Ablative    | karhu-lta       | karhu-i-lta   |
| Allative    | karhu-lle       | karhu-i-lle   |
| Abessive    | karhu-tta       | karhu-i-tta   |

- The oblique cases have a plural marker *-i-* preceding the case marker.
- Nominative and accusative are opaque (boldface)

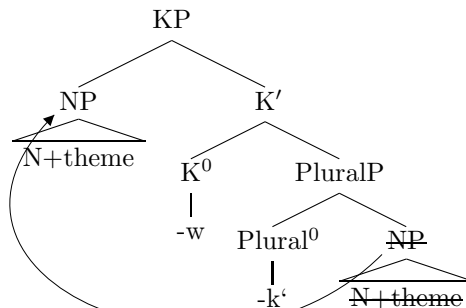
### 3.1 Spell out of non-terminals

(21) Derivation of the plural forms in Classical Armenian

a. Nominative:



b. Instrumental:



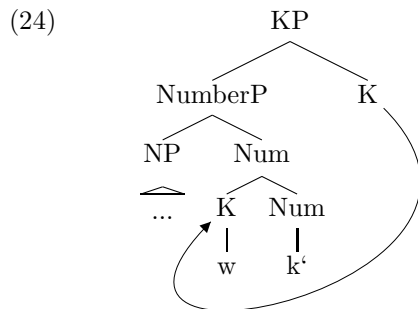
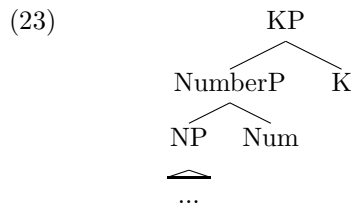
(22)  $/-s, -c'/ \Rightarrow$

```

 K Pl
 |
 Pl

```

- Taking morphology to be phrasal has the additional advantage of avoiding lowering (McFadden 2004)

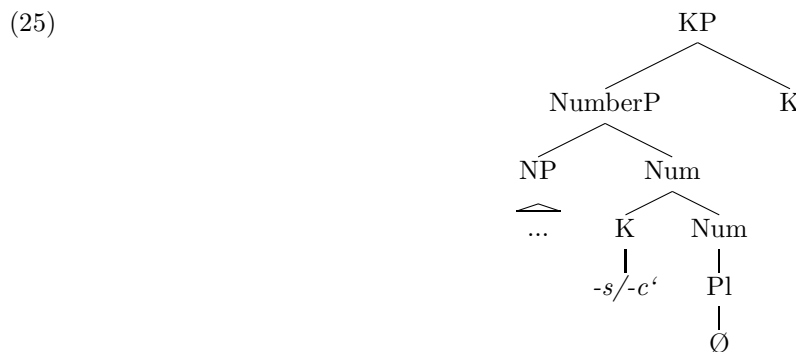


### 3.2 Against a solution in terms of Phonology

- locative: azg-i-k' ⇒ azg-s
- dative: azg-i-k' ⇒ azga-c'
- The problem is, of course, that we need two distinct outputs for an identical input

### 3.3 Against the ∅ solution

- Assume for concreteness, that we take the exponents *-s/-c'* to be exponents of K, inserted just in case the Number is plural. (One can also do things the other way round, but that would not change a thing on the argument to come.)



- This requires Plural to be ∅ in acc, loc, dat, gen and abl, while it would be *-k'* in nom and ins.

(26) Spell out rules

- [Pl] ⇒ /∅/ \ {acc, loc, dat, gen, abl}
- [Pl] ⇒ /k'/

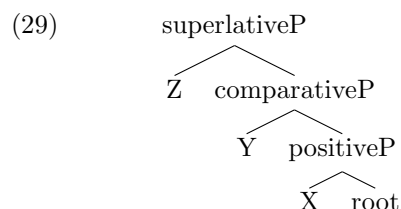
- The context in (26-a) runs against \*A-B-A condition on allomorphy proposed in Bobaljik (2007).
- The idea is that the context does not form a natural class for which a rule can be specified.
- Natural classes for contextual specification occupy a contiguous sequence on a hierarchy, which is NOM – ACC – LOC – GEN – DAT – ABL – INS.

## 4 \*A-B-A

- Bobaljik observes that if positive and superlative have the same allomorph of the root, the comparative has to have an identical allomorph too.

(27) Only contiguous regions on the hierarchy POS – COMP – SUP can have the same allomorph of the root.

- (28) a. good  
 b. better  
 c. best – \*good-est



(30) root ⇒ /good/

(31) root ⇒ /bett/ \ Y

### 4.1 Two orders compatible with Armenian declension

- What can be observed from the sample paradigms is that Case in CA nouns (with interesting twists in the pronominal declension) is organised in the same way. Specifically, only adjacent cases in the paradigms can be syncretic.

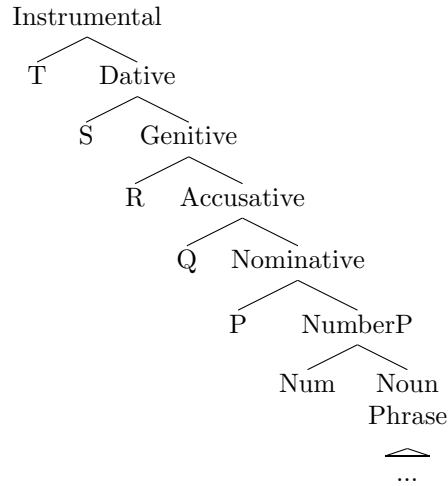
(32) *Two Declension Paradigms of Classical Armenian*

|     | 'nation' sg. | 'nation' pl. | generation,sg. | generation, pl. |
|-----|--------------|--------------|----------------|-----------------|
| nom | azg          | azg-k'       | az-n           | az-in-k'        |
| acc | azg          | azg-s        | az-n           | az-in-s         |
| loc | azg-i        | azg-s        | az-in          | az-in-s         |
| gen | azg-i        | azga-c'      | az-in          | az-an-c'        |
| dat | azg-i        | azga-c'      | az-in          | az-an-c'        |
| abl | azg-ê        | azga-c'      | az-n-ê         | az-an-c'        |
| ins | azga-w       | azga-w-k'    | az-am-b        | az-am-b-k'      |

(33) In the hierarchy (ins –) NOM – ACC – LOC – GEN – DAT – ABL – INS only adjacent cases can be syncretic.

- Baerman et al. (2005) observe that there is a hierarchy NOM – ACC – OBL
- McCreight and Chvany (1991) and Johnston (1996) observe that it is a general property of paradigms that they allow for a linear ordering at least along a single dimension.
- In Caha (to appear) I observe that the hierarchies arrived at are identical across a number of IE languages, with the instrumental coming last.

(34) Caha (to appear)



## 4.2 Position of markers

(35) *Two Declension Paradigms of Classical Armenian*

|     | 'nation' sg.   | 'nation' pl. | generation,sg.  | generation, pl. |
|-----|----------------|--------------|-----------------|-----------------|
| nom | azg            | azg-k'       | az-n            | az-in-k'        |
| acc | azg            | azg-s        | az-n            | az-in-s         |
| loc | azg- <b>i</b>  | azg-s        | az- <b>i</b> -n | az-in-s         |
| gen | azg- <b>i</b>  | azga-c'      | az- <b>i</b> -n | az-an-c'        |
| dat | azg- <b>i</b>  | azga-c'      | az- <b>i</b> -n | az-an-c'        |
| abl | azg-ê          | azga-c'      | az-n-ê          | az-an-c'        |
| ins | azga- <b>w</b> | azga-w-k'    | az-am- <b>b</b> | az-am-b-k'      |

- Ablative and instrumental follow the theme *n*, while other cases precede it.

## 4.3 Case attraction

(36) [bazmut'-eamb [zawr-awk'-n [Hay-oc']]]  
crowd-ins.sg force-ins.sg Armenian-gen.pl  
with the crowd of the forces of the Armenians

- (Plank, 1995, p.43) claims that there is a split: Ablative and Instrumental attract the case of the possessor, other cases do not. Under a story where “bigger overrides smaller,” this confirms the ordering.

## 5 Conclusion

- There is spell out of non-terminals / blocking of analytic forms by stored items
- It allows simplification of grammar (no Fusion, phrasal syntax of words)

## References

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## 6 Appendix: Armenian Declension

|     |             |                     |                  |                       |                |          |              |                 |                 |
|-----|-------------|---------------------|------------------|-----------------------|----------------|----------|--------------|-----------------|-----------------|
|     | volk (a)    | Titan (a)           | Jahr (a)         | Fluss (o)             | Geist (o)      | Wort (i) | Zeit (u)     | Vlies (u)       |                 |
| nom | azg         | Titan               | tari             | get                   | hogi           | bay      | žam          | asr             |                 |
| acc | azg         | Titan               | tari             | get                   | hogi           | bay      | žam          | asr             |                 |
| loc | azgi        | Titanay             | tarwoj           | get /i /oĵ            | hogi           | bayi     | žamu         | asu             |                 |
| dat | azgi        | Titanay             | tarwoy           | getoy                 | hogwoy         | bayi     | žamu         | asu             |                 |
| gen | azgi        | Titanay             | tarwoy           | getoy                 | hogwoy         | bayi     | žamu         | asu             |                 |
| abl | azgê        | Titanay             | tarwoy / oĵê     | getoy                 | hogwoy         | bayê     | žam ê /u /uê | asuê            |                 |
| ins | azgaw       | Titanaw             | tareaw           | getov                 | hogvov         | bayiw    | žamu         | asu             |                 |
|     | volk (a)    | Titan (a)           | Jahr (a)         | Fluss (o)             | Geist (o)      | Wort (i) | Zeit (u)     | Vlies (u)       |                 |
| nom | azgk´       | Titank´             | tarik´           | getk´                 | hogik´         | bayk´    | žamk´        | ask´            |                 |
| acc | azg s       | Titans              | taris            | gets                  | hogis          | bay s    | žams         | ass             |                 |
| loc | azg s       | Titans              | taris            | gets                  | hogis          | bays     | žams         | ass             |                 |
| dat | azgac´      | Titanac´            | tareac´          | getoc´                | hogwoc´        | bayic´   | žamuc´       | asuc´           |                 |
| gen | azgac´      | Titanac´            | tareac´          | getoc´                | hogwoc´        | bayic´   | žamuc´       | asuc´           |                 |
| abl | azgac´      | Titanac´            | tareac´          | getoc´                | hogwoc´        | bayic´   | žamuc´       | asuc´           |                 |
| ins | azgawk´     | Titanawk´           | tareawk´         | getovk´               | hogvovk´       | bayiwk´  | žamuk´       | asuk´           |                 |
|     | Knochen (r) | quelle, brunnen (r) | Stern (l)        | Geschlecht, Rasse (n) | Teil (n)       | Zahn (n) |              |                 |                 |
| nom | oskr        | aġbewr              | astġ             | azn                   |                | masn     |              | atamn           |                 |
| acc | oskr        | aġbewr              | astġ             | azn                   |                | masn     |              | atamn           |                 |
| loc | osker       | aġber               | astet            | azin                  |                | masin    |              | ataman          |                 |
| dat | osker       | aġber               | astet            | azin                  |                | masin    |              | ataman          |                 |
| gen | osker       | aġber               | astet            | azin                  |                | masin    |              | ataman          |                 |
| abl | oskerê      | aġberê              | astetê           | az(a)nê               |                | mas(a)nê |              | atamanê         |                 |
| ins | oskerb      | aġberb              | astetġb          | azamb                 |                | masamb   |              | atamamb         |                 |
|     | Knochen (r) | quelle, brunnen (r) | Stern (l)        | Geschlecht (n)        | Teil (n)       | Zahn (n) |              |                 |                 |
| nom | osker k´    | aġbewrk´            | astetk´          | azink´                |                | masunk´  |              | atamunk´        |                 |
| acc | osker s     | aġbewrs             | astetġs          | azins                 |                | masuns   |              | atamuns         |                 |
| loc | osker s     | aġbewrs             | astetġs          | azins                 |                | masuns   |              | atamuns         |                 |
| dat | oskerac´    | aġberac´            | astetac´         | azanc´                |                | masanc´  |              | atamanc´        |                 |
| gen | oskerac´    | aġberac´            | astetac´         | azanc´                |                | masanc´  |              | atamanc´        |                 |
| abl | oskerac´    | aġberac´            | astetac´         | azanc´                |                | masanc´  |              | atamanc´        |                 |
| ins | oskerawk´   | aġberawk´           | astetawk´        | azambk´               |                | masambk´ |              | atamambk´       |                 |
|     | I           | you                 | we               | you                   | refl sg.       |          | refl., pl.   | refl. poss. sg. | refl. poss. pl. |
| nom | es          | du                  | mek´             | duk´                  |                |          | iwreank´     | ink´n           | ink´eank´       |
| acc | is          | k´ez                | mez              | jez                   |                |          | iwreans      | ink´n           | ink´eans        |
| loc | is          | k´ez                | mez              | jez                   | iwr            |          | iwreans      | ink´ean         | ink´eans        |
| dat | inj         | k´ez                | mez              | jez                   | iwr            |          | iwreanc´     | ink´ean         | ink´eanc´       |
| gen | im          | k´o                 | mer              | jer                   | iwr            |          | iwreanc´     | ink´ean         | ink´eanc´       |
| abl | inên        | k´ên                | mênĵ             | ĵênĵ                  | iwr mê         |          | iwreanc´     | ink´enê         | ink´eanc´       |
| ins | inew        | k´ew                | mewk´            | jewk´                 | iwrew/eaw/eamb |          | iwreambk´    | ink´eamb        | ink´eambk´      |
|     | my,sg.      | my, pl.             | his/her/its, sg. | his/her/ite pl.       |                |          |              |                 |                 |
| nom | im          | imk´                | nora             |                       |                |          |              |                 |                 |
| acc | im          | ims                 | nora             |                       |                |          |              |                 |                 |
| loc | imum        | ims                 | norayum          |                       |                |          |              |                 |                 |
| dat | imum        | imoc´               | norayum          |                       |                |          |              |                 |                 |
| gen | imoy        | imoc´               | norayoy          |                       |                |          |              |                 |                 |
| abl | immê        | imoc´               | norayoy          |                       |                |          |              |                 |                 |
| ins | imov        | imovk´              | norayov          |                       |                |          |              |                 |                 |

|     | this one, sg.      | this one, pl. | this one, sg., emph | this one, pl., emph | this one, he | this one,pl, them |
|-----|--------------------|---------------|---------------------|---------------------|--------------|-------------------|
| nom | ay-s               | ay-s-k'       | ay-s                | ay-so-k'-ik         | s-a          | so-k'-a           |
| acc | ay-s               | ay-s-s        | ay-s                | ay-so-s-ik          | s-a          | so-s-a            |
| loc | ay-s-m             | ay-s-s        | ay-s-m-ik           | ay-so-s-ik          | s-m-a        | so-s-a            |
| dat | ay-s-m             | ay-s-c'       | ay-s-m-ik           | ay-so-c'-ik         | s-m-a        | so-c'-a           |
| gen | ay-s-r             | ay-s-c'       | ay-so-r-ik          | ay-so-c'-ik         | so-r-a       | so-c'-a           |
| abl | ay-s-m-(anê)       | ay-s-c'(anê)  | ay-s-m-ik           | ay-so-c'-ik         | s-m-a-nê     | so-c'-a(-nê)      |
| ins | ay-s-u             | ay-s-u-k'     | ay-s-u-ik           | ay-so-k'-iwk'       | so-v-a-w     | so-k'-a-wk'       |
|     | the same           | the same, pl. | the same,pl         | his/her/its pl.     |              |                   |
| nom | so-in              | so-k'-in      | so-yn-k'            | noray-o/i-k'        |              |                   |
| acc | so-in              | so-s-in       | so-yn-s             | noray-o/i-s         |              |                   |
| loc | s-m-in             | so-s-in       | so-yn-s             | noray-o/i-s         |              |                   |
| dat | s-m-in             | so-c'-in      | so-c'-un-c'         | noray-o/i-c'        |              |                   |
| gen | so-r-in            | so-c'-in      | so-c'-un-c'         | noray-o/i-c'        |              |                   |
| abl | s-m-in             | so-c'-in      | so-c'-un-c'         | noray-o/i-c'        |              |                   |
| ins | so-v-in, so-v-im-b | so-k'-im-bk'  | so-k'-um-bk'        | noray-ov/iw-k'      |              |                   |