ON FUNCTIONAL VOCABULARY ITEMS IN ROOT POSITIONS
Marijke De Belder
Jeroen van Craenenbroeck
KU Leuven campus Brussel / CRISSP / FWO
marijke.debelder@kuleuven.be
jeroen.vancraenenbroeck@kuleuven.be

MAIN GOAL OF THIS TALK:
to derive four axioms about roots in a principled way from the theory of Merge, thus reducing them to theorems

THE FOUR AXIOMS:
i) Roots have no grammatical features
ii) Roots have no syntactic category
iii) Roots are defined structurally, not lexically
iv) Roots are merged lower than functional material

THE THEORY OF MERGE:
the very first instance of Merge (Primary Merge) combines a feature (set) from the Numeration with the null derivation, i.e. with the empty set

THE GIST OF THE ANALYSIS:
roots are inserted post-syntactically into the empty slots created by Primary Merge

THEORETICAL CONSEQUENCES
- unified vocabulary insertion for functional and lexical vocabulary items
- roots are a specific kind of terminal node, not a specific kind of vocabulary item
- roots are featureless nodes and as a result, cannot move or project
- generalized, revised late insertion (pace Harley to appear)

OVERVIEW
1. The explananda: four axioms about roots
2. Prerequisite for the analysis: asymmetric primary merge and the null derivation
3. Quick recap
4. The analysis: deriving the properties of roots
5. Theoretical consequences of the analysis
6. Conclusions

1. The explananda: four axioms about roots

1.1 Roots have no grammatical features (Borer 2005)

functional vocabulary items (FVIs, e.g. plural –s, numeral three, …): fixed meaning

(1) a. three stones (obligatorily count NP)
   b. They stoned her. (obligatorily verb)

→ the meaning of FVIs is fixed because they spell out grammatical features (Number, Tense, etc.)

lexical vocabulary items (LVIs, e.g. book, nice, stone, etc.): flexible meaning

(2) a. I’ve got a stone in my hand. (count noun)
   b. There’s too much stone and metal in this room. (mass noun)
   c. They want to stone this man. (transitive verb)
   d. Billy-Bob should lay off the weed; he’s always stoned. (obligatorily passive verb)

→ the meaning of LVIs is malleable → this suggests that they do not bear any grammatical features

1.2 Roots have no syntactic category (Borer 2005)

note: if LVIs have no grammatical features, they have no categorial features either

example: an LVI such as slick bears no inherent categorial specification → it can be used as a noun, verb or adjective depending on the functional context in which it is inserted:

(3) a. Are those slicks under your Dodge A-100?
b. While not every man likes to slick his hair up every morning, it is wise to have a gel, wax or mousse around just in case.
c. Oh, you’re such a slick little girl.
advantage: doing away with the categorial specification of LVIs/roots eliminates
categorial redundancy from the extended projection:

(4)  
```
  D
  \   /
N  cat
```

→ traditional view: (4) is marked for nominality twice

1.3 Roots are defined structurally, not lexically

1.3.1 Introduction

question: how are roots defined/identified as roots?

two options: - roots have a special status in the lexicon → lexical definition
- roots correspond to a particular structural position → structural definition

1.3.2 Roots that are inserted early are defined lexically

if vocabulary items are inserted early, i.e. at the beginning of the syntactic
derivation

then the featurelessness of LVIs/roots can only be guaranteed if the lexicon contains
featureless members, i.e. the lexicon contains two subsets (Borer 2005a):

(5)  

LVIs:  no grammatical or categorial features  
stone  light  cat  kiss …

FVIs:  grammatical and categorial features  
those[D,def,distal,pl]  -ed[T,past]  -s[Num,pl, …]

1.3.3 Roots that are inserted late are defined structurally

if vocabulary items are inserted late, i.e. in a post-syntactic module

then the featurelessness of LVIs/roots can only be guaranteed if the structural
representation contains a position that lacks grammatical features, i.e. apart
from bona fide grammatical features, the lexicon contains a ‘placeholder’
[Root]-feature (Halle & Marantz 1993):

structure building:

(6)  
```
  T'
  -ed[T,past]  \√stone
```

lexical definition of roots: roots are the result of the merger of a featureless
vocabulary item; the lexicon contains roots and non-roots

structure building:

(7)  

```
  [past]
  [def]  [plural]
  [1st]
  [Root]  [distal]
```

```
  T  [past][Root]
  [past]  [Root]
  [def]  [plural]
  [1st]
  [Root]  [distal]
```

(8)  
```
  T
  [past]  [Root]
  [past]  [Root]
  [def]  [plural]
  [1st]
  [Root]  [distal]
```

after (late) vocabulary insertion:

(9)  
```
  T
  -ed  stone
```
**structural definition of roots:** root are the spell-out of an empty node in the structural representation.

**1.3.4 Supporting evidence for the structural account**

test to distinguish between the two accounts: can functional vocabulary items occur in root position?

**lexical definition of roots:** no → roots are defined by the merger of featureless vocabulary items and functional vocabulary items have (grammatical and categorial) features ⇒ no functional vocabulary items in root position

(10) D
    the(D,def) those(D,def,distal,pl) → this structure contains no roots

**structural definition of roots:** yes → roots are whatever gets inserted into the structural positions designated by the placeholder [Root]-feature ⇒ there is no a priori ban on inserting a functional vocabulary item there

(11) D
    [D,def] [Root] → can (in principle) be spelled out as either LVI or FVI

the relevant data:

(12) Ik heb het waarom van de zaak nooit begrepen. (Dutch)
    I have the why of the case never understood
    ‘I have never understood the motivation behind the case.’

(13) In een krantenartikel komt het wat/hoe/wie/waar in a newspaper article comes the what/how/who/where
    always before het waarom.
    ‘In a newspaper the what/how/who/where always precedes the why.’

(14) De studenten jij-en onderling,
    the students you-3PL amongst one another
    ‘The students are on a first-name basis with each other.’

(15) Martha is mijn tweede ik.
    Martha is my second I
    ‘Martha is my soulmate.’

(16) Niets te maar-en!
    nothing to but-INFINITIVE
    ‘Don’t object!’

(17) Paard is een het-woord.
    horse is a the-decl-word
    ‘Paard takes a neuter article.’

**note #1:** these data are cross-linguistically robust:

(18) Fomento seguirá ningun-eando a Cornellà (Spanish)
    MPWVC will continue nobody-ing DOM Cornellà
    in sus paneles viarios,
    in their signs roadside
    ‘The Ministry of Public Works and Constructions will continue to use roadside signs that ignore Cornellà.’

(19) % vos-ear
    you.2PL-INFINITIVE
    ‘to address someone politely.’

(20) Studentii il tutuiesc pe profesor (Romanian)
    student.PL,DEF him.CL you.3SG-3PL on professor
    ‘The students are on a first name basis with the professor.’

(21) Ucenci vikajo učitelja. (Slovenian)
    student,NOM,PL you.3SG teacher.ACC
    Učitelj tika učence.
    teacher,NOM,SG you.3SG student.ACC,PL
    ‘The students address the teacher politely. The teacher is on a first name basis with the students.’
(22) ty-kat' (Russian)
YOU(informal)-INFinitive
'to be on a first name basis'

(23) pod-da-kiva-t'
ITERATIVE-yes-ITERATIVE-INFinitive
'to say yes/to echo whatever is being said'

(24) ot-ne-kiva-t'-sya
PREFIX-NEGation-REpetitive-INFinitive-REFLEXive
'to deny/to make excuses'

(25) oj-kat'
OY-INFinitive
'to express dismay'

(26) lemt-uh am ballash y-bass-biss-l-i (Lebanese Arabic)
blame.PVF.1SG-him so start.PVF.3MS but.IPVF.3MS-to-me
'I blamed him so he started saying "but" to me in a defensive way.'

note #2: these data are not exceptional/irregular/unproductive:

(27) a. het getik van de klok
the GE-tick of the clock
'the ticking of the clock.'

b. het gefluit van de vogeltjes
the GE-whistle of the birds
'the whistling of the birds.'

→ ge-prefixation is a productive derivational word-formation process to form nouns which refer to a pluractional event → this process also productively applies to functional vocabulary items:

(28) a. Ik hoef al dat ge-maar niet.
I need all that GE-but not
'I don't like those constant objections.'

b. Ik hoef al dat ge-alhoewel niet.
I need all that GE-although not
'I don't like those constant considerations.'

c. Ik hoef al dat ge-of niet.
I need all that GE-or not
'I don't like those constant alternatives.'

d. Ik hoef al dat ge-hé niet.
I need all that GE-PRT not
'I don't like the constant need for confirmation.'

e. Ik hoef al dat ge-waarom niet.
I need all that GE-why not
'I don't like the constant need for justification.'

f. Ik hoef al dat ge-nooit niet.
I need all that GE-never not
'I don't like the constant unwillingness.'

g. Ik hoef al dat ge-ik niet.
I need all that GE-I not
'I don't like all this egocentricity.'

1.3.5 Dispelling an alternative account: self-reference

self-reference: take any string of sounds and (re)list it in the lexicon as a root:

(29) a. Jardin is the French word for 'garden'.

b. The 'the' you have written on the board is a little too big.

c. L-ennoy yall b-ha-l-masal ma-na daruriyyeh. (Leb. Arabic)
the-that that in-this-the-example not-it necessary
'The that that is in this example is not necessary.'

= supposition materialis (Mill 1843), hypostasis (Sørensen 1961), pure quotation
(Geurts and Maier 2005)

claim: the use of functional vocabulary items in root terminal nodes is not an instance of self-reference (pace Borer 2013:387):
**Argument #1: form vs. meaning**

→ self-reference: the actual phonetic form is at stake

(30) [context: you are proofreading a Dutch text in which the first occurrence of the definite article (spelled de) on p.23 is in the wrong font]

a. # The first 'the' on p.23 is in the wrong font.
b. ✓ The first 'de' on p.23 is in the wrong font.

→ FVIs in RTNs: the meaning of the FVI is at stake

(31) [context: you are describing (in Dutch) the communication style of a group of French-speaking students]

   the students you-3.pl amongst.one.another
   'The students are on a first-name basis with each other.'
b. * De studenten tu-en onderling.
   the students you-3.pl amongst.one.another

(32) [context: you are describing a text that contains not a single instance of the Dutch article de 'the']

In deze tekst wordt paard als een de-woord gebruikt.
'in this text becomes horse as a the-WORD-word used
   'In this text paard is used as a non-neuter noun.'

**Argument #2: gender**

→ self-reference: default non-neuter gender

(33) De {waarom / ik / gemaar} op de eerste regel
   the why I but on the first line
   staat in een verkeerd lettertype.
   stands in a wrong font
   'The word waarom/ik/gemaar on the first line is in the wrong font.'

→ FVIs in RTNs: gender varies

(34) Ik heb het {waarom de zaak nooit begrepen.}
   I have the why of the case never understood
   'I have never understood the motivation behind the case.'

(35) Zij is de {ik die ik zoek.}
   she is the.I rel I look.for
   'She's the soulmate I'm looking for.'

(36) Ik hoef al het {ge-maar niet.}
   I need all the ge-but not
   'I don't like the constant objections.'

**Argument #3: syntactic category**

→ self-reference: restricted to nominal contexts (Sørensen 1961)

(37) The 'the' you have written on the board is a little too big.

→ FVIs in RTNs: can function both nominally and verbally

(38) Zij is de {ik die ik zoek.}
   she is the.I rel I look.for
   'She's the soulmate I'm looking for.'

   the students you-3.pl amongst.one.another
   'The students are on a first-name basis with each other.'
b. Niets te {maar-en!}
   nothing to but-INFINITIVE
   'Don't object!'
Argument #4: proper names vs. common nouns

→ self-reference: self-referring nouns behave like proper names

(40) *(The) ‘why’ is an adverb.
(41) *(The) ‘why’ you have written on the board is a little too big.

compare:
(42) *(The) Paris is a great city.
(43) *(The) Paris that I used to know is a great city.

→ FVIs in RTNs: behave like commoun nouns

(44) *(Het) *waarom* (van de zaak)
the *why* of the case
wordt in de eerste alinea beschreven.
becomes in the first paragraph described
‘The motivation behind the case is discussed in the first paragraph.’

Argument #5: paraphrases with sound/word/phrase

→ self-reference: can be paraphrased as the sound/word/phrase/… (Sørensen 1961)

(45) *(Het woord) *waarom* is een bijwoord.
the word *why* is an adverb
*(The word) *why* is an adverb.’

→ FVIs in RTNs: cannot be paraphrased as such

(46) *Het (woord) *waarom* van de zaak wordt eerst beschreven.
the *word* *why* of the case becomes first described
‘The motivation behind the case is discussed first.’

Summary

<table>
<thead>
<tr>
<th>form vs. meaning</th>
<th>self-reference</th>
<th>FVIs in RTNs</th>
</tr>
</thead>
<tbody>
<tr>
<td>gender</td>
<td>form</td>
<td>meaning</td>
</tr>
<tr>
<td>syntactic category</td>
<td>nominal</td>
<td>nominal or verbal</td>
</tr>
<tr>
<td>proper name vs. common noun</td>
<td>proper name</td>
<td>common noun</td>
</tr>
<tr>
<td>can be paraphrased as</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td><em>the sound/word/phrase/</em>…</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

conclusion: the use of functional vocabulary items in root terminal nodes is not an instance of self-reference

1.3.6 Conclusion

→ the fact that functional vocabulary items can occur in root positions shows that roots should be defined structurally: they correspond to whatever is inserted (LVI or FVI) in structural positions that are featureless and hence remain inert throughout the syntactic derivation

1.4 Roots are merged lower than functional material

→ lexical categories are dominated by functional material rather than the other way around:

(47)

a. T
   \[
   \begin{array}{c}
   T \\
   v \\
   \end{array}
   \]

b. *T
   \[
   \begin{array}{c}
   *T \\
   v \\
   v \\
   T \\
   \end{array}
   \]
1.5 Summary: desiderata for a theory of roots

| i) | Roots have no grammatical features |
| ii) | Roots have no syntactic category |
| iii) | Roots are defined structurally, not lexically |
| iv) | Roots are merged lower than functional material |

**note:** all current theories of roots have to state (i)-(iv) as axioms; as it stands, they do not follow from any independent properties of roots

2 PREREQUISITE FOR THE ANALYSIS: ASYMMETRIC PRIMARY MERGE & THE NULL DERIVATION

2.1 Asymmetric Merge


\[
\text{Merge}(\alpha, \beta) = \{\alpha, \beta\}
\]

→ this operation is completely symmetric; neither hierarchically nor linearly organized: Merge (\alpha, \beta) = Merge (\beta, \alpha)

**however:** there are reasons to think Merge is asymmetric:

(i) **labeling**

Chomsky (1995): in Merge (\alpha, \beta), either \alpha or \beta projects

\[
\text{Merge}(\alpha, \beta) = \{\alpha \{\alpha, \beta\}\}
\]

→ Langendoen (2003:3): \{\alpha \{\alpha, \beta\}\} = <\alpha, \beta>, i.e. labeling leads to (asymmetric) Pair Merge rather than (symmetric) Set Merge

(ii) **Derivational Asymmetry**

Jaspers (1998): for every Merge operation one element is derivationally prior to the other, i.e. derivation creates asymmetry (cf. also Epstein 1999:337)

(iii) **conceptual simplicity**

Zwart (2009b): Merge applying to two elements is a divergence from the simplest possible—and hence preferable—scenario: why not one?

**alternative:** Unary Merge

(50) **Unary Merge** (adapted from Zwart 2009a, 2010)

Merge selects a single subset from a resource (e.g. \{\alpha\}), includes it in the derivation under construction (\delta), and yields an ordered pair (e.g. <\{\alpha\}, \delta>, assuming \{\alpha\} projects).

(51)

2.2 Primary Merge

**question:** how does the very first Merge operation take place, when there isn’t yet a “derivation under construction”, i.e. when \delta = \emptyset?

**traditional (often implicit) answers:**

**option #1:** Select can exceptionally take two elements from the resource

\[
\text{Select}(\alpha, \beta)
\]

\[
\text{Merge}(\alpha, \beta) = \{\alpha, \beta\}
\]
problems:
- if 2, why not 3 or 4 or ...?

(53) Select \( (\alpha, \beta, \gamma, ..., \omega) \)
Merge \( (\alpha, \beta, \gamma, ..., \omega) = \{\alpha, \beta, \gamma, ..., \omega\} \)

\[ \{\alpha\} \quad \{\beta\} \quad \{\gamma\} \quad \{\delta\} \quad \{\epsilon\} \quad \{\zeta\} \quad \{\eta\} \quad \{\theta\} \quad \{\omega\} \]

- how to restrict this to Primary Merge?

(54) \{\gamma\}

\{\delta\} \quad \{\gamma\} \quad \{\beta\}

\{\beta\} \quad \{\alpha\}

\textbf{option \#2:} Select need not (directly) feed Merge

(55) Select \( \alpha \)
Select \( \beta \)
Merge \( (\alpha, \beta) = \{\alpha, \beta\} \)

problems:
- same overgeneration issues as solution (i)
- involves lookahead

\textbf{alternative:} Unary Merge \( \alpha \) with the empty workspace (see also Zwart 2009b, 2010, Fortuny 2008, Guimarães 2004)

(56) \( \delta = \emptyset \)
(57) Merge \( (\alpha, \emptyset) = <\alpha, \emptyset> \)

(58) \{\alpha\}
\{\alpha\} \quad \emptyset

\textbf{interesting side-effect:} labeling the output of Primary Merge (i.e. \{H, H\}-structures) now becomes trivial:

\textbf{Chomsky (2013:47):} “Another long-standing problem has to do with head-head constructions, the first step in a derivation. If the Marantz-Borer conception is adopted, these will be of the form \( f\)-root, where \( f \) is one of the functional elements determining category. \textit{Suppose that root, like conjunction, does not qualify as a label.} In that case these constructions will be labeled \( f \), as intended, because no other element is visible to LA [the labeling algorithm, mdb & jvc].” (emphasis added)

\textbf{our proposal:} structures created by Primary Merge are always of the form \( \{H, \emptyset\} \rightarrow \)
given that \( \emptyset \) by definition cannot project, Merge \( (\alpha, \emptyset) \) will always/automatically be labeled \( \alpha \)

3 \textbf{QUICK RECAP}

\textbf{section 1:} four properties of roots:
  i) Roots have no grammatical features
  ii) Roots have no syntactic category
  iii) Roots are defined structurally, not lexically
  iv) Roots are merged lower than functional material

\textbf{section 2:} asymmetric Primary Merge

(59) \{\alpha\}
\{\alpha\} \quad \emptyset

\textbf{next section:} derive (i)-(iv) from (59)
4  THE ANALYSIS: DERIVING THE PROPERTIES OF ROOTS

gist of the analysis: the empty position created as a side-effect of asymmetric Primary Merge serves as the insertion site for roots

4.1  A (simplified) sample derivation

(i)  Numeration/Resource:

(60)  the books

(61)  \( R = \{ [+def], [+pl] \} \)

recall: Late Insertion implies that \( R \) contains no actual vocabulary items, only grammatical features (and no placeholder feature for roots)

(ii)  syntactic derivation:

step one: (Primary) Merge of [+pl]

(62)  \( \{ [+pl] \} \)

(63)  \( R = \{ [+def] \} \)

step two: Merge of [+def]

(64)  \( \{ [+def] \} \)

(65)  \( R = \{ \} \)

(iii)  (late) Vocabulary Insertion:

(66)  \( /\delta a/ \leftrightarrow [+def] \)

(67)  \( /s/ \leftrightarrow [+pl] \)

(68)  \( /buk/ \leftrightarrow \emptyset \)

4.2  Deriving the four root axioms

i) Roots have no grammatical features

\( \rightarrow \emptyset \) is radically empty \( \Rightarrow \) the root position does not play any active role in the syntactic derivation and root meaning is malleable

ii) Roots have no syntactic category

\( \rightarrow \emptyset \) is radically empty \( \Rightarrow \) it does not contain any categorial features

iii) Roots are defined structurally, not lexically

\( \rightarrow \) the empty position is a mechanical by-product of the operation Merge; it is completely dissociated from whatever vocabulary item gets inserted into that position at a post-syntactic stage

iv) Roots are merged lower than functional material

\( \rightarrow \) only in the case of the very first Merge operation (Primary Merge) is the derivation null \( \Rightarrow \) only at the very foot of the structure does \( \emptyset \) show up
5 THEORETICAL CONSEQUENCES OF THE ANALYSIS

5.1 Dealing with multiple roots: layered derivations

Previous section: the root position (i.e. Ø) is the mechanical by-product of the very first Merge operation only

Consequence: structures containing multiple roots must be the result of multiple derivations, each with its own instantiation of Primary Merge

One derivation one root
For every derivation there is exactly one root, and for every root there is exactly one derivation

Implementation: layered derivations: derivations are layered when “the output of a previous derivation [appears] as an atom in the numeration for the next derivation” (Zwart 2009b:161)


a. a sit-on-the-guidelines Euro policy
b. animal-to-human transplant experiments
c. go-anywhere-at-any-time-access
d. I feel particularly sit-around-and-do-nothing-ish today

A sample derivation

The boy eats the cookie. \(\rightarrow\) three roots \(\rightarrow\) three derivations

(i) Numeration/Resource (abstracting away from Tense):

\[ R = \{ [+def], [+def], v \} \]

(ii) Syntactic derivation:

\[ \text{step one: Primary Merge of [+def]} \]

\[ \{ [+def] \} \]

\[ \{ [+def] \} \cdot \emptyset \]

\[ R = \{ [+def], v \} \]

\[ \text{step two: readmittance of (72) to R} \]

\[ R = \{ [+def], v, \langle [+def], \emptyset \rangle \} \]

\[ \text{step three: Primary Merge of v} \]

\[ R = \{ [+def], \langle v, \emptyset \rangle, \langle [+def], \emptyset \rangle \} \]

\[ \text{step four: Merge of } \langle [+def], \emptyset \rangle \]

\[ R = \{ [+def], \langle [+def], \emptyset \rangle \} \]

\[ \text{step five: readmittance of (77) to R} \]

\[ R = \{ [+def], \langle v, \emptyset \rangle, \langle [+def], \emptyset \rangle \} \]
step six: Primary Merge of [+def]

(80) \{ [+def] \}

\{ [+def] \} \emptyset

(81) R = \{ \langle v, \emptyset \rangle, \langle \{ [+def] \}, \emptyset \rangle \}

step seven: Merge of \langle v, \emptyset \rangle, \langle \{ [+def] \}, \emptyset \rangle

(82) \langle v, \emptyset \rangle, \langle \{ [+def] \}, \emptyset \rangle

\{ [+def] \} \emptyset

(83) R = \{ \}

(iii) (late) Vocabulary Insertion:

(84) /ða/ \iff [+def]

/baj/ \iff \emptyset

/kuki/ \iff \emptyset

/iit/ \iff \emptyset

(85) The boy eats the cookie.

note: if readmittance to R entails spell-out and concomitant opacity (Uriagereka 1999, Zwart 2009b), the derivation in (72)-(84) wrongly predicts objects are islands and subjects are not

proposal: derivations proceed left-to-right across subderivations (i.e. subject-verbal complex-object), but bottom-up within each subderivation (cf. Uriagereka 1999, Drury 2005)

5.2 A unified vocabulary insertion mechanism

5.2.1 Introduction

Chomsky (1995:226): Vocabulary Insertion (VocIns) = Select: take an element from the numeration and introduce it into the derivation

Halle & Marantz (1993): VocIns = Late insertion: syntax merges innate features which are matched post-syntactically with vocabulary items (VI)

a. [+D, +def] \iff /ða/

b. \sqrt{ } \iff /buk/

note: there is a three-level dichotomy in the DM-approach to VocIns:

(i) two types of terminal nodes in syntax:
   - Root terminal nodes (RTNs), \sqrt{ }
   - Functional terminal nodes (FTNs), e.g. [+D, +def]

(ii) two types of vocabulary items at VocIns:
   - Lexical vocabulary items (LVIs), e.g. \sqrt{ } \iff /buk/
   - Functional vocabulary items (FVIs), e.g. [+D, +def] \iff /ða/)

(iii) two mechanisms for vocabulary insertion:
   - FTNs: insertion based on competition
   - RTNs: insertion based on free choice
by linking these three dichotomies, DM arrives at a strict division of labor between the functional and the lexical domain:

(i) functional vocabulary items spell out functional terminal nodes and are inserted based on competition
(ii) lexical vocabulary items spell out root terminal nodes and are inserted based on free choice

however: in principle, there are four ways of combining vocabulary items with terminal nodes:
(a) functional vocabulary items realizing functional terminal nodes
(b) lexical vocabulary items realizing root terminal nodes
(c) functional vocabulary items realizing root terminal nodes
(d) lexical vocabulary items realizing functional terminal nodes

recall: FVIs can spell out root terminal nodes (i.e. option (c) is realized):

(88) Ik heb het *waarom* van de zaak nooit begrepen.
I have the *why* of the case never understood
‘I have never understood the motivation behind the case.’

5.2.2 Revisiting Vocabulary Insertion

5.2.2.1 Vocabulary insertion in DM

recall: two mechanisms for vocabulary insertion

(1) functional terminal nodes: insertion based on competition

(89) The Subset Principle
The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen (Halle 1997:428).

→ ensures that the VI whose feature specification matches that of the terminal node most closely will be the winner, via the Elsewhere Principle

(2) root terminal nodes: insertion based on free choice

→ all LVIs bear some marking (a [Root]-feature (Halle and Marantz 1993), a phonological index (Harley to appear a.o.) that is replicated on root terminal nodes → this matching ensures that only and all LVIs can be inserted in RTNs

5.2.2.2 [Root]-problems

→ adopting a [Root]-feature (or comparable lexical diacritic) to distinguish roots from non-roots is problematic for three reasons:

(i) theoretically, such a feature is the odd one out in the pre-syntactic (feature) lexicon: it is not syntactic in that it does not play any role in the syntactic derivation, and it is not morphological in that there is no morphological property that distinguishes roots from non-roots
(ii) FVIs can be inserted in RTNs → FVIs should be endowed with a [Root]-feature as well ⇒ the feature no longer distinguishes roots from non-roots

(90) Ik heb het waarom van de zaak nooit begrepen.
I have the why of the case never understood
‘I have never understood the motivation behind the case.’

(iii) FVIs can be inserted in RTNs → competition-based insertion in FTNs requires that FTNs are endowed with a [Root]-feature as well ⇒ the feature no longer distinguishes root terminal nodes from non-root terminal nodes

conclusion: adopting a [Root]-feature (or other similar diacritic) to regulate the insertion in root terminal nodes raises more problems than it solves

5.2.2.3 Vocabulary insertion without root markers

recall: in our proposal, root terminal nodes are radically featureless, i.e. there is no [Root]-feature or any other comparable diacritic

consequences for Vocabulary Insertion:

(1) in functional terminal nodes: nothing changes; insertion is regulated by Subset Principle-based competition, like in standard DM

(2) in root terminal nodes: in DM, free choice was restricted to those VIs that bear a particular marking (e.g. a [Root]-feature) → we have done away with these markings ⇒ free choice is now truly unlimited: every and any vocabulary item can be inserted in root terminal nodes

conclusion: a natural consequence of doing away with the [Root]-feature is that Vocabulary Insertion in root terminal nodes now allows any vocabulary item to be inserted there ⇒ this is indeed what we find

5.2.3 There are no lexical vocabulary items in functional terminal nodes

question: under what circumstances could an LVI spell out an FTN?

answer: if it wins competition-based Vocabulary Insertion, i.e. if its feature specification matches that of the terminal node most closely → given that its feature specification is the empty set, this only occurs if there is no more specific (functional) VI available in the language to spell out (the features in) that FTN

however: under such a hypothetical scenario every LVI should be an equally suitable candidate for spelling out the FTN, i.e. if this scenario occurs, it should be extremely productive

semi-lexical items: seem like the best candidates for LVIs spelling out FTNs (see Emonds 1985, 15 Van Riemsdijk 1998 and Corver & Van Riemsdijk 2001)

example: paar in Dutch (Van Riemsdijk 2005:8, see also Vos 1999)

- can realize an RTN:

(91) Het gelukkige paar wandelde langs de Seine.
the happy couple walked along the Seine
‘The happy couple walked along the Seine.’

- can realize an FTN (i.e. a quantifier)

(92) de paar vrienden die hij nog heeft
the few friends he still has
‘the few friends he has left’

(93) de vrienden
the friends
‘the friends’

(94) * de paar
the few pair
note: the semi-lexicality of paar is not productive:

(95) het {koppel / stel / duo}
the couple / twosome / duo
‘the couple/twosome/duo’

(96) * de koppel/stel/duo vrienden die hij nog heeft
the couple/twosome/duo friends that he still has

→ if paar in (92) were an LVI merged in an FTN, replacing it with other LVIs such as koppel/stel/duo should be perfectly felicitous → the fact that it isn’t suggests that paar (and by extension: semi-lexical items more generally) are functional vocabulary items, not lexical ones:

(97) [Q] ↔ paar

in other words: (92) is not an example of an LVI realizing an FTN, (91) is a case of an FVI spelling out an RTN

6 CONCLUSIONS

(a) the following four properties of roots can be derived as theorems from the theory of Merge:
   i) Roots have no grammatical features
   ii) Roots have no syntactic category
   iii) Roots are defined structurally, not lexically
   iv) Roots are merged lower than functional material

(b) Merge is unary and asymmetric, and the first Merge operation in each derivation appends an element from the Numeration to the null derivation

(c) the empty position thus created serves as the post-syntactic insertion site for roots

(d) expressions containing multiple roots are the output of multiple (layered) derivations

(e) functional vocabulary items can realize root terminal nodes

(f) lexical vocabulary items cannot realize functional terminal nodes

(e) semi-lexical items are functional vocabulary items, not lexical ones

Theoretical Consequences

- unified vocabulary insertion for functional and lexical vocabulary items
- roots are a specific kind of terminal node, not a specific kind of vocabulary item
- roots are featureless nodes and as a result, cannot move or project
- generalized, revised late insertion (pace Harley to appear)