1 Introduction

The goal of this paper is twofold

- To derive the asymmetries of synthetic and primary compounds through differences in their formation.
- To examine how the resulting structure may regulate interactions between the elements in terms of morphophonology and contextual allomorphy.

1.1 Roadmap

§2 reviews some of the differences between synthetic and primary compounds.

§3 outlines a proposal for compound formation that accounts for the asymmetries observed.

§4 gives an overview of the different ways elements within compounds interact.

§5 provides a summary of the paper and some outstanding questions.

2 Synthetic versus Primary Compounds

Synthetic and primary compounds differ in terms of various properties (see e.g. Marchand 1969, Roeper & Siegel 1978, Selkirk 1982, Lieber 2004, Giegerich 2009).

- Synthetic compounds are restricted in terms of the complexity of right-branching structures:

  (1) a. *  
      shelf  
      book  
      stacker  

  b. *  
      book  
      shelf  
      stacker

  ‘someone who stacks books onto shelves’ [Peter Smith, p.c.]

- Primary compounds are not:

  (2) a.  
      crocodile  
      nurse  
      shoes  

  b.  
      horse  
      water  
      bottle

- Synthetic compounds always have a synonymous phrasal counterpart:

  (3) a. truck driver  =  driver of trucks
       b. book stacker  =  stacker of books
       c. head movement  =  movement of a head
       d. candle stick maker  =  maker of candle sticks

- Primary compounds only sometimes:

  (4) a. nurse shoes  =  shoes of nurses
       b. cream cheese bagel  =  a bagel with cream cheese
       c. daughter languages  ≠  language of daughters
       d. motherland  ≠  land of mothers

- The relationship between the head and the modifier is predictable and compositional with synthetic compounds, (5). That is not necessarily the case with primary compounds, (6).
3 Putting the Pieces Together

Under Lexicalism, the differences between synthetic and primary compounds was argued to stem from them being formed in different components of grammar (Roeper & Siegel 1978, Fabb 1984, Roeper 1987, 1988).

• Primary compounds are formed in the lexicon.
• Synthetic compounds are formed in the syntax through incorporation.

A non-lexicalist solution:
• Both types of compounds are formed in the syntax.
• Difference in how they are put together.
  – Synthetic compounds are formed by incorporation.
  – Primary compounds are formed by merging the modifier directly to the head.

3.2 Primary Compounds


• The two elements are formed in separate workspaces and the resulting structures then merged together (cf. Nunes & Uriagereka 2000, Piggott & Travis 2013).

(10) Workspace 1
    \[ \sqrt{NURSE} \] 

Workspace 2
    \[ \sqrt{SHOE} \]
4.1 Morphophonology

Under Nunes & Uriagereka (2000), Piggott & Travis (2013), it is further expected that there will be an additional asymmetry in terms of possible interactions (Jackson & Punske see also 2013, Punske see also 2016 for a different proposal along these lines).

- Modifiers in primary compounds undergo spell-out prior to being merged with the head.
- Modifiers are hence expected to be islands.
- A cross-linguistic survey of various phenomena indicates however that the non-head elements in compounds are not islands.

In single-stem words, various locality domains have been proposed for contextual allomorphy:

- It has been argued that morphophonology is subject to the same locality restrictions (e.g. Embick 2010, Merchant 2015).
- Interactions between elements within compounds point to a double dissociation between the domain of morphophonology and contextual allomorphy.

4 Interactions

4.1 Morphophonology

Umlaut in Icelandic Harðarson (2016)

(13) Vowel alternation in i-umlaut (adapted from Árnason 2011:240)

/a/, /ɔ/, /œ/  →  /ɛ/
/au, /ou/  →  /ai/
/ɔ/, /œ/  →  /ɪ/
/u/, /ju/, /jou/  →  /ɪ/
/œy/  →  /eɪ/

- I-umlaut in Icelandic does not seem to obey the same restrictions as contextual allomorphy.

(14) a. gráð-∅-ug-
/kraʊð-/∅-/vɪ/-
[kraʊðů̯] ‘greedy’

b. græð-∅-g-i-
/kraʊð-/∅-/vɪ/-/-ɪ/-
[kraiðů̯] ‘greed/greediness’
The u-umlaut shows similar behavior, but differs in that it applies throughout the word as long as there is a chain of potential undergoers (e.g. Anderson 1969b,a, 1974, Orešnik 1977, Rögnvaldsson 1981, 2006, Árnason 1985, Kiparsky 1984).

Vowel alternations in u-umlaut
a. /a/ → /œ/
b. /a/ → /ɔ/ or /ɔ/

U-umlaut never applies between two elements in a compound.

Word Stress Elements within compounds appear to form domains for word stress.

- In Icelandic, primary stress falls on the leftmost syllable and secondary stress falls on every other subsequent syllable.

In compounds, certain classes of stems can bear secondary stress (Gouskova & Roon 2009).

Non-head elements are not islands There are various languages in which certain morphophonological processes can apply between two elements in compounds.

- Vowel harmony is known to apply between two elements in a compound in various languages.
4.1 Morphophonology

(25) Nez Perce (Adapted from Crook 1999:23–24)
   a. /má'sá:y/ + /ˈsà:tay/ → [má'yóisá:tya:y]
      ‘ear’ ‘hair’ ‘ear hair’
   b. /háma/ + /ˈtinú:n/ → [hámátʰn̪n]
      ‘man’ ‘divorcee’ ‘divorced man’

(26) Nawuri (Adapted from Casali 2013:321)
   a. /gA/nc + /tSu/ ‘water’ + /tUU/ ‘throw’ → [gA tSútUU]
      ‘water throwing’ (a funeral rite)
   b. /ɔ/nc + /dI/ ‘sleep’ + /bojii/ ‘break’ + /pU/  → [ɔdibojii]
      ‘gossiper’

(27) Chukchi (Adapted from Comrie 1981:245)
   /p@lv@nt@/ ‘metal’ + /kupre/ ‘net’ + /n/ → [p@lv@nt@kupre]
      ‘metal net’

• There are also cases of compound-specific morphophonological processes (Vogel 2010)

(28) Nasal assimilation in Marathi (adapted from Pandharipande 1997:563)
   a. /bʰagawat/ + /ˈnam/ → [bʰagawanm]
      ‘god’ ‘name’ ‘god’s name’
   b. /sɒt/ + /maz/ → [sanmaz]
      ‘six’ ‘month’ ‘six months’

(29) Final vowel lengthening in Hausa (adapted from McIntyre 2006:32)
   a. /bì/ + /bango/ → [bìbango]
      ‘follow’ ‘wall’ ‘leakage along the wall’
   b. /k’arɛ/ + /dæŋq'/ → [k’arɛdæŋq']
      ‘finish’ ‘relative’ ‘type of arrow poison’

(30) Vowel deletion in Swedish (Josefsson & Platzack 2004:12)
   a. flicka + skola → flickskola
      ‘girl’ school ‘girls school’
   b. loge + dans → logdans
      ‘barn’ ‘dance’ ‘barn warming’

(31) Vowel change in Swedish (Josefsson & Platzack 2004:13)
   a. saga + bok → sagobok
      ‘story’ ‘book’ ‘storybook’
   b. gata + skylt → gatuskylt
      ‘street’ ‘sign’ ‘street sign’

• No apparent asymmetries in terms of synthetic – primary compounding.

Domain of morphophonology

• Compounding takes place at different levels within the complex head (e.g. De Belder 2013, Moskal 2015, Harðarson 2016).

• Modifiers must match the level where they are merged Harðarson (2016).

(32)
4.2 Contextual Allomorphy

The compound structure can serve as context for suppletive allomorphy.

- Compounding conditions null allomorph of a nominalizing suffix despite the linear intervention of the head root.

(33) **Domain for morphophonological interactions**

A domain for morphophonology is marked by the highest projection in the extended projection of the root.

i. Morphophonological rules can apply to the exponents of two nodes, X and Y, if X and Y are within the same extended projection.

ii. Morphophonological rules do not apply between two extended projections.

(34) **Extended projection within a complex head**

α is in the extended projection of a root R if:

i. the head of α morphologically selects/subcategorizes R, or

ii. the head of α morphologically selects/subcategorizes β, where β is a head in the extended projection of R.

[Harðarson 2016:23]

- Uncategorized roots have no extended projection, hence do not form domains for morphophonology, allows for (25–27).

- The compound specific processes in (28–29) point to the complex head serving as context for certain morphophonological processes to the exclusion of the extended projection of the root, i.e. certain processes apply specifically between two extended projections within the complex head.

- Morphophonological operations apply at two levels within the complex head, in the vein of Lexical Phonology (e.g. Kiparsky 1982, Monahan 1982) and its descendants.

  - The extended projection of the root.
  - The complex head.

4.2 Contextual Allomorphy

The compound structure can serve as context for suppletive allomorphy.

(35) Bosnian (Aida Talić, p.c.)

| a. hoda-ti | b. hod-anje | c. *hod-∅ |
| walk-INF | walk-n | walk-n |

(36) a. mimi-o#hod-∅

| by/past-l.#walk-n | *mimi-o#hod-anje |
| ‘passing by’ | by/past-l.#walk-n |

(37) a. žder-onja/*∅

| devour-n | ljud-o#žder-∅/*onja |
| ‘devourer’ | people-l.#devour-n |

(38) a. vod-enje/*∅

| lead-n | dalek-o#vod-∅/*enje |
| ‘leading’ | far-l.#lead-n |

(39) a. vod-itel/*∅

| lead-n | ekskursa#vod-∅ |
| ‘leader’ | tour#lead-n |

(40) French (adapted from Snyder:12–13)

| a. lave-∅/#euri#vaiselle | b. lav-eur/#∅ de vaiselle |
| wash-n#dishware | wash-n of dishware |

‘dishwasher’

- Appears to be analogous to V-N compounds in Romance.

- The compound structure can also serve as context for allomorphy of the modifier.
4.2 Contextual Allomorphy

(41) Bosnian (Aida Talić, p.c.)

a. ljud-o#žder-∅
   people#devour-n
   ‘man eater’

b. *čovjek-o#žder-∅
   man#devour-n

(42) Basque (adapted from Snyder:10)

a. gizon-ek
   man-ERG
   ‘man’

b. giza#kuntza
   man#language
   ‘human language’

• If the non-head elements have been spelled out prior to merging with the
  head, this interaction is predicted to be impossible.

• The size of the non-head elements in these cases remains to be determined.

(43) Dutch (Krott et al. 2007:28)

a. schaap-en#tong
   sheep-L#tongue
   ‘sheep’s tongue’

b. schaap-s#kooi
   sheep-L#fold
   ‘sheep fold’

c. schaap#herder
   sheep#herder
   ‘shepherd’

• Inflected modifiers in Icelandic are structurally peripheral to uninflected
  modifiers (Harðarson 2016).

(44) a. karl-a#hest#vagn
    man-GEN#horse#wagon
    ‘a horse-drawn carriage for men’

b *

(45) a. karl#hest-a#vagn
    man#horseGEN#wagon
    ‘a carriage drawn by male horses’

b *

(46) a. karl-a#hest-a#vagn
    man-GEN#horse#wagon
    ‘a horse carriage for men’

b *

(47) a. *hór-s#
    *flax-GEN# pocket-GEN# cloth
    ‘linen handkerchief’

b. *silkis#
    *silk-GEN# pillow-GEN# case
    ‘silk pillow case’

c. *tré-s#
    *tree-GEN# pen-GEN# stand
    ‘wodden pen stand’

d. *plasts#
    *plastic-GEN# pen-GEN# stand
    ‘plastic pen stand’

e. *hárs#
    *hair-GEN# humidity-GEN# measurer
    ‘hygroscope’

• There is a class of nouns that cannot appear with an overt genitive marker
  in compounds, but still appear structurally peripheral to inflected modifiers.

  – Strong neuter non-count nouns denoting material
The default form of the stem tré- ‘tree’ is trjá-.

a. trjá-a  
   tré-gen  
   ‘tree’

b. tré#froskur  
   tree#frog  
   ‘wooden frog/tree frog’

c. trjá#froskur  
   tree#frog  
   ‘tree frog’

It appears that the compound structure is conditioning a ∅ allomorph of the genitive suffix.

Contextual allomorphy applying across boundaries that morphophonology in Icelandic cannot.

Although the elements of primary compounds are formed in separate workspaces, the modifiers are not spelled out prior to being merged with the head and can potentially be subject to contextual allomorphy.

Morphophonology applies at two levels:
- The extended projection of the root
- between two extended projections within the complex head

Question remains as to how far into the modifier contextual allomorphy applies.

5 Conclusion

The asymmetries between synthetic and primary compounds can be derived from the difference in their formation.

- Synthetic compounds are formed through incorporation.
- Primary compounds are formed by merging a modifier directly to the head after building the two elements in separate workspaces.

Although the elements of primary compounds are formed in separate workspaces, the modifiers are not spelled out prior to being merged with the head and can potentially be subject to contextual allomorphy.

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