Semi-lexicality: syntax or lexicon?

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1 Introduction

1.1 The phenomenon

The noun **bunch** looks like a regular count noun (e.g. 'study'); It can take an indefinite determiner, and an *of*-complement.

(1)   A **study** of possessives is worth pursuing.

(2)   A **bunch** of chickens ran down the mountain.

However, **bunch** cannot occur in plural form . . .

(3)   **Studies** of possessives are worth pursuing.

(4)   *****Bunches** of chickens ran down the mountain.   (Klockmann 2017:4)

. . . nor can it control agreement.

(5)   A **study** of possessives *****were**/***was** worth pursuing.

(6)   A **bunch** of chickens ***were**/*****was** found on the trail.   (Klockmann 2017:4)

→ Semi-lexical elements add functional-like meaning to a lexical item.

→ they syntactically 'do not behave as we expect them to do' (to be defined more precisely in section 2).

They seem to be neither fully lexical nor fully functional. The 'in between' syntactic behaviour of these elements is **problematic for their integration into a theory of linguistic categories**.

The number of nouns, verbs and adjectives which behave 'semi-lexically' across different languages makes it hard to set them aside as exceptions (Ross 1972, Emonds 1985, Van Riemsdijk 1998, Vos 1999, Corver and Van Riemsdijk 2001).

1.2 This debate

In this debate, we want to

- formally define semi-lexicality

- analyze semi-lexicality

> **Main research question**:
> Given the bifurcation between roots and functional items, what is semi-lexicality?
> --
> **Each perspective's main answer:**
>
> - Perspective A: Semi-lexicality is lexical. Next to roots and functional items, there are semi-lexical items in the lexicon. The syntax of semi-lexical items is not necessarily anything special.
>
> - Perspective B: Semi-lexicality is syntactic. Roots can incorporate into functional heads and eventually become functional items. There are no 'semi-lexical items' in the lexicon.

1.3 Research questions

Five research questions:

Q1: How does the change from lexical to functional happen exactly?

Q2: What facilitates the grammaticalisation of a root?

Q3: How can semi-lexicality inform us about the strictness or fuzziness of categories?

Q4: Is the semi-lexical behavior of a lexical item construction dependent?

Q5: Tying semi-lexicality to grammaticalisation, can we explain why degrammaticalisation is so much rarer than grammaticalisation (possibly non-existent)?

Overview of the debate:

	Agree	Partly agree	Disagree
Question	2	1, 3	4, 5

Table 1: Overview debate

Regarding question 5, we split up differently: one perspective being taken by Klockmann and Cavirani-Pots, and the other taken by De Belder only.

1.4 Roadmap

- Section 2: A definition of semi-lexicality

- Section 3: Both perspectives in a nutshell

- Section 4-8: Targeted discussion by answering the research questions from each perspective

- Section 9: Comparison of implications of both perspectives for linguistic theory

- Section 10: Conclusion and outlook

2   Semi-lexicality: definition and core examples

2.1   Our definition of semi-lexicality

The literature acknowledges the need for the term semi-lexical, but lacks a clear definition (see Emonds (1985), Van Riemsdijk (1998), Corver and Van Riemsdijk (2001) and chapters therein).

> **Definition of semi-lexicality**
> Semi-lexicality manifests itself as a combination of four properties:
>
> 1. a given vocabulary item A is used to express functional-like meaning of a lexical vocabulary item B
>
> 2. its morphosyntactic behaviour is degraded or more restricted compared to that of the lexical items of the category with which it shares syntactic properties
>
> 3. its morphosyntactic behaviour is not identical to that of the functional items which can express the same functional feature of a lexical vocabulary item B
>
> 4. it still shows part of its lexical semantics

We all take a grammaticalisation approach to semi-lexicality, i.e. semi-lexicality is the result of (early steps on) a grammaticalisation path (cf. Haider (2001), Hagemeijer (2001), see Klockmann (2017:202-210) and Cavirani-Pots (2020:277-281), see subsection 3.4.).

2.2   An example from the nominal domain: English *bunch*

2.2.1   Property 1: functional-like meaning

(7)   A **bunch** of chickens ran down the mountain.

→ *Bunch* is used to indicate a given quantity of a lexical noun, namely *chickens*.

2.2.2   Property 2: restricted morphosyntax compared to lexical items of the same category

(8)   ****The*** **bunch** of chickens ran down the mountain.

(9)   ***Bunches** of chickens ran down the mountain.

(10)   A **bunch** of chickens ***were/*was*** found on the trail.

→ *Bunch* in its semi-lexical use is restricted to singular, indefinite contexts, and cannot control agreement.

2.2.3   Property 3: different morphosyntax compared to functional items expressing the same functional feature

(11)   a.   A **bunch** of chickens.
         b.   ***Bunch** chickens.
         c.   *A **bunch** chickens.
         d.   ***Bunch** of chickens.

(12)   a.   **Many** chickens.
         b.   *A **many** of chickens.
         c.   *A **many** chickens.
         d.   ***Many** of chickens.

→ The semi-lexical use of *bunch* requires an indefinite determiner, and *of* between itself and the lexical noun, whereas real quantifiers, such as *many*, cannot occur with a determiner, nor with *of*.

2.2.4 Property 4: lexical semantics is still present

Bunch can also be used as a lexical noun.

(13)   The flowers were arranged in a beautiful **bunch**.

In its semi-lexical use, *bunch* still partly retains its lexical semantics: it can only be used to signal a relatively large quantity of things that form a collection together, corresponding to its lexical meaning of an actual bunch (Klockmann 2017:234).

(14)   A **bunch** of chickens ran down the mountain.

(14) cannot refer to a situation in which five thousand chickens ran down the mountain.

→ The core of the lexical semantics of lexical *bunch* is still retained in its semi-lexical use.

2.3 An example from the verbal domain: Dutch *zitten* 'sit'

2.3.1 Property 1: functional-like meaning

(15)   Ze   heeft **zitten** (te) lezen.
         she has   sit   to   read
         'She has been reading.'

→ *Zitten* 'sit' can be used to express meaning that maps onto progressive/durative aspect.

2.3.2 Property 2: degraded morphosyntax compared to lexical items of the same category

The set of lexical verbs in Dutch that take a *te*-complement require *te* 'to' to be present.

(16)   Ze   heeft **besloten** *(*te*) vertrekken.
         she has   decided   to   leave
         'She decided to leave.'

When *zitten* is used semi-lexically, *te* can be present, but does not have to be.

(17)   Ze   heeft dat   boek **zitten (*te*)** lezen.
         she has   that book sit   to   read
         'She has been reading that book .'

→ The morphosyntax of *zitten* is degraded compared to that of lexical verbs selecting a *te*-complement.

2.3.3 Property 3: different morphosyntax compared to functional items expressing the same functional feature

There are no functional verbs in Dutch that can express progressive aspect, but note that Dutch functional verbs like modals never select a *te*-complement.

(18)   Ze   heeft dat   boek **moeten** *(*te*) lezen.
         she has   that book must   to   read
         'She had to read that book.'

2.3.4 Property 4: lexical semantics is still present

Zitten can also be used as a lexical verb.

(19)   Ze   heeft de hele   dag op haar stoel **gezeten**.
         she has   the whole day on her   chair sit.PTCP
         'She has been sitting on her chair all day.'

In its semi-lexical use, *zitten* still partly retains its lexical semantics.

(20)   Ze   heeft **zitten** (te) ***zwemmen***.
       she has   sit   to   swim
       ??'She has been swimming.'

Swimming is incompatible with a seated position.

→ The core of the lexical semantics of *zitten* is still retained in its semi-lexical use.

3   Both perspectives in a nutshell

3.1   Common agreement

Semi-lexicality is the result of grammaticalisation (cf. Haider (2001), Hagemeijer (2001)).

3.2   Two main differences

The cause of semi-lexicality:

- Perspective A: feature specification in the lexicon.

- Perspective B: syntax.

This is connected to a different view on the syntax-lexicon interface:

- Perspective A: Vocabulary items are marked with features, which determine the syntactic structure.

- Perspective B: Vocabulary items post-syntactically realise a syntactic structure. They do not determine syntax. Their insertion instructions at PF and their interpretational instructions at LF may refer to feature sets, but the vocabulary item itself is never *marked* for features.

(Note: Klockmann does call open class lexical items roots, but does not use this term with the realisational implications known from DM.)

3.3   Perspective A: Semi-lexicality originates in the lexicon

3.3.1   Perspective A in a nutshell

Klockmann (2017, today) builds on Emonds (1985), Schütze (2001), Powers (2001), Haider (2001).

> **Perspective A's Semi-lexicality Hypothesis**:
> Semi-lexicality is what arises when a root is also specified in the lexicon for a funtional feature or bundle of features.

Prediction: the types and manifestations of semi-lexicality in a given language depends on the types of features present in a given language. I.e. if a language has gender as a feature, then gender can play a role in the creation of semi-lexicality effects; in a language without gender, gender can play no role in semi-lexicality.

Being semi-lexical isn't necessarily anything special; instead, it is rather ordinary, and even expected. Vocabulary items generally can be marked for features, roots are no exception.

Semi-lexicality becomes 'visible' when a root specified for a functional feature or bundle of features as a lexical entry forces a non-canonical syntactic structure when this lexical entry is fed to the syntax. The result is a non-canonical (morpho)syntax.

→ A non-canonical structure arises when a semi-lexical item is inserted in the functional domain, which, due to the features it's specified for in the lexicon, either blocks or requires functional structure. This can result in a non-canonical functional structure (to be illustrated shortly).

3.3.2 Perspective A put to work: English *bunch*

Semi-lexical *bunch* illustrates how the quantity domain can be lexicalised by a root specified for a [Q]-feature.[1]

Recall: semi-lexical *bunch* always occurs with an indefinite article ((21) *vs* (22)), always occurs in the singular ((21) *vs* (23)), and indicates a quantity of the lexical noun.

(21)   A bunch of chickens.

(22)   *The bunch of chickens.

(23)   *Bunches of chickens.

Klockmann proposes the lexical entry for semi-lexical *bunch* given in (24).

(24)   *Bunch*: [$\sqrt{bunch}$, Q, INDEF, $\neg\#_{pl}$]

Given that bunch is specified for a [Q]-feature, it is a candidate to lexicalise the quantity domain of a nominal projection.

The semi-lexical root *bunch* is Merged above the classification domain (i.e. the Number projection) of the lexical root in a nominal phrase. Because semi-lexical *bunch* is also still a root, it cannot be Merged directly in the Q-head, but it is Merged right below it.

(25)   **Bunch as a semi-lexical noun**
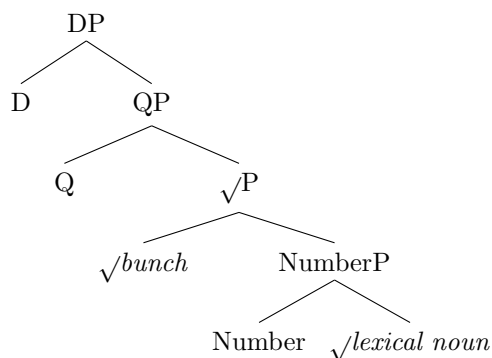
The [INDEF]-feature on the root of *bunch* ensures that it can only co-occur with an indefinite determiner, while the negative plural feature blocks *bunch* from occurring in the plural.

3.4 Perspective B: semi-lexicality originates in syntax

3.4.1 Perspective B in a nutshell

Cavirani-Pots (2020, today) and De Belder (today) build on parts of the approaches of on the one hand Van Riemsdijk (1998) and Cardinaletti and Giusti (2001), and on the other hand Song (2019).

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[1]This is a simplified version of the analysis of *bunch*, see Klockmann (2017:chapter 6) for the full analysis.

> **Perspective B's semi-lexicality hypothesis:**
> There are two separate stages of semi-lexicality; in stage I a root is Merged very low in the extended projection of another root, in stage II a root forms a complex head with a functional head.

There are only two types of vocabulary items: roots and features.

Semi-lexicality is syntactic.

Semi-lexicality is the result of two early consecutive steps on a grammaticalisation path.
We propose the following two underlying syntactic structures for the two stages of semi-lexicality:

(26) **Semi-lexical stage I**   (27) **Semi-lexical stage II**   (28) **Functional stage**
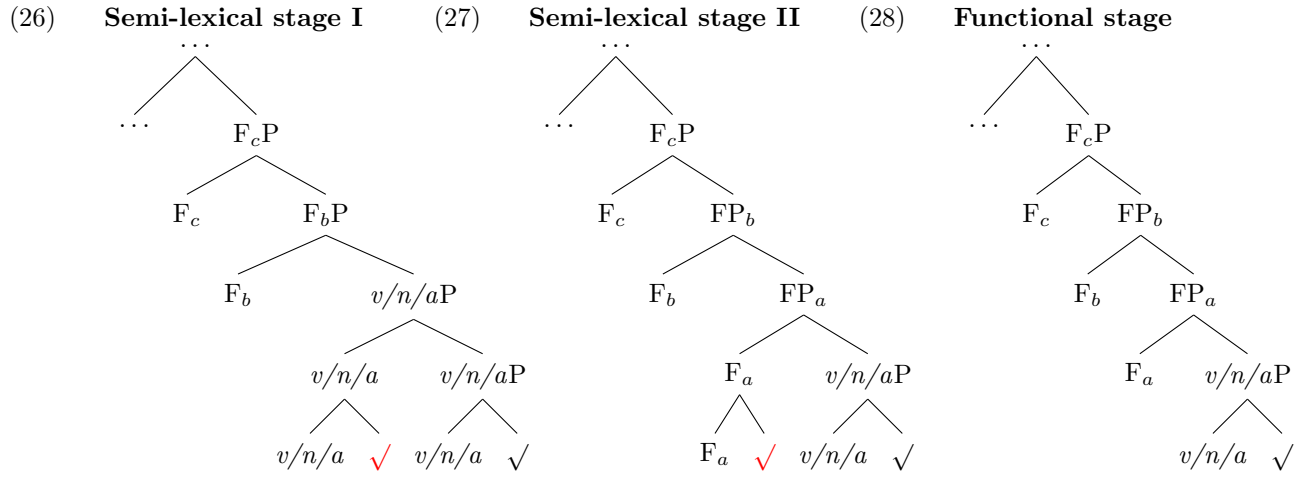
$\rightarrow$ The red root = semi-lexically used root.

The third structure is the syntactic structure for when the item has become completely functional, and has ceased to be semi-lexical (which does not have to happen necessarily).

$\rightarrow$ Cavirani-Pots and De Belder deal with formalising the early steps on a grammaticalisation path *before* the item is part of the functional structure/extended projection (cf. Roberts and Roussou (2003); Roberts (2010); Van Gelderen (2004) et seq.; among many others).[2]

3.4.2 Perspective B put to work: Dutch *hoeven* 'need'

The Dutch verb *hoeven* 'need' is an example of a semi-lexically used root.[3]

Recall (1): In Dutch, lexical verbs can select a *te*-complement:

(29)   Ze   heeft **besloten** *(*te*) vertrekken.
         she has   decided   to   leave
         'She decided to leave.'

Dutch functional verbs like modals never select a *te*-complement:

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[2] Downwards grammaticalisation exists as well. Some cases of downward grammaticalisation can potentially be seen as semi-lexicality in step-way grammaticalisation towards becoming integrated lower into the extended projection as well (V > C, Dem. > C, downward grammaticalising complementizers (Munaro (2016); see also Andriani et al. (2020)). See also Biberauer (2018) for discussion on how discourse elements can become integrated into the functional structure.

[3] This is a simplified version of the analysis of *hoeven* 'need', see Cavirani-Pots (2020:chapter 5) for the full analysis.

(30)   Ze heeft dat boek **moeten *(te)** lezen.
      she has   that book must   to   read
      'She had to read that book.'

When *hoeven* is used semi-lexically, *te* can be present, but does not have to be:

(31)   Ze heeft dat boek niet **hoeven (*te*)** lezen.
      she has   that book not need   to   read
      'She didn't need to read that book.'

Recall (2): Cavirani-Pots and De Belder's hypothesis: semi-lexicality results from a root being used in the functional domain of another root, either still labeled as a verb by *v* (stage I), or Merged with a functional head F (stage II).

Two assumptions:

- *hoeven* 'need' is a semi-lexically used verb: it adds modality (functional behaviour), but still optionally shows the lexical behaviour of selecting a *te*-complement;

- *hoeven* is currently grammaticalising from stage I of semi-lexicality into stage II of semi-lexicality.

The analysis:

- *te* is the spell out of *v* (*v* is a mere verbaliser (Kratzer 1996, Lin 2001, Borer 2005a, Bowers 2010, Lohndal 2014)).

- *hoeven* can be used semi-lexically due to its lexical semantics that contains modality (see section 4).

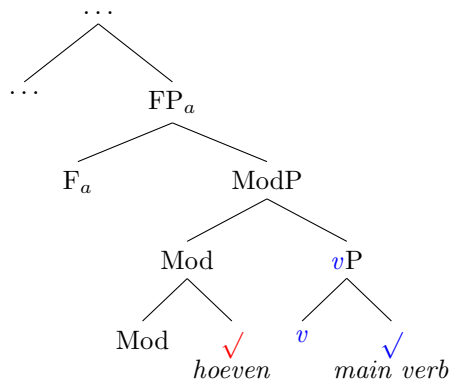The syntactic structure when semi-lexically used *hoeven* is in stage I:

(32)   **Semi-lexical stage I of *hoeven***
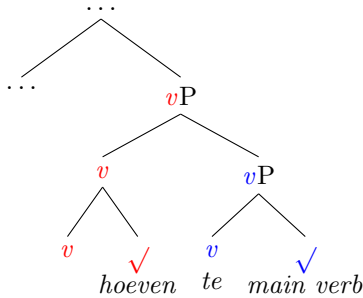
- When *hoeven* is in stage I of semi-lexicality, the *v* with which the root of *hoeven* is merged imposes its selection requirements: a *te*-infinitive;

- the lower *v* (the one of the main verb of the sentence) is spelled out as *te*

The syntactic structure when semi-lexically used *hoeven* is in stage II:

(33) **Semi-lexical stage II**

```
                · · ·
              /      \
         · · ·         FP_a
                      /    \
                   F_a      ModP
                           /     \
                        Mod       vP
                       /   \      /  \
                    Mod    √     v    √
                        hoeven      main verb
```

- *hoeven* is no longer verbalised, but forms a complex head with Mod;

- it has lost its selectional properties: we see *hoeven* being combined with a bare infinitive

4   *Q1*: How does the change from lexical to functional feature happen exactly?

How can semi-lexical items express functional meaning?

4.1   Background: Lexical semantics and semi-productive polysemy

A theory of lexical semantics and general patterns of meaning shift:

We all assume a generative lexicon (e.g. Copestake and Briscoe (1992), Pustejovsky (1995)).

In a generative lexicon, lexical meaning, meaning shifts and the malleability of meaning is derived from a featural decomposition.

Example of a productive meaning shift: animal to meat

(34)   In the garden, John petted the lamb.

(35)   In the restaurant, John had the lamb.

In a generative lexicon, meaning is derived from a hierarchy of types in which semantic features are inherited from mother types to daughter:

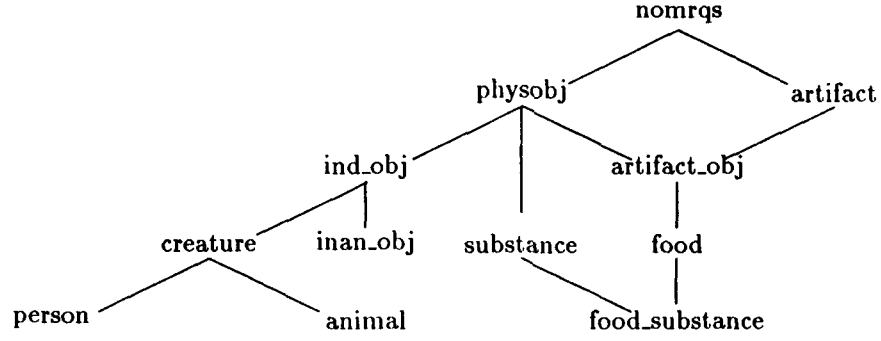Lexical features (a.o. qualia) that characterise a type:
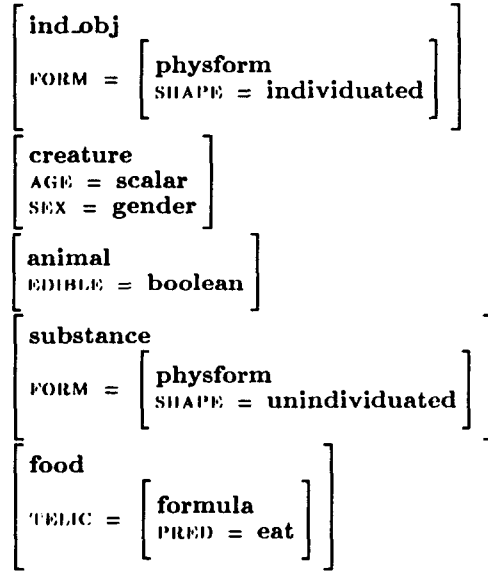
Figure 1: Copestake & Briscoe

$$
\begin{bmatrix}
\textbf{ind\_obj} \\[4pt]
\text{FORM} = \begin{bmatrix} \textbf{physform} \\ \text{SHAPE} = \textbf{individuated} \end{bmatrix}
\end{bmatrix}
$$

$$
\begin{bmatrix}
\textbf{creature} \\
\text{AGE} = \textbf{scalar} \\
\text{SEX} = \textbf{gender}
\end{bmatrix}
$$

$$
\begin{bmatrix}
\textbf{animal} \\
\text{EDIBLE} = \textbf{boolean}
\end{bmatrix}
$$

$$
\begin{bmatrix}
\textbf{substance} \\[4pt]
\text{FORM} = \begin{bmatrix} \textbf{physform} \\ \text{SHAPE} = \textbf{unindividuated} \end{bmatrix}
\end{bmatrix}
$$

$$
\begin{bmatrix}
\textbf{food} \\[4pt]
\text{TELIC} = \begin{bmatrix} \textbf{formula} \\ \text{PRED} = \textbf{eat} \end{bmatrix}
\end{bmatrix}
$$

Figure 2: Copestake & Briscoe 1992:93

Lexical rules that operate on these features:

$$
\textbf{grinding} \sqsubseteq \textbf{lexical\_rule} \qquad
\begin{bmatrix}
\textbf{grinding} \\[4pt]
1 = \begin{bmatrix} \textbf{count-noun} \\ \text{ORTH} = \boxed{1} \\ \text{RQS} = \textbf{ind\_obj} \end{bmatrix} \\[18pt]
0 = \begin{bmatrix} \textbf{mass-noun} \\ \text{ORTH} = \boxed{1} \\ \text{RQS} = \textbf{substance} \end{bmatrix}
\end{bmatrix}
$$
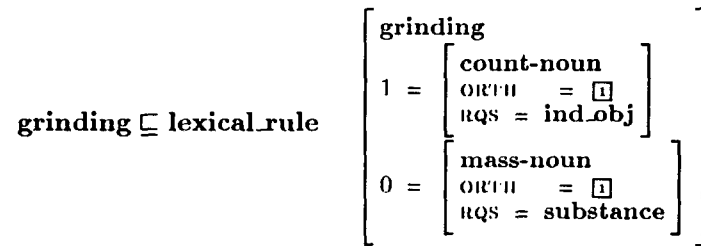
Figure 3: Lexical rule, Copestake & Briscoe 1992:95

```
⎡ count-noun                                              ⎤
⎢ ORTH = "haddock"                                        ⎥
⎢ SYNTAX = [ COUNT = + ]                                  ⎥
⎢          ⎡ animal                                    ⎤  ⎥
⎢          ⎢ SEX = gender                              ⎥  ⎥
⎢          ⎢ AGE = scalar                              ⎥  ⎥
⎢ RQS =    ⎢ EDIBLE = boolean                          ⎥  ⎥
⎢          ⎢ PHYSICAL-STATE = solid                    ⎥  ⎥
⎢          ⎢          ⎡ physform                     ⎤  ⎥  ⎥
⎢          ⎢ FORM =   ⎣ SHAPE = individuated         ⎦  ⎥  ⎥
⎣          ⎣                                          ⎦  ⎦
```
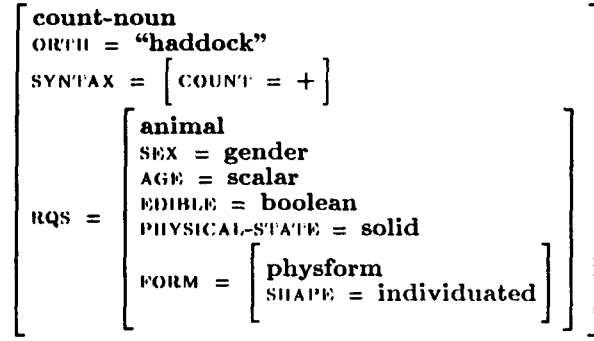
Figure 4: Copestake & Briscoe 1992:94

For good measure, note that theories on the generative lexicon may include syntactic features amongst the features of the lexical item. Following Borer (2005a,b), we all deny this possibility.

4.2 Our proposal

4.2.1 Core idea

> A root can realise a functional feature if one of its lexical features is synonymous with a functional feature (Zeijlstra 2008, Biberauer 2019a).
>
> -
>
> This lexical feature can be listed in the feature set of the root or it can result from a lexical rule that operated on the feature set.

- Perspective A: the root can acquire the functional feature in its lexical entry and become semi-lexical.

- Perspective B: In Stage I and Stage II the proposal fully relies on the generative nature of the generative lexicon. Only in Stage III will the lexical item eventually grammaticalise into a functional vocabulary item.

The lexical feature that is synonymous with the functional feature must be distilled out of the total lexical feature set.

Isolation of lexical features comes for free from lexical semantics. The use of lexical items typically isolates one of the semantic aspects of a lexical item anyway. Lexical rules also distill features from feature sets.

(36) ??John fed and carved the lamb. (Copestake and Briscoe 1992:98)

(37)   #John put two glasses of wine in the stew. We all ended up in intensive care.

→ measure noun from an object: the feature [material] becomes irrelevant, but its size does not.

4.2.2 Defining the difference between lexical features and functional features

Lexical features can be overriden by lexical rules, functional structure or pragmatics:

(38)   There is dog in the soup.

→ The functional structure derives a mass noun.

→ A lexical rule derives the meat reading (i.e. "animals turn into meat when grinded"), overriding the boolean lexical feature [−edible].

(39)   The queen forgot his shoes.
        Context: Theatre setting in which a male actor plays a queen.

→ World knowledge and pragmatics override the lexical feature [gender: feminine] on *queen* (De Belder 2011:205).

Functional features cannot be overriden; their meaning is computed compositionally by LF:

(40)   *She forgot his shoes. (cf. (39), De Belder (2011:205)).

→ *she* is syntactically marked for the feature [feminine].

Crucially, we identify a generative (i.e. productive) system that allows a vocabulary item's lexical feature to be interpreted or even to be transformed into a functional feature. Eventually, it may grammaticalise as such.

- Perspective A: The lexical feature grammaticalises into a functional feature in the lexical entry of the root.

- Perspective B: The lexical item exists as a root or, eventually, as a root and a functional vocabulary item. Thanks to the generative system, there is no need for stored semi-lexical items.

5   *Q2*: What facilitates the grammaticalisation of a root?

> **Main hypothesis**
> Every lexical item of which a lexical feature can be reinterpreted as an exponent of a functional head can grammaticalise.

We assume there to be several factors that may stimulate or that may inhibit the grammaticalisation of a root.

One crucial factor (discussed in section 4) is the presence of the relevant semantics; without this factor, grammaticalisation will never start.

Another factor is the inventory of heads in the functional spines: existing heads will more easily be realised than newly invented ones (cf. Biberauer (2019a)).

For example, De Belder (2011) argues that the semi-lexical noun *stuk* and the diminutive in Dutch both realise the same [unit] head:

(41)   drie   suiker-**tje**-s
        three sugar-DIM-PL
        'three clumps of sugar'

(42)   drie   **stuk**-s
        three piece-PL
        'three specimens'

Yet, it is possible for lexical items to 'introduce' new functional heads (and variation depends on the inventory of functional items, Borer (1984).

An example from (De Belder et al. 2015:ex38-39).

(43) **tipti** sez
      small chair
      'small chair'   (Mauritian Creole)

(44) **ti**-sez
      DIM-chair
      'small chair'   (Mauritian Creole)

Frequency may be a facilitating factor: if a word grammaticalises, it was probably a frequent word (it does not work the other way around).

Word	Freq/million
big	683
small	125
danger	45
poison	25
poisonous	3
edible	1
round	67
flat	26

Table 2: word frequencies from Clearpond: general examples

Another clear factor is the 'poverty of lexical semantics': the most general concept, i.e. the one with the least additional or specific semantic features, is the one that will become grammaticalised (Lehmann (1985:303-318), Traugott and Heine (1991:7-9), Heine et al. (1991:221-22), Hopper and Traugott (1993:154-155)).

For example, 'lady' is more likely to grammaticalise than 'duchess', 'to sit' more than 'to squat', 'glass' more than 'goblet', et cetera.

Note that this may go hand in hand with frequency as well (Table 3).

Word	Freq/million
woman	435
girl	557
wife	348
lady	217
duchess	4
thing	1089
pen	25

Table 3: poverty of lexical semantics

A clear example from the Dutch verbal domain:

In (mostly spoken) Netherlandic Dutch, alongside *zitten* (45), *lopen* (46) is a semi-lexical verb that has grammaticalised to be used to express progressive/durative aspect of the lexical verb.

(45) Ik heb **zitten** (te) werken.
      I   have sit   to   work
      'I have been working.'

(46) Ik heb **lopen** (te) werken.
      I   have walk   to   work
      'I have been working.'

In many languages, motion verbs with the most pover semantics grammaticalise into aspectual markers

(Kuteva (1999) Ross (2016) among others).

In Belgian Dutch, the early grammaticalisation of *lopen* cannot take off, because the lexical semantics of this verb is more complex than in Netherlandic Dutch. That is, it means 'to walk fast' or 'to jog' rather than 'walk'.

A last facilitating factor is a semantic field with few oppositions, which, again, may go hand in hand with frequency (Table 4): binary semantic oppositions map more easily into binary functional features.

Word	Freq/million
white	171
black	168
light	165
red	148
blue	102
dark	89
green	72
yellow	34
orange	22
purple	12
grey	9
pale	8

Table 4: number of oppositions

In sum, we assume the following stimulating/inhibiting factors for grammaticalisation:

1. The presence of the relevant semantics

2. The inventory of heads in the functional spine

3. High frequency

4. Poverty of lexical semantics (combined with frequency)

5. A semantic field with few oppositions (combined with frequency)

6 *Q3*: How can semi-lexicality inform us about the strictness or fuzziness of categories?

6.1 Background: different definitions of categories

Structural versus lexical definitions of categories. The two poles:

- Lexical definition of categories:
  - Vocabulary items are marked with features that define their category.
  - Categories may be fuzzy, ambiguous or they may have intermediate categories, depending on which feature sets one defines on a single vocabulary item (e.g. defining an adjective as +V,+N, see Ross (1972) for fuzziness).
  - Vocabulary items are present in syntax.
  - Vocabulary items project their features into the structure.
  - The features on the item *determine* the syntactic structure.

14

- Syntactic definition of categories:
  - The syntactic structure defines its own categories by merging heads.
  - Syntactic categories may be hybrid (e.g. a nominalisation that indeed starts with verbal structure, see Borer (2013)), but they play according to strictly defined syntactic rules. The category is computed compositionally. No 'fuzziness'.
  - Post-syntactically, vocabulary items are *matched* to the structure according to feature sets and an Elsewhere Principle, however defined (example here from Harley (2014); i.e. the proposals are *realisational*).

PF instructions:

$\sqrt{77}$ $\longleftrightarrow$ /**θ**row/

LF instructions:

$\sqrt{77}$ $\longleftrightarrow$ "vomit" /[v [[__]$_\sqrt{}$ [up]$_P$]]$_{vP}$

$\longleftrightarrow$ "a light blanket" /[n [[__]$_\sqrt{}$]

{… other meanings in other contexts…}

$\longleftrightarrow$ "throw" / elsewhere

Figure 5: Harley 2014

  - The features of the vocabulary item never determine the syntactic feature.

These two poles are the extreme ends of the theoretical possibilities. Within root-based proposals, many mixed proposals have been formulated (Borer (2005a,b, 2013), De Belder (2011), De Belder and Van Craenenbroeck (2015), Wood (2015), Wood and Marantz (2017) among others, see also Starke (2010)).
The relevance for a theory of semi-lexicality:

Whether one considers semi-lexicality as a lexical or a syntactic phenomenon depends directly on one's general view on how categories are defined.

6.2   Perspective A

Semi-lexicality shows us that the transition from lexical to functional is fuzzy and scalar in the lexicon:

Vocabulary item	category
Roots	lexical
Roots with morphosyntactic features	semi-lexical
Roots with morphosyntactic and positional features	semi-lexical
Functional features	functional

Table 5: Lexical to functional

Given the definition of semi-lexicality as a root being specified for a (set of) functional feature(s), there are many items in the lexicon that count as semi-lexical.

This does not always have a visible effect in syntax. I.e., in a language like Polish, where gender is an active feature on nouns, all nouns are taken to be semi-lexical in the lexicon, even though their syntax is canonical.

15

Other semi-lexical entries do have an effect on the syntax. Two examples from Polish:

A lexical entry for a Polish pluralia tantum noun

(47)   *Drzwi* 'door': [$\sqrt{door}$, pl$_\#$, γ]

→ *Drwi* only occurs in plural form.

A lexical entry for a Polish numeral

(48)   *Pięć* '5': [[$_{\#P}$ [$\sqrt{5}$]], ¬#$_{pl}$, ¬γ]

→ *Pięć* is defective for number and gender, and needs to occur in a plural context.

Semi-lexicality in the lexicon also manifests itself as roots with both morphosyntactic and positional features. Recall *bunch* from 3.3.2:

(49)   *Bunch*: [$\sqrt{bunch}$, Q, INDEF, ¬#$_{pl}$]

→ *Bunch* is defective for number, needs to occur with an indefinite determiner, and is inserted in the Q-domain of another root.

In sum:

- given the definitions of semi-lexicality as roots specified for a (set of) functional feature(s), there are many vocabulary items in the lexicon which fall under the header 'semi-lexical';
- they do not form a coherent class; only a subset triggers a non-canonical syntax;
- therefore, lexical, semi-lexical and functional categories are fuzzy and scalar in nature.

6.3   Perspective B

Semi-lexicality does not challenge the view that lexical and functional items are strict categories in the lexicon.

De Belder (2011), De Belder and Van Craenenbroeck (2015):

- Roots are in se structural notions: a root is a type of syntactic node, not a type of vocabulary item. Any vocabulary item can realise a root.
- Lexical items are roots or functional items: either the item is marked with features for insertion, in which case it is called functional. Functional items can realise both their designated functional head and a root node. If a lexical item is not specified for features, it is called a 'root' and it can only realise a root position. This bifurcation has no space for an in-between category, such as semi-lexical items.

  Semi-lexical items do not exist in the lexicon. They are either

- not specified for features, aka roots in the lexicon (both Cavirani-Pots and De Belder)
- specified for features, aka function words in the lexicon (De Belder only, see section 9)

As a consequence, semi-lexicality had to be defined syntactically. This is exactly what Cavirani-Pots (2020) did while still accounting for the empirical properties of the domain: semi-lexical items are root *nodes* that incorporated into a functional head.

In stage 3 the lexical item may fully grammaticalise into a functional item, in which case it becomes a garden-variety functional item.

7 *Q4*: Is the semi-lexical behavior of a lexical item construction dependent?

7.1 Example (1): Dutch *zitten* 'sit'

Dutch *zitten* 'sit' can occur as a

- lexical verb
- copula (De Belder 2020)
- aspectual verb (Cavirani-Pots 2020)

Zitten as lexical verb:

(50)   Anna **zit** op een stoel.
         Anna sits on a   chair.
         'Anna is sitting on a chair.'

Zitten as copula:

(51)   Anna **zit** in Frankrijk.
         Anna sits in France.
         'Anna is in France.'

→ does not imply a seated position.

Zitten semi-lexically used to indicate progressive aspect:

(52)   . . . dat   ik **zit te** werken.
         . . . that I   sit to work.INF
         '. . . that I'm working.'

7.2 Example (2): Afrikaans *loop* 'walk'

Afrikaans *loop* 'walk' can occur as a

- lexical verb
- aspectual verb (andative aspect)
- aspectual verb (progressive/durative aspect)

(De Vos 2005, Breed 2017, Breed et al. 2017, Cavirani-Pots 2020)
Loop as lexical verb:

(53)   Hy **loop** baie vinnig.'
         he walks very fast
         'He is walking very fast.'

Loop as aspectual verb, andative aspect:

(54)   Sal jy net gou   vir my die groente   **loop** en bring?
         shall you just quickly for me the vegetables walk and bring
         'Can you just quickly go and get me vegetables?'   (Biberauer 2019b:11)

Loop as aspectual verb, progressive aspect:

(55)   Ek het   gister   baie **loop** en   praat.
         I   have yesterday a.lot walk and talk
         'I've been (walking and) talking a lot yesterday.'

7.3 Perspective A

Semi-lexical items are not equal to functional items in the lexicon. The former are roots specified for a (set of) functional feature(s), the latter are a (bundle of) functional feature(s) without root.

Given the copula use of *zitten* seems to be fully functional, two lexical entries are assumed.

The lexical entry of the functional item:

(56)   *Zitten*: [copula] (simplified)

This lexical entry allows *zitten* to be used as a copula (see also Kratzer (1996), Alexiadou et al. (2015), Ramchand (2008) on the syntax of copulas as verbal functional heads.

The lexical entry of the semi-lexical item:

(57)   *Zitten*: [$\sqrt{zitten}$, [Asp]] (simplified)

The semi-lexical root can either be inserted in a root position (i.e. its lexical use), or inserted in the functional domain of another root.

In the former case, the functional features are suppressed, given that they are irrelevant in the root position.

In the latter case, the [Asp]-feature ensures that the semi-lexical root can be inserted in the aspectual domain of another root. The lexical semantics of the semi-lexical root brings about the progressive/durative flavour.

For Afrikaans *loop*, only a semi-lexical item is assumed. The lexical entry of this item:

(58)   *Loop*: [$\sqrt{loop}$, [Asp]] (simplified)

The semi-lexical root can either be inserted in a root position (i.e. its lexical use), or inserted in the functional domain of another root.

In the former case, the functional features are suppressed, given that they are irrelevant in the root position.

In the latter case, the [Asp]-feature ensures that the semi-lexical root can be inserted in the aspectual domain of another root. The lexical semantics of the semi-lexical root brings about the progressive/durative or andative flavour.

7.4 Perspective B

A root can occur as a root or as a root inserted in the functional domain of another root.

The original root and its fully grammaticalised functional counterpart can coexist (stage III).

For the example of Dutch *zitten*, two lexical entries are assumed: one functional item, and one featureless root.

The functional item:

(59)   *Zitten* $\longleftrightarrow$ {[copula], [-Path] } (see De Belder (2020))

(60)   ***Zitten* as a copula (Functional stage)**
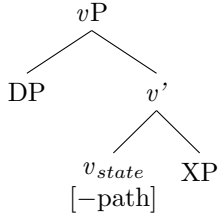
```
          vP
         /  \
        DP   v'
            /  \
      v_state   XP
      [−path]
```
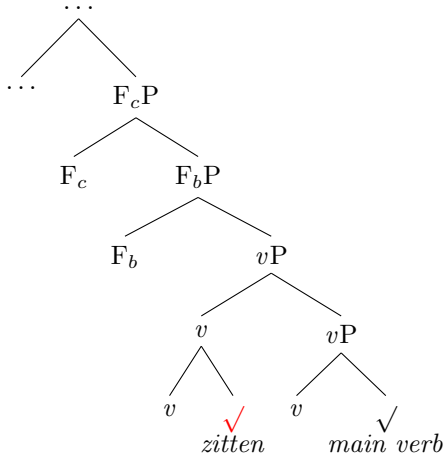
See also Kratzer (1996), Alexiadou et al. (2015), Ramchand (2008) on the syntax of copulas as verbal functional heads.

The featureless root can either be inserted in a root position (i.e. its lexical use), or inserted in the functional domain of another root:

(61)   *Zitten* $\longleftrightarrow$ { $\sqrt{}$ } (See Cavirani-Pots (2020))

(62)   ***Zitten* as a semi-lexical verb (Semi-lexical stage I)**

```
            . . .
           /    \
        . . .    F_cP
                /    \
              F_c     F_bP
                     /    \
                   F_b     vP
                          /   \
                         v     vP
                        / \    /  \
                       v  √    v    √
                       zitten     main verb
```
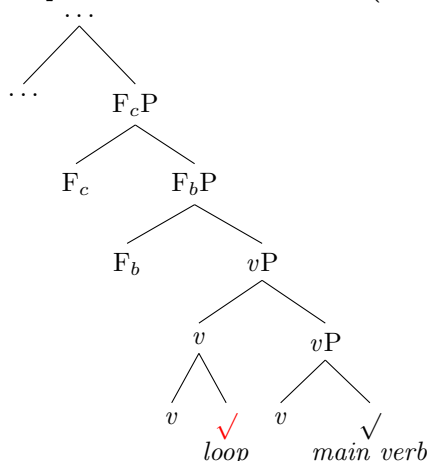
$\rightarrow$ The progressive/durative interpretation of *zitten* arises from its lexical semantics (as discussed in subsection 4.2.1): [durative, -path] (Kuteva 1999, Lemmens 2005).

For the example of Afrikaans *loop*, only a root is assumed:

(63)   *Loop* $\longleftrightarrow$ { $\sqrt{}$ } (See Cavirani-Pots (2020))

The featureless root can either be inserted in a root position (i.e. its lexical use), or be inserted in the functional domain of another root:

(64)   **_Loop_ as a semi-lexical verb (Semi-lexical stage I)**

$\ldots$
$\ldots$ F$_c$P
F$_c$ F$_b$P
F$_b$ vP
v vP
v √ v √
loop   *main verb*

→ The andative interpretation of *loop* arises from its lexical semantics (i.e. [motion, +path], see (Ross 2016) among others).

→ The progressive/durative interpretation of *loop* arises from its lexical semantics (i.e. [durative], [iterative] (repeated steps), see (Ross 2016) among others).

8   *Q5*: Tying semi-lexicality to grammaticalisation, can we explain why degrammaticalisation is so much rarer than grammaticalisation (possibly non-existent)?

Degrammaticalisation, i.e. the process of a functional item gradually becoming less functional and eventually even behaving as a full fledged lexical item, is rare, if not completely non-existent (see for discussion a.o. Heine et al. (1991), Ramat (1992), Diewald (1997), van der Auwera (1993), Hopper and Traugott (2003), Willis (2007), Norde (2009), Viti (2015)).

8.1   Klockmann and Cavirani-Pots

We argue that it is very hard - if not impossible - to cross the border from functional to semi-lexical and then to fully lexical, which is what would need to happen in the case of full degrammaticalisation.

Such a development would require:

- a functional feature to degrammaticalise to such an extent that it loses its functional feature;
- while at the same time it should acquire the corresponding semantic feature plus a whole bunch of other semantic features, to get to having a root

Especially this latter step would be very hard, if not impossible, since the functional item will not be used in contexts where it seems to have a such a set of other semantic features – it will only be used in a position the functional domain.

This means that the language acquirer will never have evidence for the given vocabulary item to have a root in its lexical entry.

In addition: it is unlikely that the slow process of degrammaticalisation would be preferred as a strategy for neologisms over borrowing or invention.

8.2   De Belder

There is clear empirical evidence that functional vocabulary items are used as roots productively and constantly (De Belder 2011, De Belder and Van Craenenbroeck 2014, 2015, De Belder 2017).

(65)   al dat ge-**maar**
        all that prefix-but
        'all those objections'

(66)   **niet**-verjaardags-feest
        not-birthday.party
        'unbirthday party'

(67)   **tegen**-wind
        against-wind
        'headwind'

This possibility follows directly from the Subset Insertion Principle (see De Belder and Van Craenenbroeck (2015) for details).

Given this possibility, there is no need for a functional vocabulary item to degrammaticalise.

9   Comparison of the implications of both perspectives

The main debate issue: is semi-lexicality a property of lexical items or a syntactic phenomenon?

Common agreement:

- Semi-lexicality depends on grammaticalisation: it is an intermediate stage of a root that becomes functional.

We disagree on the timing of the acquisition of a functional feature:

- perspective A: A root acquires a functional feature when it is used semi-lexically.

- perspective B: A root never acquires a functional feature when it is used semi-lexically, but can eventually acquire the functional feature it is merged with in semi-lexical stage II, after which it has become a functional item.

The timing of acquisition of a functional feature consequently results in a different view on the possible types of items in the lexicon:

- perspective A: In the lexicon, there exist (i) roots without functional features (lexical items), (ii) roots with functional features (semi-lexical items), and (iii) functional features without roots (functional items).

- perspective B: In the lexicon, there exist (i) roots without functional features (lexical items) and (ii) functional features without roots (functional items).

In other words, the two perspectives very clearly have different consequences for the structure of the lexicon and the strictness or fuzziness of categories.

	Using roots as functional items		Using functional items as roots	
Conditions	K, C-P, DB		K & C-P	DB
	mapping of a lexical semantic feature on to a functional feature + depending on the inventory of functional heads		voc. item needs to acquire lex. semantics and lose funct. features	follows immediately from voc. insertion at syntax-lexicon interface
Technically	K	C-P & DB	K & C-P	DB
	Addition of a functional feature on the root, resulting in lexical semi-lexicality	via syntactic incorporation, resulting in syntactic semi-lexicality	Degrammaticalisation	Flexible process
How exceptional?	K	C-P & DB	K & C-P	DB
	Many roots are marked for features anyway, semi-lexicality is nothing special	Semi-lexicality is restricted to grammaticalisation processes	Rare	Fully productive

Figure 6: Comparison

10 Conclusion and outlook

10.1 Two main conclusions

Conclusion I: Semi-lexicality is a root being merged in the functional structure of a lower root.

The unexpected/degraded morphoysyntactic behaviour of semi-lexical items compared to lexical items results from:

- perspective A: the feature specification on the semi-lexical root imposing a non-canonical syntactic structure

- perspective B: the semi-lexical root being merged with a functional head rather than a categorising head

The fact that (part of) the lexical semantics of the root when used semi-lexically is often still present, is accounted for:

- perspective A: the root is still present in its specification in the lexicon

- perspective B: it is still the root that is used in both stages of semi-lexicality

Conclusion II: Semi-lexicality results from (intermediate stages of) grammaticalisation.

Grammaticalisation is an important empirical domain to address the question:

- how the interface between syntax and lexicon is structured

10.2 Outlook

Questions regarding semi-lexicality to be addressed in future work:

10.2.1 Phonological restrictions on semi-lexicality

In many languages, suprasegmental phonological constraints apply differently to different categories.

Universal hierarchy (Selkirk 1984, Smith 2011, Zec 2005):

N > A > V > free functional elements > bound functional elements and clitics

In other words, if the language shows category-specific phonology, the suprasegmental phonology of nouns is a superset (i.e. is more liberal) than the phonology of adjectives, which is a superset of the phonology of verbs, etc.

In principle, this may posit a restriction on the grammaticalisation of a words from a phonological superset-category to a more restricted category.

However, it seems that, at least for the Germanic languages, these constraints should not be seen as absolute constraints or strict limitations, but in terms of probabilities (De Belder and Ruigendijk (2021), see Pater (2009), Hayes and Wilson (2007), Hayes and White (2013) on constraints as probabilities).

I.e., it becomes statistically less likely for such a word to make a transition, but it should not be impossible in the Germanic languages. For other language families, restrictions may be stricter.

10.2.2 Universals, features and variation

Different hypotheses on the universality of the functional spine:

1. **Universal Base Hypothesis**: (Chomsky 1981, Kayne 1994, Cinque 1999)
   –All features and their order are innate

2. **No Base Hypothesis**: (Joos 1957, Dryer 1997, Corft 2001, Haspelmath 2007)
   –No features are innate

3. **Universal Spine Hypothesis** (Wiltschko 2014):
   –Some basic concepts are innate.

See also Biberauer (2019a) on emergent features; only general feature format (i.e. $[i\text{F}]$ vs. $[u\text{F}]$) in UG; feature emerge through language acquisition, i.e. interaction between the 'intake' and Third Factor "Maximise Minimal Means" (a learning bias).

See also Cinque and Sevenonius (2020), Longobardi and Roberts (2020), Leivada and Barceló-Coblijn (2021) for recent discussion.

These frameworks make very different predictions in what can be used semi-lexically, as semi-lexical use depends on semantic features of a root overlapping with possible functional features.

Semi-lexicality and grammaticalisation are important empirical domains to investigate:

- what can be a functional head and eventually, what is innate

- where the source of language variation is

10.2.3 Future work: a corpus on semi-lexicality

The creation of a cross-linguistic corpus of semi-lexical items would be a way to test ideas and predictions regarding several aspects of semi-lexicality, including:

- our predictions on the facilitating/inhibiting factors for a grammaticalisation path to start;

- a possible relationship between frequency and stability of semi-lexical items and language type (e.g. analytical languages might have more stable semi-lexical items, which do not grammaticalise further into functional items (Biberauer p.c.);

- semi-lexicality in young languages/poverty of the stimulus-emerged languages, like Creoles;

- similarities and differences between semi-lexical nouns, verbs, adjectives and their grammaticalisation paths.

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