A constructional account of French -clé 'key' and Dutch sleutel- 'key' as in mot-clé / sleutelwoord 'key word'

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A constructional account of French *-clé* 'key' and Dutch *sleutel-* 'key' as in *mot-clé / sleutelwoord* 'key word'[1]

1 Introduction

The study of linguistic phenomena may yield some curious surprises, even when the domain seems to be rather well-defined from the outset. Van Goethem & Amiot (2009) proposed an analysis of recurrent constituents, appearing as right-hand and left-hand members of complex lexemes in French and Dutch, as illustrated in (1):

(1)   a. FR   *industrie-pilote* 'pilot industry'*, ferme-pilote* 'pilot farm', *modèle-pilote* 'pilot model', etc.

   roman-fleuve 'lit. novel-river; very long novel, cycle of novels', *conférence-fleuve* 'lit. conference-river; long conference' , *débat-fleuve* 'lit. debate-river; long debate', etc.

   b. DU   *groenteboer* 'lit. vegetable-farmer; greengrocer', *visboer* 'lit. fish-farmer; fishmonger', *sigarenboer* 'lit. cigar-farmer; cigar seller'

   stokoud 'lit. stick-old; very old', *stokzwart* 'lit. stick-black; very black', *stokvervelend* 'lit.stick-annoying; very annoying', etc.

This study took into consideration a series of nominal components (*-boer* 'farmer', *stok-* 'stick' and *sleutel-* 'key' for Dutch; *-clé* 'key' and *bébé-* 'baby' for French) and led to the following results.

First, the Dutch recurrent components seem to undergo a more advanced grammaticalization into affixes than the French ones. This holds both for right-hand members (*-boer* 'farmer'), grammaticalizing into suffixes (cf. *ijsboer* 'ice cream man', *melkboer* 'milkman', *kaasboer* 'cheesemonger'), and for left-hand members (*stok-* 'stick'), grammaticalizing into prefixes (cf. *stokoud* 'very old', *stokzwart* 'very black', *stokvervelend* 'very annoying', etc.).[2] Whereas French *fleuve* 'river', for instance, is still a noun in the examples given in (1a), *bébé*, on the contrary, seems to have grammaticalized towards prefix status in, for example, *bébé-éléphant* 'baby elephant', *bébé-voiture* 'baby car' and *bébé-société* 'baby society'. In Van Goethem & Amiot (2009), we have related these differences to a typological opposition between Germanic languages, characterized by modifier-head structure, and Romance languages, displaying head-modifier structure. If (evaluative) prefixes are modifiers and if suffixes are (typically) heads, then it could be explained why prefixization (e.g. *stokoud*) and suffixization (e.g. *groenteboer*) are more productive in Dutch because of its Modifier-Head structure: the grammaticalization process into a prefix or a suffix does not conflict with the Modifier-Head structure of Dutch. However, French Head-Modifier structure seems to be an obstacle that has to be overcome when a left-hand component (Head) grammaticalizes into a prefix (Modifier-status) or a right-hand component (Modifier) grammaticalizes into a suffix (Head-status). This could explain why affixization of nouns (and adjectives, cf. Van Goethem 2011) is very rare in French, with the case of *bébé-* serving as an interesting counterexample.

Second, we compared the status of French *-clé* and Dutch *sleutel-* 'key' which occur in similar constructions, as shown in (2):

(2)   *notion-clé / sleutelbegrip* 'key notion', *figure-clé / sleutelfiguur* 'key figure',
   fonction-clé / sleutelfunctie 'key function', *moment-clé / sleutelmoment* 'key moment', etc.

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[1] This paper is a revised version of a conference paper given in French (Amiot & Van Goethem 2010).
[2] Since bound forms such as *stok-* 'lit. stick' and *-boer* 'lit. farmer' still have an independent counterpart, contrary to true affixes, authors such as Meesters (2004) and Booij (2009) prefer treating them as semi-affixes or affixoids: "morphemes which look like parts of compounds, and do occur as lexemes, but have a specific and more restricted meaning when used as part of a compound" (Booij 2009: 208). However, such an analysis raises at least one fundamental question: are the nouns *stok* and *boer* still the same "morphemes" as *stok-* and *boer-* as components of, respectively, the *stok*-A / N-*boer* constructions? Semantically, they do not seem to have any common feature. For instance, the noun *boer* means 'farmer', while the bound form *-boer* appears in complex nouns denoting sellers/ grocers (1b).

In Van Goethem & Amiot (2009), we proposed a classical analysis, for both Dutch and French, considering the complex nouns formed with -*clé* and *sleutel*- as regular NN compounds. However, we noticed that Denison (2001), L'heureux (2008) and De Smet (2010) all propose a different analysis for English *key*, which nevertheless, according to the translations found in (2), seems to be a perfect counterpart of *sleutel* and *clé*. These authors consider that *key* should be analyzed as an adjective in the *key-N* structure, because it occurs in typical adjectival constructions (e.g. *a very key factor*, cf. Section 2.2.) that can also be observed to a certain extent in French (cf. Section 3.1.). If this is true, the differences in status between *sleutel, clé* and *key* cannot be related to the typological opposition described above between Germanic Modifier-Head languages and Romance Head-Modifier languages, since English and French would allow new, unbound uses of the bound noun that are inexistent in Dutch.

Consequently, the main objective of this paper will be to re-examine the status of *clé* and *sleutel* in the *N-clé* and *sleutel-N* structures, in order to verify if the proposed analysis for *key* can be transferred to -*clé* and/or *sleutel*-. In Section 2, we will present the different analyses proposed in the literature to account for the complex units presented above; 2.1. will be devoted to the general analyses and 2.2. to the analyses proposed by Denison (2001), L'heureux (2008) and De Smet (2010) for English *key*. In Section 3, we will systematically compare the contexts in which *clé* and *sleutel* can be used. Since it will be demonstrated that their uses widely differ, we will attempt a unified account within the framework of Construction Grammar (Goldberg 1995; Croft & Cruse 2004; Booij 2008, 2009, 2010) in Section 4.

2 Analyses proposed in the literature

A significant number of studies deal with the status of the nominal components in complex units, whether they are recurrent, such as presented in (1) and (2), or not, as in the examples given in (3):

(3)   *requin-marteau / hamerhaai* 'hammerhead shark'*, jupe-culotte / broekrok* 'pantskirt'*, timbre-poste / postzegel* '(postage) stamp'*, homme-sandwich / sandwichman* 'sandwich-man', etc.

The proposed analyses often differ to a considerable extent, which provides evidence of the fact that the exact status of the second component in French or the first one in Dutch is difficult to determine.

2.1 General analyses

Whereas certain linguists propose a syntactic account for the structures under discussion, others give preference to a morphological one.

Noailly (1990) focuses on French complex nominal structures and considers them as syntactic constructions with the right-hand member acting as an attributive substantive (*'substantif épithète'*), i.e. basically a noun with an adjectival function. In addition, Noailly proposes a comprehensive classification of the different relations found between the (semantic) head noun and the attributive noun, and distinguishes qualification (e.g. *femme-femme* ('lit. woman-woman; true woman'), coordination (e.g. *auteur-compositeur* 'author-composer'), complementation (e.g. *stratégie Mitterrand* 'Mitterrand strategy') and identification relations (e.g. *président Chirac* 'president Chirac').

Fradin (2009) and Booij (2008), in turn, advance an essentially morphological account of the structures under discussion. According to Fradin (2009), they are formed by lexeme construction rules / patterns of the NN type (while others create VN lexemes such as *chauffe-biberon* ('lit. warm(s)-bottle; bottle-warmer')). Complex NN lexemes can be formed in morphology or in syntax, the first strategy applying to coordinate (e.g. *hôtel-restaurant* 'hotel-restaurant') and subordinate compounds (e.g. *requin-marteau* 'hammerhead shark'*, justice escargot* 'lit. justice-snail; slow justice'), the second to "two-slot nominal constructs" (e.g. *impression laser* 'laser printing') and identificational NNs (e.g. *catégorie adjectif* 'adjective category').

According to Booij (2008), who is inspired by Goldberg's Construction Grammar (Goldberg 1995), the NN structures are formed by lexeme construction patterns which, in case of recurrence, can be considered "constructional idioms", in the sense of Langacker (1987).

More generally, it can be noticed that both Fradin (2009) and Booij (2008) analyze the recurrent component as a noun. It should, however, be added that Booij assigns an affixoid status, neither fully lexical nor truly affixal, to recurrent elements that undergo a semantic change and that still have a syntactic counterpart (cf. note 2).

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In sum, whereas the authors' opinions may differ in the way they analyze the construction mode of the complex units (syntactic or morphological account), there exists a broad consensus on the way the category of the recurrent element should be analyzed, namely as a noun. A very different account can be found in Denison (2001), L'heureux (2008) and De Smet (2010), who analyze, among other items, the status of English *key*. In what follows, we present their analysis and arguments. Since the two most recent accounts were largely inspired by the first, we will essentially discuss the analysis proposed by Denison.

2.2 Analysis proposed by Denison (2001)

Denison (2001) endeavours to demonstrate that diachronic change implies gradience. On the basis of the contexts in which the nouns *key* and *fun* are used, it is argued that they have an adjectival behaviour or can even be considered to be true adjectives. These examples give evidence of what Denison calls "intersective gradience" between categories, noun and adjective in the present case (as opposed to "subsective gradience" which is gradience within a single category).

In what follows, we will concentrate on the discussion of *key*. Denison (2001: 128-129) measures its adjectival role on the basis of the following parameters: (i) adverbial modification, (ii) predicative use, (iii) attributive use and (iv) comparative / superlative use. It is shown that *key* acts as an adjective in the following contexts:

(i)   *Key* allows modification by adverbs such as *absolutely* and *very*:

(4)   a.   It's not **an absolutely key work** by Cézanne (L'heureux 2008: 7)
        b.   There are a number of reasons why people lose their hair, stress is **a very key factor**. (Denison 2001: 129)

(ii)   *Key* can be used predicatively:

(5)   a.   Claudia brings an unforgettable quality of joy to all her work that **is key** to Revlon's view of beauty. (Denison 2001: 129)
        b.   Color **is absolutely key** to making a home feel warm and rich. (L'heureux 2008: 7)

L'heureux (2008: 11) remarks that *key* is often modified by an adverb in this predicative use (cf. (5b)).

(iii)   *Key* can be used attributively:

(6)   a.   More emotional weight is carried in **the key domestic scenes** (…) (Denison 2001: 128)
        b.   But **the key foreign and defense portfolios** remained unchanged. (Denison 2001: 128)

To illustrate this attributive use and to distinguish it from a possible use as a prenominal modifier, Denison (2001) (as well as L'heureux (2008) and De Smet (2010)) picks out cases in which *key* is not immediately adjacent to the head noun, because of intercalation of an adjective (*domestic* in (6a)) or even two coordinated terms (*foreign* and *defense* in (6b)). In the first case, Denison (2001: 128) admits nevertheless that the context may not be particularly decisive, since *key* could still be interpreted as a prenominal modifier of the (semi-) lexicalized unit *domestic scene*. In (6b), however, *key* needs to be analyzed as an adjective that has scope over the two subsequent terms; if it were a modifying noun, the word order would be different (*foreign and defense key portfolio*), according to Denison.

(iv)   *Key* allows degree marking, both comparative (7a) and superlative (7b). This use is however rather exceptional.

(7)   a.   Nowhere is credibility **more key than** among Iraqis. (L'heureux 2008: 9)
        b.   It's **the most key part** of this business. (L'heureux 2008: 9)

In sum, it can be noticed that English *key* acts as an adjective in different contexts. Consequently, the question should be raised whether this is also the case for French *clé* and Dutch *sleutel*. In the following Section, we will proceed in the same way as Denison (2001) in order to evaluate how *clé* and *sleutel* function in adjectival contexts. This analysis will also allow us to measure the degree of cohesion of the binominal structures in which they occur.

3 Comparison of the use of *clé* and *sleutel*

3.1 The use of *clé*

Clé seems to display more or less the same uses as *key*[3]:

(i)   *Clé* can be modified by an adverb, such as *absolument* 'absolutely' or *réellement* 'really' (less easily by *très* 'very'):

(8)   a.   Pour qu'elle réussisse, il faut que nous nous appuyions sur le management de proximité, qui joue un **rôle absolument clé (lit. 'role absolutely key; absolutely key role')** dans notre entreprise […].
        b.   Nous reviendrons sur ce **point réellement clé (lit. 'this point really key; this really key point')** pour la suite de la réflexion.

Many examples of this kind can be found.

(ii)   *Clé* can modify a polylexematic unit, what Denison (2001) considers to be an attributive use:

(9)   a.   Le tourisme est un **secteur économique clé (lit. 'sector economic key; key economic sector')**.
        b.   Un diplomate français nommé à un **poste administratif clé** de l'UE **(lit. 'position administrative key; key administrative position')**.

In the same contexts, examples with coordination of two adjectives can be found (cf. also under (6b)):

(10)   Les APE devraient être cohérents avec l'intégration régionale et les stratégies régionales pour les **secteurs économiques et industriels clés (lit. 'sectors economic and industrial key; key economic and industrial sectors').**

(iii)   *Clé* can have predicative uses:

(11)   a.   Le poste de coordination d'artwork **est clé (lit. 'the post […] is key')** dans le développement des innovations
        b.   Ce livre de Zweifel **est absolument clé (lit. 'is absolutely key')** pour vous et vos collaborateurs si vous voulez une équipe gagnante.

Exactly as in the case of *key*, adverbial modification and predicative use are often correlated.

(iv)   *Clé* allows degree marking, both comparative (12a) and superlative (12b):

(12)   a.   Et depuis l'essor d'internet, la relation client est d'autant **plus clé que (lit. 'the client relation is all the more key because')** le consommateur peut facilement et rapidement exprimer son avis.
        b.   Et c'est sans doute ce point qui est **le plus clé et critique (lit. 'this point is the most key and critical')**: comment parvenir à déléguer une partie de la réputation du parti ou du candidat […]

It should be noted that the examples under (iii) and (iv) are rare and that many native speakers reject them. However, they are mentioned because they provide evidence of what could be a possible evolution of *clé* (in this respect, cf. Denison (2001), L'heureux (2008) and De Smet (2010)).

From what precedes, two conclusions can be drawn: on the one hand, *clé* can have typical adjectival uses, even if some of these uses are uncommon or sociolinguistically marked, and, on the other hand, more disturbingly, the studied sequences N(-)clé are much less cohesive than Van Goethem & Amiot supposed. The two examples at (13) illustrate this fact very clearly:

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[3] If not specifically mentioned, the examples come from the online press watch *GlossaNet*: http://glossa.fltr.ucl.ac.be. The corpus was made up of 21 French and 7 Dutch newspapers that were analyzed for five months between November 2009 and March 2010.

(13) a. Si vous voulez dire que le *timing* dans le développement […] est un **élément absolument clé**, **(lit. 'element absolutely key; absolutely key element')** que le bon réglage du *timing* est un **élément-clé ('key element')** dans le succès […].

 b. pour Marx, le prolétaire n'avait pas de patrie, il était non **le témoin (fût-il clé)**, mais bien le héros de l'histoire (**lit. 'he was not the witness, (were-he key) but the hero'**).

Under (13a), there are two *élément(-)clé* sequences. In the former, *clé* is modified by an adverb (*absolument* 'absolutely') which possibly indicates that this sequence is built up by syntax, while in the latter *élément* and *clé* are joined by a hyphen, which could be seen as the sign of a morphological formation, even if the presence of the hyphen is not proof (on the unstable nature of the use of the hyphen, cf. Mathieu-Colas 1995). As for (13b), whatever analysis may be proposed, it is incontestable that the two constituents (*témoin* 'witness' and *clé* 'key') are really independent.

All of the above questions the analysis proposed by Fradin (2009) (see Section 2.1.). In the chapter on French compounding, he identifies two morphological NN formations: the coordinate NN and the subordinate NN. The former are "classically formations whose constituents are tied by the conjunction «and »" (Bisetto & Scalise 2005): an *auteur-compositeur* is an *auteur* ('author') and a *compositeur* ('compositor'); both components are semantically equal. In the latter formation type, the relation between the components is a "complement" relation: both components are not equal, but one is the complement (*café* in *pause-café* 'coffee-break') or the modifier (*chat* in *poisson-chat* 'catfish') of the other: a *pause-café* is a *pause* ('break') for drinking coffee ('for' relation) and a *poisson-chat* is a fish that resembles a cat because of its moustache ('like' relation)[4]. However, Fradin (2009) introduces a further distinction: he limits the NN subordinate class to the NN in which N2 expresses a property corresponding "to a salient property of the compound's referent. It is quite clear that the meaning of NNs of this type is metaphor-based, if we agree that a metaphor is the understanding of one concept in terms of another (Benczes 2006)" (Fradin 2009: 431). According to Fradin, only these nouns are built up by a morphological process; the others, which present a complement relation between the two nouns, that can be expressed by a preposition, such as *pause-café* 'coffee break'*, impression laser* 'laser printing' and *impôt sécheresse* 'tax for dryness', are called "two-slot nominal constructs" and are analyzed as built up by syntax[5].

In our opinion, this new subordinate NN class is not homogeneous: nouns such as, on the one hand, *poisson-chat* 'catfish' or *oiseau-lyre* 'lyrebird' and, on the other hand, *personnage-clé* 'key character' or *visite-éclair* 'lightning visit' do not function in the same way, even if in all these cases N2 is a metaphoric modifier of N1:

(i) Contrarily to N-*clé* nouns, the formers are completely cohesive:

(14) *poisson-chat*: **un poisson réellement chat* (lit. 'a fish really cat')
  **un poisson plus chat que…* (lit. 'a fish more cat than…')
  **ce poisson est chat* (lit. 'this fish is cat')
 oiseau-lyre **un oiseau absolument lyre* (lit. 'a bird absolutely lyre')
  **un oiseau plus lyre que…* (lit. 'a bird more lyre than')
  **cet oiseau est lyre* (lit. 'this bird is lyre').

(ii) The properties denoted by the N2 in the two types of compounds are not of the same nature. In nouns such as *poisson-chat*, this property is essential to the identification of the NN denotation and it has a categorisation power. Moreover, such nouns often belong to scientific taxonomies. In fact, this property seems to correspond to what is called "individual level" property (cf. Carlson 1977). On the contrary, in nouns such *personnage-clé* or *visite-éclair*, the property denoted by the N2 does not have any distinctive function (a *personnage-clé* is not a type of character and a *visite éclair* is not a type of visit); it corresponds to a "stage level" property (*ibid.*). Consequently, the N2s often express a high degree, in the N-*clé* nouns and in other words built up by the same general pattern, cf. e.g. *visite-éclair* ('lit. visit-lightning; a visit as fast as a lightning'), *soldes-monstres* (lit. 'sales-monster, i.e. sales with a huge discount'), *roman-fleuve* (lit. 'novel-river; a very long novel').

In order to account for the preceding facts, we propose to distinguish two types of subordinate compounds (in the sense of Fradin 2009, that is two-slot nominal constructs excluded) on the basis of the property denoted by N2: classifying subordinate NN compounds when the property denoted by N2 is an individual level property, and

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[4] Bisetto & Scalise (2005) classify these examples as "attributive compounds".
[5] Fradin assigns a syntactic analysis to another category of NN: the identificational NN compounds, such as *la categorie adjectif* 'the category of the adjective' or *le président Obama* 'president Obama'. For the argumentation, see Fradin (2009: 432-434).

qualifying subordinate NN compounds when the property is a stage level property. Only the latter show an absence of cohesion between the two nominal components of the compound. If the former are likely to be built up by a morphological process of compounding, the way the latter are built up is not so obvious, by morphology or by syntax? For now, we shall leave this question in abeyance, but come back to it in Section 4, where it will be investigated in the theoretical framework of Construction Grammar.

3.2 The use of *sleutel*

Sleutel appears in two different formation types:

On the one hand, it occurs in NN compounds in which it keeps its original concrete meaning referring to the instrument *key*. These compounds may be lexicalized (to a greater or lesser degree). Whereas compounds such as *sleutelbos* ('lit. key-bunch; bunch of keys') and *sleutelgat* ('keyhole') are fully conventionalized, *sleutelman* ('lit. key-man') and *sleuteldatum* ('lit. key-date') are ad hoc formations. *Sleutelman* may refer to a man who supplies keys, who repairs locks or who, as in (15), is responsible for the key of the cemetery; *sleuteldatum* may indicate the date at which they key of a new house or room, in a rest home for example (16), can be delivered.

(15) **Sleutelman** Evergem - Voor de aan de Polenstraat en Herritakkerlaan gelegen begraafplaats van Sleidinge zoekt het gemeentebestuur een sleutelverantwoordelijke die elke dag de hekken opent en sluit.
'Key-man Evergem -
'For the cemetery of Sleidinge, situated at the Polenstraat and the Herritakkerlaan, the municipality is looking for a person responsible for the keys who will open and lock the fences every day.'

(16) Het verzorgingshuis of verpleeghuis mag verblijfsdagen declareren met ingang van de dag waarop de cliënt de sleutel van de kamer krijgt (de zogenaamde **sleuteldatum**).
'The rest home or nursing home can declare the length of stay from the day on which the client receives the key of his room (the so-called key-date).'

On the other hand, *sleutel* can occur in complex NN units in which it means 'essential'. As shown in the examples in (2) above and repeated in (17), it can be seen here as a perfect counterpart of *key* and *clé*:

(17) *notion-clé / sleutelbegrip* 'key notion', *figure-clé / sleutelfiguur* 'key figure',
fonction-clé / sleutelfunctie 'key function', *moment-clé / sleutelmoment* 'key moment', etc.

However, a closer look at the different contexts in which *sleutel* can be used reveals that *sleutel* behaves quite differently to *key* and *clé*:

(i) *Sleutel* cannot be modified by an adverb[6]:

(18) *[…] dat een **absoluut sleutelrol** speelt in ons bedrijf […][7]

(ii) *Sleutel* cannot be used as a premodifier of a polylexematic unit:

(19) *Het toerisme is een **sleutel economische sector**.

(20) *Een Franse diplomaat benoemd op een **sleutel administratieve post** van de EU.[8]

(iii) *Sleutel* does not allow to be used predicatively ((21) and (22)):

(21) *[…]. Dat **is echt sleutel** volgens mij.
(22) *[…]. Zijn gevoelens begrijpen **is echt sleutel**.

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[6] The examples given in (18-24) are (ungrammatical) translations of the French examples given in Section 3.1.

[7] If *absoluut* acts as an (invariable) adverb of degree that only modifies the component *sleutel*, the example is ungrammatical. However, if *absoluut* were inflected, as in "(…) dat een **absolute sleutelrol** speelt in ons bedrijf […]", the example becomes acceptable, because here *absolute* is an adjective (inflected before masculine and feminine nouns) that modifies the complete polylexematic unit *sleutelrol*.

[8] In contrast to example (20), *economische sleutelsector* and *administratieve sleutelpost* (with inverse word order) would be possible, but then *sleutel* only modifies the head nouns *sector* and *post*. *Sleutel* cannot modify an entire AN phrase, even if it is lexicalized to a certain degree.

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(iv)   Finally, *sleutel* does not allow comparative and superlative degree marking:

(23)   *En sinds de opkomst van Internet, is de relatie met de klant **des te meer sleutel** omdat de gebruiker gemakkelijk en snel zijn mening kan geven.

(24)   *En het is wellicht dit punt dat **het meest sleutel** en kritiek is […]

In sum, unlike *key* and *clé*, *sleutel* cannot be used in the typical adjectival contexts presented above. On the contrary, the structures with *sleutel-* seem to give evidence of a maximal degree of cohesion. Apart from that, two important remarks should be added. First, the use of *sleutel* seems to be more restricted than that of *clé*. The data provided by *GlossaNet* indicate that very often Dutch does not have a counterpart for *N-clé* or that it is difficult to find a literal translation (e.g. *acteur-clé / ?sleutelacteur*). Second, in the structures under discussion, in which *sleutel* has a more or less axiological qualifying meaning, it competes with other Dutch nouns having undergone a similar semantic evolution, such as *grond* 'ground' (25a), *hoofd* 'head' (25b), *kern* 'core' (25c) and *basis* 'basis' (25d). Moreover, the examples (25e) and (25f) show that these elements are often interchangeable:

(25)   a.   *élément-clé* 'lit. element-key; fundamental element'/ ***grond**bestanddeel* 'lit. ground-element; fundamental element'
         b.   *acteur-clé* 'lit. actor-key; main actor'/ ***hoofd**acteur* 'lit. head-actor; main actor'
         c.   *chiffre-clé* 'lit. number-key; base figure'/ ***kern**getal* 'lit. core-number; base figure'
         d.   *besoin-clé* 'lit. need-key; basic need'/ ***basis**behoefte* 'lit. basis-need; basic need'
         e.   *idée-clé* 'lit. idea-key; basic idea' / ***grond**gedachte* 'lit. ground-idea', ***kern**idee* 'lit. core-idea' 'basic idea'
         f.   *problème-clé* 'lit. problem-key; main problem' / ***kern**probleem* 'lit. core-problem', ***hoofd**probleem* 'lit. head-problem', ***basis**probleem* 'lit. basis-problem' 'main problem'

It can therefore be concluded that Dutch *sleutel* does not present any adjectival property and that, conversely, the *sleutel-N* constructions prove to be very cohesive. Hence they should be analyzed as true compounds, that is pure morphological formations. This analysis is supported by their stress pattern: as in all other Dutch NN compounds, the first component (in the present case, *sleutel*) carries the main stress.

Consequently, we find ourselves confronted with a very interesting paradox: *clé (/key)* and *sleutel* act very similarly to a certain extent. Both elements occur in polylexematic units in which they play the same semantic role: they qualify the N1 in French and the N2 in Dutch by indicating that its referent has a crucial importance in a certain context. However, on the morpho-syntactic level, it has been shown that the polylexematic units in which *clé (/key)* and *sleutel* operate are very different: while they appear to be extremely cohesive in Dutch, which points in the direction of a formation by morphological rules or patterns, they are not cohesive at all in French (and English). As demonstrated in Section 3.1., *clé*, just like *key*, can be modified by an adverb and occurs in attributive, predicative and comparative / superlative contexts, some of which are more accepted and frequent than others. In order to resolve this aporia, in the next Section we will concentrate on the possible solutions offered by Construction Grammar.

4. A constructional account to resolve the aporia?

4.1 Some theoretical preliminaries

According to Goldberg (2006: 3), constructions are "conventionalized pairings of form and function". Here, "conventionalized" implies that constructions themselves carry meaning, independently of the words of the sentence. In these form-meaning correspondences, the conception of meaning is very broad: a construction can obviously have a semantic meaning, but it also can have a pragmatic meaning or an informational one. In all these cases, the meaning is not entirely predictable from the constructional components. For example, three argument constructions convey a caused motion meaning even if the main verb does not itself have a three argument sense, such as *glisser* 'to slide': *Il glisse* 'he slides' vs *Il glisse un livre à Marie* 'He slides a book to Mary' (Goldberg 2006: 7).

Nevertheless, different types of constructions need to be distinguished. Croft & Cruse (2004) oppose schematic (/formal) constructions to substantive constructions: schematic constructions have open slots where appropriate items can be filled in (e.g. the ditransitive construction NP V NP NP), while substantive constructions are lexically filled; all elements are fixed and nothing can be altered (e.g. *It takes one to know one*). Between these two poles, there is no discrete division but a continuum. For example, a construction such as [*the more* NP VP,

the less NP VP] is partially schematic and partially substantive. In short, by means of the concept of construction, semantic and syntax are a unified whole.

Correlatively, according to Croft & Cruse (2004: 255), "morphology describes complex constructions, but constructions of bound morphemes". This is illustrated with examples from inflectional morphology: [VERB-TNS] or [NOUN-PLUR] are schematic constructions, [*chant*-TNS] 'sing-TNS', [NOUN-*s*] are semi-schematic constructions and [*chantons*] 'sing-PRS1PL', [*arbres*] 'trees' are substantial constructions. This argumentation can be transferred to constructional morphology. As for derivation, [VERB-SUF], [VERB-*eur*] and [*chanteur*] are examples of, respectively, schematic, semi-schematic and substantive constructions. As for compounding, [NOUN-NOUN] is a schematic construction, [NOUN-*clé*] is semi-schematic[9] and [*mot-clé*] is a substantive construction. From this perspective, "there is a uniform representation of all grammatical knowledge in the speaker's mind" (*ibid.*), whatever the domain is, syntax or morphology (and also phonology, not taken into consideration in this study). Consequently, Construction Grammar does not rely on a modular approach of grammar; instead all language domains (semantics, syntax, phonology, morphology and even the lexicon) are interrelated.

In addition, it is worth noting that Construction Grammar is a complete inheritance model, where the most schematic constructions are at the highest level, and the most substantial at the lowest. A construction generally inherits the properties of the upper constructions.[10]

4.2 *N-clé / sleutel-N:* two different construction types

Several studies within the framework of Construction Grammar have been devoted to morphology, first to inflectional morphology (cf. the seminal work by Bybee 1985), later to constructional morphology. Booij was the first linguist to study compounding in this perspective (among others Booij 2008, 2009 and 2010). In particular, he studied Dutch compounds with a recurrent constituent, which he calls an affixoid (e.g. **hoofd***ingang* 'lit. head-entrance; main entrance', **hoofd***gebouw* 'lit. head-building; main building', **hoofd***verdachte* 'lit. head-suspect; main suspect') (see for instance Booij 2009: 207). According to Booij, these formations are constructional idioms, that is more or less semi-schematic constructions with a variable constituent (*ingang* 'entrance', *gebouw* 'building', *verdachte* 'suspect', etc.) and a fixed one (*hoofd* 'head; main'). However, since Booij mainly focused on Dutch, he did not have to deal with the paradox described above, namely on the one hand the fact that the NN formations with *clé*, *key* and *sleutel* are very similar and have the same meaning in the three studied languages, but on the other hand the fact that in French and in English, they are not necessarily cohesive, while in Dutch the degree of cohesion between the two constituents is very strong.

The N-*clé* and *sleutel*-N formations can, without any doubt, be analyzed as constructions in the Goldberg sense, that is as form-meaning pairings:
– formally, they are semi-schematic constructions with one open slot to be filled by a noun and one fixed position filled by *clé / sleutel* ;
– semantically, a specific meaning is associated to the *clé / sleutel* nouns: they denote an entity that is important, crucial in a given context.

Such semi-schematic constructions are frequent in French (26a) and Dutch (26b):

(26)   a.   *monstre* 'monster'*: soldes-monstres* 'monstrous sales', *foule-monstre* 'monstrous crowd', *succès-monstre* 'monstrous success', etc.
                charnière 'hinge'*: moment-charnière* 'lit. moment-hinge; moment of transition', *période-charnière* 'lit. period-hinge; period of transition', *épisode-charnière* 'lit. instalment-hinge, instalment of transition', etc.
                éclair 'lightning'*: guerre-éclair* 'lightning war, blitzkrieg', *visite-éclair* 'lightning visit', *déjeuner-éclair* 'lightning lunch', etc.
        b.   *monster* 'monster': *monsterverbond* 'lit. monster-alliance; very large alliance' , *monsterzege* 'lit. monster-victory; very large victory', *monsterzitting* 'lit. monster-session; marathon session'
                bliksem 'lightning': *bliksembezoek* 'lightning visit' , *bliksemcarrière* 'lightning career', *bliksemoorlog* 'lightning war, blitzkrieg'
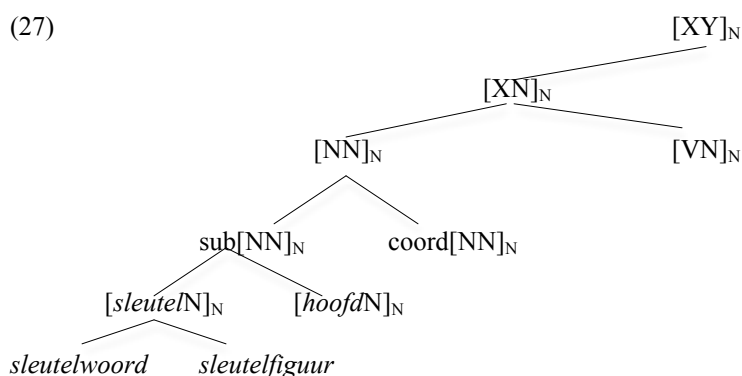
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[9] Arguments will be given *infra*.
[10] On this subject, see Croft & Cruse (2004) for general considerations and Booij (2008, 2009, 2010) for a morphological perspective.

<div align="center">

hoofd 'head': *hoofdfiguur* 'leading figure, main character' , *hoofdgebouw* 'main building', *hoofdgerecht* 'main course / dish'

</div>

The main problem to be solved now is to account for the difference of cohesion between the NN constituents in the Dutch formations and in the French ones, in correlation with the way these formations are built up, by syntax or by morphology.

In Dutch, the *sleutel*-N construction seems to be a sub-construction instantiating a more general pattern of compounding[11], the subordinate [NN]$_N$ construction, that itself is an instantiation of a more general construction, the [NN]$_N$ pattern, and so on. Such a hierarchy can be represented as follows:

(27)

<div align="center">

[XY]$_N$

[XN]$_N$

[NN]$_N$ [VN]$_N$

sub[NN]$_N$ coord[NN]$_N$

[*sleutel*N]$_N$ [$\widehat{hoofd}$N]$_N$

sleutelwoord   *sleutelfiguur*

</div>

The figure in (27) only represents the hierarchy of the morphological nominal compounds. As for [NN]$_N$, a distinction is established between coordinate and subordinate compounds. The *sleutel*-Ns are of the second type: a *sleutelwoord* is fundamentally a word that has the property of being crucial in a given context.

The analysis in French is more complex; at least two different solutions should be considered:

(i) There is only one construction that can be represented as follows:

(28)   [N (Adv) *clé*] 'N important, crucial in a given context'

This construction would be "hospitable"[12] enough to integrate adverbs between the N and *clé*. Hence, the two occurrences of *element(-)clé* in (29) would fall under the same construction:

(29)   Si vous voulez dire que le *timing* dans le développement – et notamment dans le développement par croissance externe ou par partenariat – est un **élément absolument clé ('lit. element absolutely key; absolutely key element')**, que le bon réglage du *timing* est un **élément-clé ('key-element')** dans le succès […]

According to this view, the construction would have a hybrid nature since it integrates syntax and morphology. However, as we observed in Section 3.1., *clé* can be used in other contexts, in predicative contexts and in comparative or superlative ones. Accounting for these usages would require enlargement of the construction's "hospitality" in a very broad way, all the more because some of these contexts involve discontinuous markers (*plus / moins / aussi … que, le plus / le moins … (de)*, etc. 'more / less / as … than / as, the most / the least … (of)'). This solution has two important disadvantages: first, the construction would become extremely complex and second, the comparative / superlative structures or the predicative ones are already themselves constructions in syntax. In short, this solution is not really satisfactory.

(ii) The second solution consists in assuming that several independent constructions interact with each other. In what follows, we will only outline some of the possibilities without going into the details.

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[11] The other *sleutel*-N pattern, where *sleutel* is interpreted with its original meaning (cf. *sleutelman*, ex. (15)), is also a construction, but one of a different type.
[12] In French, the adjective "accueillant" is used by several linguists in this context (cf. for example Legallois (2005)).

First, we can assume the existence of a morphological construction, similar to the Dutch one (27), with the following representation:

(30)   [N-*clé*]$_N$ 'N crucial in a given context'

As in Dutch, this construction is also an instance of a more general construction, the subordinate NN construction, in its turn an instantiation of a more general construction, and so on (cf. *supra*). However, for French, because of the distinction between two different types of subordinate NN formation, the classifying *vs* the qualifying subordinate compounds (cf. Section 3.1.), the representation will be somewhat different:

(31)
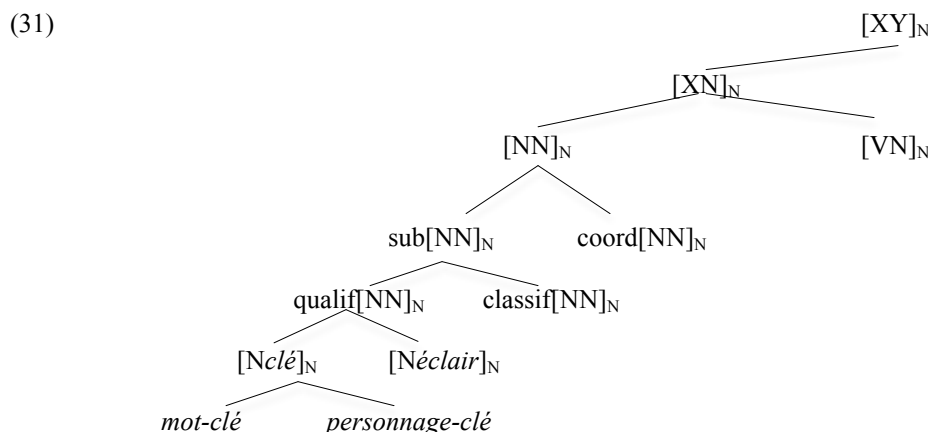
The [N-*clé*]$_N$ nouns are subordinate morphological compounds. However, since *clé* has a qualifying function, this [NN]$_N$ morphological construction is close to the [NA] syntactic construction, where the adjective has also a qualifying function:

(32)   *c'est un élément-clé de la stratégie / c'est un élément important de la stratégie* ('it is a key-element / an important element of the strategy')

Both constructions (NN and NA constructions) can merge if the following conditions are fulfilled:
(i) the NN construction is a subordinate construction;
(ii) the right-hand N of the construction has a qualifying meaning.[13]

Merging/fusion is a well-known phenomenon in Construction Grammar (cf. for example Goldberg (1995))[14], but this merging is particular insofar as it fuses a morphological construction (NN) with a syntactic one (NA).
This initial merging (NN/NA) allows subsequently the N2 (*clé* in our study) to fill in other adjectival constructions, from less specific adjectival constructions ([ADV A]) to more specific ones ([ADVsuperl A], [ADVcomp. A *que*] and finally to the predicative construction [Vstate A]).[15] Since constructions exert some coercion on the interpretation of the elements they integrate (cf. Goldberg (1995), Taylor (1988), Michaelis (2002) or Lauwers (2008)), when a noun (with a qualifying function) integrates into an adjectival construction, its interpretation easily complies with the meaning imposed by this construction. Consequently, from a synchronic and constructional perspective, the question whether *clé* is a noun or an adjective is not fundamental; there is a continuum between the nominal and the adjectival uses. The gradual extension of these adjectival uses reveals that the noun becomes increasingly closer to an adjective, even if it does not (yet?) become a full-fledged one. The new construction [N N/A] then inherits its properties from both [NN] and [NA]. For example,

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[13] No formalism is proposed in this paper, but it would be done in the way of Michaelis (2003).

[14] One of our reviewers calls our attention to the process of "blending" (cf. for example Fauconnier and Turner 1996). This notion seems close to what is generally called merging or fusion, but takes place in a particular theoretical frame: the mental spaces of Fauconnier (1985). Since in morphology, the term *blending* is also used with another meaning, we prefer to keep our first denominations. Blending is indeed "the intentional coinage of a new word by fusing parts of at least two source words of which either one is shortened in the fusion and/or where there is some form of phonemic or graphemic overlap of the source words" (Gries 2004: 201); *brunch* (=*br(eakfast) + (l)unch*) is a well-known example of morphological blending.

[15] Work is in process to confirm or invalidate the pertinence of these assumptions; cf. Van Goethem & Amiot (2011) and Van Goethem (in prep.).

semantically, (-)*clé* has an adjectival meaning, although morphosyntactically, and contrary to a true adjective, it does not inflect for gender (cf. *notion clée). These assumptions have to be seriously argued, from a diachronic perspective as well as from a theoretical point of view, but the first perspectives opened by Construction Grammar already lead to interesting insights.

5. A case of degrammaticalization?

Finally, the question could be raised if the process by which French *clé* acquires autonomous adjectival properties out of its bound use is an instance of degrammaticalization. Norde (2009: 120) defines degrammaticalization as "a composite change whereby a gram in a specific context gains in autonomy or substance on more than one linguistic level (semantics, morphology, syntax, or phonology)". More particularly, the process we are confronted with is very likely to be analyzed as a case of what Norde calls *debonding*, viz. "a composite change whereby a bound morpheme in a specific linguistic context becomes a free morpheme" (Norde 2009: 186). Debonding is typically characterized by a decrease of bondedness (*severance*), recategorialization, scope expansion and increase of syntactic freedom (*flexibilization*). These parameters all seem to apply to the evolution of *clé*: the bound noun *clé* gradually seems to have developed adjectival properties, both at phrasal level (e.g. *secteur vraiment clé* 'really key sector') and at sentence level (e.g. *ce secteur est vraiment clé pour l'économie* 'this sector is really key to the economy') (scope expansion), gradually increasing its syntactic freedom (flexibilization). In Van Goethem & Amiot (2011) and Van Goethem (in prep.), we support these assumptions by a more in-depth synchronic and diachronic analysis.

6. Conclusion

In this conclusion, we would like to stress some important points (key-points (!)):
First, thanks to the work on large corpora we became aware of non-standard formations in French (particularly comparative, superlative and predicative uses of *clé*). Without these data, it would not have been possible to observe the lack of cohesion between the two components in French N-*clé*.
Second, because of the comparative perspective we adopted (comparing Dutch, English and French), we have been compelled to put into perspective our previous findings on the *sleutel*-N and N-*clé* constructions. As stated in the introduction of this article, Van Goethem & Amiot (2009) concluded that differences in the degree(s) of grammaticalization of the left / right recurrent component of a compound was due to a typological word order difference between Germanic languages and Romance languages. This conclusion still holds from one point of view (the process of grammaticalization / affixation), but not from another (the process of degrammaticalization of one of the components): from this perspective, the different evolutions cannot be related to typological facts.
Third, it has been shown that the theoretical framework of Construction Grammar provides interesting insights to account for phenomena that take place at the boundary between several domains, here between syntax and morphology. Our assumptions (existence of different constructions in morphology and in syntax with possible interactions between them, by semantic proximity, and extensions of the basic uses based on this semantic proximity) still have to be confirmed, but are very stimulating for further research.

In many other respects, the present study opens perspectives for future research. First of all, its assumptions need to be verified by a thorough diachronic and quantitative analysis which would allow us to study more in depth the degrammaticalization processes at work (cf. Van Goethem & Amiot 2011; Van Goethem (in prep.)). Second, a diachronic analysis is also needed to investigate the distinctions between qualifying *vs* classifying subordinate NN-compounds: the former instantiate an old French pattern but with a decreased productivity in modern French, while the later, probably a copy of an English pattern, still allows many new formations to be coined (cf. Noailly 1990; Arnaud 2010). In Dutch also, a more fine-grained semantic classification of compounds with elements such as *sleutel*- is needed. Finally, it would be interesting to study other NN formations (principally those that Fradin (2009) considers to be built up by syntax, the two-slot nominal constructs and the identificational compounds) from the theoretical perspective of Construction Grammar.

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