

On concatenative and nonconcatenative lexeme-formation patterns in English

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ABSTRACT

The paper borrows the concept of (non)concatenation from morphology and applies it to word-formation patterns both within and outside the scope of derivational morphology, arguing at the same time for a broader, lexicological approach to lexeme-formation (as a model of vocabulary expansion) than that identifying word-formation with derivational morphology. It arrives at the conclusion that the binary division of lexeme-formation into either concatenative or nonconcatenative patterns does not reflect the character of many patterns accurately enough.



KEYWORDS

word-formation, derivational morphology, lexeme-formation pattern, concatenative, nonconcatenative

*Men ever had, and ever will have leave,
To coin new words well suited to the age,
Words are like leaves, some wither every year,
And every year a younger race succeeds.*

Horace, poet and satirist (65–8 BCE), *Ars Poetica*,
transl. by Wentworth Dillon, 4th Earl of Roscommon (1680)

1. INTRODUCTION

When it comes to the description of lexicon innovation, it is usual to speak of word-formation, although it has been repeatedly pointed out that lexeme-formation is a more appropriate term (in order to exclude inflectional morphology; cf Bauer, 2004; Kastovsky, 2009; Haspelmath, Sims, 2010, and others). Offering a much broader perspective, Mathesius (1929, 1975) introduces the concept of functional onomatology, a study of linguistic denomination (the semantic activity of giving names to concepts which precedes the syntactic activity of bringing the names into mutual relations). From this point of view, formation of words is subsumed under a wider notion of name formation (a naming unit expressing a concept may consist of more than one word; cf. Vachek, 2003, 163).

The fact that a new lexeme may not be a single word, but a multiple-word expression, that it may not be a morphologically complex word, but a simplex coinage, that it may not be formed by a morphological rule at all, indicates that just replacing the term word-formation with lexeme-formation does not resolve the problem of the limited reach of word-formation conceived as (part of) morphology. This narrow

view of word-formation under morphology is echoed in Lieber and Štekauer (2014, 3): “The term ‘word formation’ refers to the creation of new lexemes in a language and is generally said to be composed of compounding and derivation.” Both compounding and derivation (to which conversion is usually added) are nowadays occasionally described in terms of (non)concatenation. The following is an attempt to follow through the application of the morphological concept of (non)concatenation to lexeme-formation in the broader, lexicological sense, which includes processes that go beyond the formation of mere words and beyond morphology, inasmuch as “the mechanisms of creating lexical items include much more than just the regular morphological mechanisms of derivation and composition; they also comprise, for instance, borrowing and onomatopoeia” (Geeraerts, 1994, 2190), to which others, such as semantic shifting, can be added.

2. (NON)CONCATENATION IN MORPHOLOGY

Matthews (1991, 130–144), among others, recognizes two main types of morphological processes: the addition of an independent formative, and an internal change or a modification (either total or partial) of the base. According to him, the first type includes prefixation, suffixation and infixation, and apparently also reduplication; processes of the second type which he mentions include vowel change, suppletion, accent or tonal patterns, and subtraction. (In contrast to the prevailing view, he treats compounding as distinct from word-formation, in that compounding is a lexical process which derives lexemes from lexemes, not from forms, although he finds parallels with word-formation.)

Subsequently the two types have come to be termed concatenative and nonconcatenative processes. Thus, for instance, Haspelmath and Sims (2010, 34–40) speak of two basic types of morphological patterns: concatenative, “which is when two morphemes are ordered one after the other”, and nonconcatenative, “which is everything else”. They identify concatenative patterns with affixation and compounding. As far as nonconcatenative patterns are concerned, they distinguish “[o]ne important class of non-concatenative patterns”, base modification (or stem modification/alternation), a “collective term for morphological patterns in which the shape of the base is changed without adding segmentable material”. It subsumes changes of place of articulation (palatalization, fronting), changes of manner of articulation (weakening of consonants, fricativization), changes of quantity (lengthening, e.g., gemination, or the shortening of stem vowels), and also tonal change and stress shift. In addition, Haspelmath and Sims place three more processes of inflectional morphology under base modification: subtraction (truncation or deletion of segments from the base), metathesis (rearrangement of segments within the base) and reduplication (part of the base or the complete base is copied and attached to the base), although the last one with certain reservations. They also point out that just as description of affixation involves specifications as to which morphemes may combine, i.e. the combinatory potential of the affix, so are nonconcatenative patterns subject to restrictions equivalent to the combinatory potential in concatenative patterns.

While concatenation is generally not a moot point, this is not true of nonconcatenative morphology (a term used by McCarthy, 1981; see also Carstairs-McCarthy 1992, 80). The current developments in (autosegmental, prosodic) morphology and phonology in combination with the Optimality Theory approach take a dim view of nonconcatenation as a morphological process. Davis and Tsujimura (in Lieber, Štekauer, 2014, 190–192) point out that the definition of nonconcatenative morphology is “not uncontroversial” and explain why. Bye and Svenonius (2012, 429–430) introduce the “concatenative ideal” in which morphemes are linearly ordered (i.e. with no overlapping), contiguous (i.e. no discontinuity), additive (i.e. no subtraction), preserved when additional morphemes are added, segmentally autonomous (context-free) and disjoint from each other (i.e. no hapology). Nonconcatenative patterns are then usually defined negatively as phenomena that fall short of this ideal, patterns in which the phonological instantiation of a morpheme cannot be demarcated in an output representation (cf. Kurisu, 2001, 2). Bye and Svenonius, for one, conclude that there is no nonconcatenative morphology, only nonconcatenative effects; that all morphology is concatenative, and nonconcatenative morphology is only an epiphenomenon. Similarly Trommer (2012, 2) rejects Matthews’ position that nonconcatenative morphology is the result of genuinely morphological processes in favour of the view that it is basically a phonological phenomenon (cf. also Lieber, 1992).

The differences in defining nonconcatenative morphology are reflected in disagreement on the inclusion of some processes among nonconcatenative processes. Thus, while Davies and Tsujimura (in Lieber and Štekauer 2014, 190–192) regard infixation as concatenative (infixes have “consistent phonemic content” and “can usually be clearly demarcated”), other authors see it as a nonconcatenative pattern (Kurusu, 2001, Carstairs-McCarthy, 1992, and others). Similarly inflectional reduplication (part of the base or the complete base is copied and attached to the base) is regarded as concatenative, for instance, by Marantz (1982), but as nonconcatenative by Inkelas (in Lieber, Štekauer, 2014) and others. Haspelmath and Sims, too, believe it has more in common with nonconcatenative gemination or vowel lengthening than affixal concatenation. The nonconcatenative nature of other processes, such as autosegmental affixation (marking a morphological category by a distinctive feature or tone added to the base), subtraction or templatic operations, is generally accepted.

3. WORD-FORMATION IN MORPHOLOGY

Subsuming word-formation under morphology in effect determines which lexeme-formation processes will be legitimate morphological patterns, and which patterns will be excluded as having questionable morphological status, although they also create new lexemes in language. Thus Haspelmath and Sims (2010: 34–40) illustrate morphological nonconcatenation only by examples from inflectional morphology because word-formation processes other than concatenative affixation and compounding are seen by them either as the limiting case of a morphological pattern (conversion) or as being outside the scope of morphology proper (formation of acronyms, alphabetisms, clippings and blends). Conversion does not exactly fit their

conception of a morphological pattern (defined as partial resemblance in form and meaning among groups of words) either because of the identity of form between base and derivative. Blends, clippings, acronyms and alphabetisms are excluded from morphology by them “because the resulting new words do not have different meanings to the longer words from which they are formed”.

The rejection of clipping, acronymization, abbreviation and blending on semantic, rather than morphological, grounds is somewhat surprising (even if blends which by definition have different meanings from their constituent words are left aside). There are acronyms (*laser*, *scuba*) whose corresponding “longer words” have probably never appeared in speech and are practically unknown to native speakers, and so exist only in their “shorter” form. As regards clipping, Bauer (2006, 498) observes that “[C]lipping does not create lexemes with new meanings, but lexemes with a new stylistic value”. According to Plag (2003, 117) this raises the question “of what exactly we mean when we say that a word-formation process should add ‘new meaning’ to a base, thereby creating a new lexeme. Do we consider the expression of attitude a ‘new meaning’? Or only as a minor modulation in usage?” He answers the question by accepting “a notion of word-formation wide enough” to accommodate even clippings as products of word-formation. (In a way a decision to treat two bases as different lexical items on account of their different evaluative meaning, or any other type of connotative meaning, is reminiscent of a distinction made between near synonyms.)

The latest treatment of derivation (derivational morphology) appears in a handbook edited by Lieber and Štekauer (2014). The contributing authors address both concatenative derivation, i.e. affixation (Bauer), and nonconcatenative derivation, reduplication (Inkelas), and other nonreduplicative processes (Davis, Tsujimura), although most of the examples involve inflectional morphology (declension, conjugation) and very little of derivation proper (formation of hypocoristics). The chapter on conversion (Valera) includes only a passing reference to its (non)concatenative character (Olsen, 1990), and the latest book on compounding (Lieber, Štekauer, 2009) does not invoke the concept of concatenation at all.

The problem of morphological status of word-formation processes is handled differently by authors. While Bauer (2004, 113) speaks of “processes which are less obviously morphological, such as blending, clipping, the creation of acronyms, and the like”, and uses the label lexical for them, some authors stress the different character of these processes by introducing special terms. López Rúa (2006) uses the term non-morphological word formation by which he means shortening of two types, splinter-based clippings (*lab*, *phone*), and letter-based initialisms, i.e. alphabetisms (*NBC*) and acronyms (*laser*), and word manufacture. Mattiello (2008) speaks of extra-grammatical morphological operations, etc.

Word-formation processes as (derivational) morphology are not very often subject to explicit classification when referring to English (or to languages in general) and are usually simply listed. One example of such general classification is Fleischer’s (2000), which operates with five basic categories: Kombination von Stämmen, Affigierung, Substitution, Subtraktion, and Konversion. A more recent example of a cross-linguistic approach to word-formation typology is Štekauer et al. (2012). Using questionnaire- and grammar-based data on 55 languages in their effort to develop a typology of lan-

guages in terms of their word-formation characteristics, the authors distinguish four basic categories: word-formation processes combining free morphemes (compounding, including compounding with word-formation base modification, reduplication, blending), word-formation processes combining free and bound morphemes (affixation), word-formation without addition of derivational material (conversion, word-formation by internal modification) and subtractive word-formation (back-formation).

4. WORD-FORMATION TYPOLOGIES IN LEXICOLOGY

By contrast, both morphological and lexical word-formation processes are equally represented when word-formation is approached as an independent area of study constituting, together with several others, the domain of lexicology in the European tradition. Hence word-formation typologies constructed from the lexicological perspective tend to be more varied and structured. A selection of English word-formation typologies is reviewed by Stein (2000), who notes that while there is broad agreement about which types of word-formation are characteristic of English, the authors differ in the sets of types postulated and often their criteria are not clear. She also finds that the typological classifications depend on specific linguistic theories and increasingly take into account the structure of the whole vocabulary.

She starts with Hans Marchand, a seminal figure in English word-formation. Marchand (1969, 1–2) explicitly recognizes the different morphological status of word-formation patterns by setting up two major groups of words (each realized by five types of processes): “words formed as grammatical syntagmas”, i.e. combinations of full linguistic signs (compounding, prefixation, suffixation, derivation by a zero morpheme and back-formation) and “words which are not grammatical syntagmas” (i.e. not made up of full linguistic signs: expressive symbolism, blending, clipping, rime and ablaut gemination and word manufacture). Common to both groups is that the new word is based on a “synchronic relationship between morphemes”. The problem with the term syntagma is that if we want to use the adjective syntagmatic, its logical opposite in the Saussurean sense is paradigmatic rather than nonsyntagmatic.

Also the next classification discussed by Stein remarks on the difference between the morphological and lexicological perspectives. It appears in Quirk et al. (1985; Appendix I Word-formation) and starts by defining word-formation as an “area in which grammar and lexicology share a common ground”, containing both generalities and idiosyncracies. Accordingly, the authors distinguish between the four main types, prefixation, suffixation, conversion and compounding, whose aspects “most resemble the regularities of grammar and are most closely interrelated with them” (p. 1530), and the remaining processes, i.e. back-formation, reduplicatives, abbreviations (clippings, acronyms), blends, and familiarity markers, which are dealt with at the end under Miscellaneous modes (Marchand’s expressive symbolism and word manufacture are omitted).

The third classification Stein examines is Algeo’s (1991) system which he used to describe neologisms appearing between 1941 and 1991. Algeo identifies six basic etymological sources (with a number of subtypes): creating (word manufacture and

sound words, imitative, echoic and onomatopoeic), borrowing (simple, adapted, calques), combining (prefixation, suffixation and compounding), shortening (clipping, alphabetism, acronymy, back-formation, phonetic elision, i.e. unintentional aphaesis, apocope, syncope), blending (with clipped first or second element, with both elements clipped, with overlapping sounds), shifting (of grammar, i.e. conversion: *a quest* > *to quest*; of meaning: specialization, generalization, metaphor, metonymy; of form: *toy boy* > *boy toy*, *Gray* > *yarg*, *Jesus* > *jeepers*; of circumstances: stylistic transfer combined with shift of form, e.g. dialectal *stomp* becoming an alternative to standard *stamp*), and, finally, source unknown. Stein focuses on Algeo's categories that coincide with standard processes, combining, shortening, blending and two of the shifting subtypes, of meaning and grammar, but dismisses shifting of form (i.e., arbitrary changes of the phonetic structure of the word) as an "unsatisfactory subgroup" and shifting of circumstances. Her objections to Algeo's classification concern its diachronic bias, the lack of focus on the pattern aspect and the lack of distinction between processes at different levels.

In this respect she prefers Tournier's (1988) outline of *matrices lexicogéniques* presented in Table 1. She appreciates his distinction between **internal and external sources** of lexical expansion and his hierarchical model of internal sources with several levels of description and generalization. Using what might be called a **semiotic categorization**, Tournier distinguishes three types of neology, morpho-semantic, semantic and morphological, according to which aspect of the linguistic sign (form and meaning) changes, and to each type assigns the process(es) effecting the change. Stein identifies the following weaknesses in his model: the formal aspect sometimes overrides the semantic effects of the operations (e.g. in juxtaposition and amalgamation); both functional change (conversion) and meaning change (metaphorisation, metonymy) also involve a change in grammatical behaviour; a reduction in form may affect only part of the morpheme and so, she claims, instead of morphological neology the term 'form neology' should be used. There are other objections we could make, such as that the model omits manufacture, or that it lumps together construction and sound imitation although their morpho-semantic neology is due to vastly different processes, that transposing construction involves a change in grammatical behaviour, etc.

Stein's own typology (Table 2) uses Tournier's model as the primary starting point but adds several improvements: she refines and incorporates both his internal-external distinction (formation-importation; the latter extended by the appellativization of proper names) and the semiotic criterion, differentiating between three facets, form, meaning and grammar. In her model of vocabulary expansion processes she circumscribes the "real domain of word-formation [...] where there is the strongest correlation in form, grammar and meaning: constructing and shifting" (p. 100). The fact that nonconcatenative shifting is definitely not seen as the real domain in word-formation as morphology underlines the difference between the morphological and the lexical approach.

Lack of general consensus on the status or definition of particular word-formation processes and the relations between them is not limited only to English. The same situation obtains in the descriptions of other languages too, as the results of Hormigo's (2011) analysis for Spanish suggest. Differences in theoretical starting points, terminology and its usage are certainly a problem, and so typological claims

LES MATRICES LEXICOGÉNIQUES DE L'ANGLAIS CONTEMPORAIN		
MATRICES INTERNES	NÉOLOGIE MORPHO-SÉMANTIQUE	CONSTRUCTION <ul style="list-style-type: none"> AFFIXATION <ul style="list-style-type: none"> 1. PRÉFIXATION : <i>antinuclear, body > embody > disembody</i> 2. SUFFIXATION : <i>kitchenette; grace > graceful > graciousness</i> 3. DÉRIVATION : <i>(to) burgle < burglar; (to) laze < lazy</i> INVERSE : <i>flammable < inflammable</i> COMPOSITION <ul style="list-style-type: none"> 4. JUXTAPOSITION : <i>sheepdog, armchair, statesman, master's degree, point of view, honeymoon trip, hand-made, give up</i> 5. AMALGAME : <i>smoke + fog > smog, transfer resistor > transistor</i>
	NÉOLOGIE SÉMANTIQUE	CHANGEMENT DE FONCTION <ul style="list-style-type: none"> 7. CONVERSION : a) Totale: <i>tunnel, N > tunnel, V</i> b) Partielle: <i>French, A > the French, N</i> CHANGEMENT DE SENS <ul style="list-style-type: none"> 8. MÉTAPHORE : <i>(she is) a cat, a peach</i> <i>(he is) a bear, an iceberg</i> 9. MÉTONYMIE : <i>the press, an iron, the Crown, paperback</i>
	NÉOLOGIE MORPHOLOGIQUE	RÉDUCTION DE LA FORME <ul style="list-style-type: none"> 10. TRONCATION : a) Antérieur: <i>omnibus > bus, telephone > phone</i> b) Postérieur: <i>veterinary surgeon > vet, public house > pub</i> 11. SIGLAISON : <i>VIP (very important person), laser (light amplification by stimulated emission of radiation)</i>
MATRICE EXTERNE	12. EMPRUNT	: <i>tutu (fr.), blitz (all.), fiasco (ital.), hacienda (esp.), bungalow (hindi), coyote (aztèque), bonsai (japonais)</i>

TABLE 1: Tournier's matrices lexicogéniques

I. Lexical importation	1. antonomasia (deonymisation)	proper names > common nouns
	2. importation from other languages	importation of (a) lexical items (b) lexical units
II. Lexical formation	1. neology in meaning	modification of the range of application of a lexical item: generalisation (covering more referents), specialisation (restriction to specific referents)
	2. neology in form	(a) ellipsis: <i>a newspaper > a paper</i> (b) clipping: <i>influenza > flu, omnibus > bus, microphone > mike</i> (c) acronymy: <i>VIP, BBC</i>
	3. neology in grammar and meaning (the real domain of WF)	(a) shifting: (i) semantic-grammatical (metaphorisation, metonymic shifting) (ii) grammatical-semantic (full conversion, partial conversion) (b) constructing: (i) compounding (composition, combining) (ii) affixation (prefixation, suffixation)
	4. neology in form, grammar and meaning	(a) backformation: <i>television > televise</i> (b) blending: <i>breakfast + lunch > brunch</i> (c) layering: <i>glitterati, jazzerati < literati</i> , showing through in such formations (d) word creation: <i>ex nihilo</i> ; (onomatopoeic) motivated word creation

TABLE 2: Stein's model of vocabulary expansion

about word-formation in individual languages and even more so typological comparisons of different languages have to be taken with caution.

5. THE USE OF (NON)CONCATENATIVE CATEGORIES IN WORD-FORMATION

Although the idea of nonconcatenative morphological processes is questioned by current trends in morphology, it has begun to crop up in recent descriptions of word-formation as morphology and as part of lexicology alike. Štekauer (2005), for instance,

contrasts his onomasiological approach to word-formation with “the traditional classification of word formation processes [...] exclusively based on formal criteria, such as extending vs. reducing the stem (word formation base), i.e., concatenative vs. non-concatenative processes; combination of two stems vs. stem + bound morpheme vs. internal stem modification; etc.”

Similarly, Fuster and Sánchez (2008) base their description of English word-formation (which they see as part of morphology “most directly related to lexicology”) explicitly on (non)concatenation. They find two basic word building operations at a formal level: concatenative word-formation processes (the combination of morphemes in strings), exemplified by derivation and compounding, and nonconcatenative word-formation processes (phonological alterations such as reduction of the base, or no change of the base at all, making morphemic segmentation difficult). They identify three important nonconcatenative processes in Modern English: conversion, back-formation and shortening (e.g. *television* > *TV*, *telly*). They also observe that word-formation is not the only way vocabulary is augmented and mention borrowing, semantic change and root creation.

Reference to (non)concatenation can also be found in descriptions of word-formation in non-Indo-European languages. Kageyama (2014) applies the concept to Japanese and speaks of “a wealth of concatenative and nonconcatenative word formation processes that produce complex words by compounding, affixation, conversion, inflection, blending, clipping, and other mechanisms, which are often conditioned by differences of lexical strata.”

6. CATEGORIZATION OF LEXEME-FORMATION PATTERNS IN TERMS OF (NON)CONCATENATION

From the lexicological perspective and given that lexeme formation only partially overlaps with morphology, the issue of whether nonconcatenative operations have a place in morphology or whether they are a phonological phenomenon is not of much relevance. On the other hand, the formal categorization of lexeme-formation processes according to (non)concatenation is an attractive idea for several reasons. It has great reach and may probably cover all of lexeme-formation (vocabulary expansion) and help cluster lexeme-formation patterns in a meaningful way. The fact that (non)concatenation is a purely formal criterion has its advantages (compared to the semiotic criterion which combines form, meaning and function at once). It may accommodate operations that have not been systematically included in lexeme formation yet (e.g. various types of creation; cf. Stein’s rejection of arbitrary shifting of form mentioned by Algeo) and easily allows for crosscategorization, i.e. identification of processes involving two different principles of formation. Concatenation also appears to naturally separate prototypical morphological rule-governed formation from less rule-governed or downright arbitrary nonconcatenative lexical patterns.

We have seen that concatenation is typically described as the addition of an independent formative, “when two morphemes are ordered one after the other” (Haspelmath, Sims above), etc., or in a more sophisticated way in terms of the “concatena-

tive ideal” (see Bye and Svenonius above). Nonconcatenation is characterized as an internal change or a modification of the base (*viz* Matthews), stem alteration, absence of clear demarcation of a morpheme, no change of the base at all, etc., or simply negatively as “everything else” (Haspelmath, Sims above) which is not concatenation. It is possible to paraphrase the two categories as additive processes and non-additive processes. This conception is sufficiently general to allow categorization of lexeme-formation not only within morphology, but to encompass the whole of vocabulary expansion (*cf.* Mathesius’ idea of name formation), both rule-governed and arbitrarily creative, not restricted to single-word level or internal sources. The following diagram is my own attempt at a tentative outline of lexeme-formation categorized from the (non)concatenation perspective:

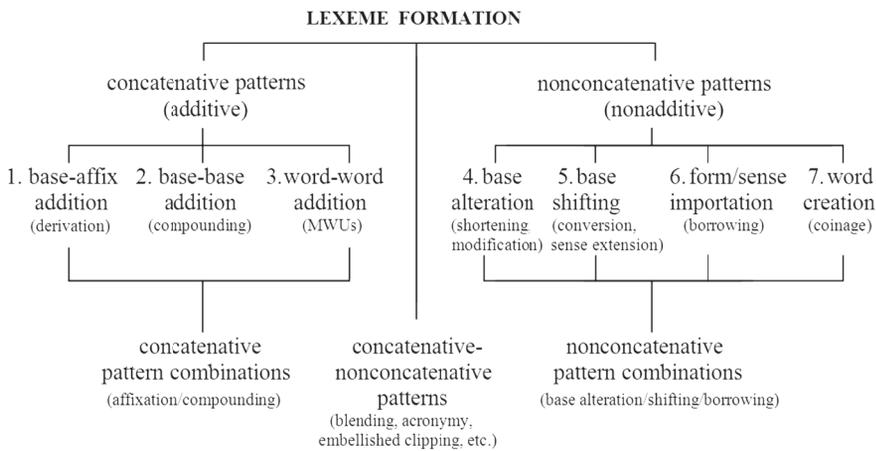


FIGURE 1: Lexeme-formation categorized from the (non)concatenation perspective

The seven basic types subsume several subtypes: 1. **base-affix addition** (lexical derivation: prefixation, suffixation; ‘base’ stands for ‘word’ or ‘stem’); 2. **base-base addition**: compounding (word-word: *windmill*; stem-word: *astrophysics*; stem-stem: *astronaut*); reduplication (*go-go*, *no-no*, *bling-bling*, *hubba-hubba*), repeating the whole unchanged base; 3. (syntactic) **word-word addition**: multiword units or phrasemes, both idiomatic and non-idiomatic (*private soldier*); 4. **base alteration**: shortening — clipping (*lab*, *temp*), initialisms (*TV*); back slang (*yob*, *redraw* [warder]); arbitrary sound alterations created for euphemizing, jocular, slang purposes, etc. (*Jesus* > *jeepers*, *lord* > *lawks*, *lud*, *pesty* > *pesky*, *yep*, *gansta*), metathesis (*girdle* < *griddle*), etc. Many such alterations are found under the lexicographic ragbag term ‘corruption’ (*cf.* Bauer, 1994, Klégr, 1999, 2010); 5. **base shifting** (grammatical: conversion; semantic: meaning extension, specialization, generalization); 6. form/sense **importation** (borrowing, interlingual, interdialectal; *antonomasia*: *titan*, *ampere*, *guinea*); 7. **word creation** (unmotivated, *ex nihilo*; motivated, onomatopoeic). However, the assignment of patterns to the concatenative or the nonconcatenative category is not

without problems. Reduplicative compounds seem to be more clearly concatenative unlike inflectional reduplication (though see below). The placement of conversion apparently depends on the authors' theoretical position: it has been interpreted as combinatorial or concatenative (cf. Olsen, 1990, following Marantz' use of autosegmental phonology) or non-concatenative (Lieber, 1981; a view subsequently adopted even by Olsen) in parallel to treating conversion either as zero derivation or as "relisting" (Lieber, 1992).

Observations such as Stein's (2000, 98) that the "lexical operations carried out with linguistic material already in existence are quite complex and they may overlap", or Bauer's (2003, 14) that "various word-formation processes appear to blend into each other and not have clear-cut boundaries between them" do appear, but are rarely, if at all, followed up (Mühleisen's (2010) heterogeneity of word-formation patterns is a different matter). Actually it is possible to point out three types of cross-cutting categories, i.e. overlapping or combined patterns: (i) combinations of different concatenative patterns, (ii) combinations of different nonconcatenative patterns, and (iii) combinations of both concatenative and nonconcatenative patterns.

Concatenative pattern combinations typically include formations combining compounding and affixation (affix compounds: *green-eyed*, *bus-driver*; combining-form + affix: *anthrop-oid*, *cephal-ic*, *mal-ware*). **Nonconcatenative pattern combinations** are found in operations such as 'accent / ac'cent, use [s]/to use [z] (base alteration [voicing or stress shift] + shifting), alternatively subsumed under conversion (Quirk et al., 1985) or excluded from it (Bauer and Huddleston, 2002). We also find them in some cases of word ellipsis (shortening + grammatical and semantic shift: *private soldier* > *a private*). Also importation, i.e. borrowing (both interlingual and interdialectal), is often accompanied by base alteration (*cockroach* < *cucaracha*).

However, the largest number of multiple combinations is probably between **concatenative-nonconcatenative patterns**. The most conspicuous instances are **blending** (back and/or front clipping + compounding, semantically similar to copulative compounds: *smog*, *dogopus*) and related **clipped compounding** (*sitcom*), **acronymy** (*Nato*) and **alphabetical abbreviation** (*NBC*), all involving subtraction/ back clipping + addition of the resulting initial letters to form a single word from a multiple-word term, and **embellished clipping** (shortening + affixation: *telly*, *preggers*, *journo*). Some embellished clippings, moreover, involve shortening, affixation and occasionally respelling and assimilation (*husband* > *hubby*, *umbrella* > *broolly*, *Barbara* > *Babs*). Base modification (sound — i.e. rime and ablaut — motivated) is typical of most cases of **reduplication** (combination of the same base + base modification: *ding-dong*). Also there is a special case of derogatory reduplication which can be interpreted as combining either with base modification (*culture-schmulture*, *theory-shmeory*) or prefixation (*income-shmincome*, *introspector-shminintrospector*, *envy-shmenvy*). A rather problematic is the position of **back-derivation** and **word ellipsis** which could be described as concatenation in reverse, i.e. on the one hand they involve removal of material (subtraction), on the other hand both processes respect morphemic boundaries, which is symptomatic of concatenative patterns. An interesting pattern is presented by so-called **rhyming slang**. In this operation a word is initially replaced by a word combination (concatenation) and subsequently shortened to a single word again (ellipsis: *lie* > *slang porky pie* > *porky*).

There are no doubt many other instances of an intricate interweaving of concatenative and nonconcatenative features. For instance, so-called string or **(de)phrasal compounding** in which syntactic units such as phrases or even clauses are used as clause elements (typically modifiers, but also verbs, *to short-change*, and nouns, *No more I love you's*) is usually assigned to compounding (base addition), although the frozen string evidently undergoes grammatical shift (nonconcatenative operation). Sometimes the string is sentence-long and the operation is more than anything reminiscent of Lieber's relisting: *First of all, that I-only-did-it-because-you-left-and-I-missed-you-and-wanted-to-feel-special-even-if-for-a-moment line is a crock of shit*. Similarly, motivated word creation (onomatopoeic words) which typically involves interjections is frequently associated with conversion (*woof* > n, v) or repetition (concatenation: *woof woof, blah blah blah*). If anything, as far as lexeme-formation is concerned (and contrary to standard presentation in morphology), a closer look suggests that simple concatenative and nonconcatenative patterns are endpoints on a continuum with variously mixed patterns in between. The feature of (non)concatenation is clearly of a scalar nature which is hardly surprising given that scalarity pervades language, cf. Kastovsky's (2009) scale of (patterns with) progressively less independent constituents (word → letter): "compounding (word) > stem compounding (stem) > affixoids > affixation proper (word-/stem-based) > clipping compounds (clipping of words/stems) > blending > splinters > acronyms".

7. CONCLUSION

The paper draws attention to the feature of (non)concatenation as a descriptive tool which has been recently referred to in connection with word-formation with increasing frequency. It traces the views and use of (non)concatenation in morphology where it has been applied to both inflectional and derivational processes. It argues that word-formation or, more appropriately, lexeme-formation regarded as synonymous with derivational morphology (cf. Štekauer et al., 2012: 1) is too narrow because formation of new lexemes is not restricted to words or to morphological processes only. In fact, word-formation as morphology and lexeme-formation as part of lexicology have overlapping but not identical agendas. The paper focuses on the application of the (non)concatenation criterion even to operations which are considered lexical rather than morphological, and in this sense prefers the lexicological approach to lexeme-formation to the morphological one.

(Non)Concatenation is a powerful concept in that it points to the manner in which naming takes place at the most fundamental level: by stringing forms together or by manipulating their shape. The feature of nonconcatenation is particularly helpful in bringing together a number of form shifts that otherwise give the impression of a disjointed medley. The aim of the paper was to show that the typological application of this criterion so far — confined as it has been to binary classification — is not consistent enough. It appears that many, if not most, patterns are not just simply concatenative or non-concatenative, but involve a combination of two (or more) operations simultaneously (either in principle or as a frequent variation). Most typically we find

patterns integrating both a concatenative and a nonconcatenative operation at once (such as shortening + addition in blending, acronymy, or embellished clipping). There are also patterns in which two distinct operations of the same type participate, i.e. concatenative-concatenative patterns (compounding + affixation) or nonconcatenative-nonconcatenative (conversion + base alteration). The existing disagreements about the (non)concatenative nature of some processes (reduplication and conversion) make no difference about this. The conclusion is that lexeme-formation patterns form a cline from purely concatenative to purely non-concatenative ones with mixed patterns in between. This is in keeping with both the scalarity of language phenomena in general and the observation of how incredibly variable the formation of neologisms is, ranging from “default” productive, rule-governed patterns to creative, non-productive, analogy-based and unruly playful formations.

An interesting thing about the distinction between concatenative and nonconcatenative patterns is that it broadly correlates with the basic functions of lexeme-formation. Of the two general functions usually recognized, (concept) naming and syntactic recategorization (for a brief summary see, for instance, Hohenhaus, 2007), to which a third one must be added, that of meeting social needs (such as to introduce an element of novelty, to raise attention, to connote an attitude or stylistic value, to establish or reinforce one’s social identity, etc.), concept naming appears to be largely fulfilled by concatenative patterns (compounding, derivation), the social function is prototypically met by nonconcatenative patterns (base modification, shortening) and syntactic recategorization is effected by both concatenative and nonconcatenative patterns (transpositional derivation, back-derivation and conversion, i.e. if we accept conversion as a nonconcatenative process). While “social naming” typically produces stylistically marked formations (e.g. clippings, blends) and concept naming is usually neutral, syntactic recategorization seems to produce both stylistically marked and unmarked neologisms. However desirable it would be to complement formal typologies of lexeme-formation with a functional aspect, the fact is, to quote Hohenhaus, that “[T]he functional side of word-formation is often regarded as an understudied area of the field.”

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