Affixation in Morphology

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Summary and Keywords

Affixation is the morphological process that consists of adding an affix (i.e., a bound morpheme) to a morphological base. It is cross-linguistically the most common process that human languages use to derive new lexemes (derivational affixation) or to adapt a word's form to its morphosyntactic context (inflectional affixation). Suffixes (i.e., bound morphemes following the base) and prefixes (i.e., bound morphemes preceding the base) are the most common affixes, with suffixation being more frequently recorded in the world's languages than prefixation. Minor types of affixation include circumfixation and infixation. Conversion and back-formation are related derivational processes that do not make use of affixation.

Many studies have concentrated on the need to differentiate derivation from inflection, but these morphological processes are probably best described as two end points of a cline. Prototypically, derivation is used to change a word's category (part of speech) and involves a semantic change. A word's inflectional distinctions make up its paradigm, which amounts to the different morphological forms that correlate with different morphosyntactic functions. Form-function mapping in (derivational and inflectional) affixation is a key issue in current research on affixation. Many deviations from the canonical *One Form-One Meaning* principle can be observed in the field of affixation.

From a diachronic point of view, it has been demonstrated that affixes often derive from free lexemes by grammaticalization, with affixoids being recognized as an intermediate step on this cline. More controversial, but still attested, is the opposite change whereby affixes and affixoids develop into free morphemes through a process of degrammaticalization.

Keywords: affixation, prefix, suffix, circumfix, infix, derivation, inflection, form-function mapping, affixoid, (de)grammaticalization

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1. Defining Affixation

An *affix* is a bound morpheme: this means that it cannot function as an independent word. *Affixation* is the morphological process that consists of adding an affix (or more than one affix) to a morphological base.

The terms *affix* and *affixation* go back to the Medieval Latin verb *affixare*, frequentative of Latin *affigere* (past participle *affixus*) “fasten to, attach” (from *ad* “to” + *figere* “to fasten”) (see Online Etymology Dictionary). Although affixes are in principle well-defined elements in linguistics, the term encompasses a wide range of phenomena that differ in their formal and functional properties.

When an affix precedes the base, it is called a *prefix*. *Suffixes* are affixes that follow the base. Examples of English prefixes and suffixes are given in (1) and (2), respectively.

(1)

dis*-agree,* ***un****-kind,* ***in****-justice,* ***hyper****-sensitive,* ***trans-****gender,* etc.

(2)

*golf-****er****, polite-****ness****, friend-****ship****, hope-****less****, radical-****ly****,* etc.

The examples in (1) and (2) show that affixation is frequently used to create a new word with a different meaning (*derivational affixation*). A second basic function of affixation is to create a new form of a word to make it fit into a particular morphosyntactic context (*inflectional affixation*), as illustrated in (3).

(3)

*a bouquet of rose-****s****, I open-****ed*** *your present yesterday, Lisa****’s*** *boyfriend,* etc.

Roses, for instance, is not a new word derived from *rose* but should be considered a grammatical variant of the base that indicates plurality.

Affixation is the most common way of deriving new words cross-linguistically, although other derivational processes are productive as well—for instance, *conversion* (e.g., *to host* (V) < *host* (N)) or *back-formation* (e.g., *to diagnose* (V) < *diagnosis* (N)). Besides derivation, new words are often coined by combining free morphemes too—for instance, through *compounding* (e.g., *birthday present* < *birthday* + *present*) or *blending* (e.g., *blog* < *web* + *log*) (see section 3.3).

Affixation is a central concept in morphology and touches upon many related theoretical and empirical issues in word-formation and inflection. Consequently, this article can only cover a subset of relevant issues.

Section 2 concentrates on the cross-linguistic properties of affixation. Section 3 provides an overview of the main formal expressions of affixation and related word-formation

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processes. Section 4 surveys the functions of derivational and inflectional affixation. Section 5 focuses on form-function mapping in derivation and inflection, a prominent issue in current research on affixation. Finally, Section 6 is devoted to affixation from a diachronic perspective: it will show that affixes often derive from free lexemes and, more exceptionally, can give rise to new free lexemes too.

Many studies cited in this article refer the reader for more information and further reading to other articles of the *Oxford Research Encyclopedia in Linguistics (ORE)* and to key resources in the domain of affixation. Derivational and inflectional morphology, respectively, are extensively described in the *Oxford Handbooks* (Baerman, 2015B; Lieber & Štekauer, 2014B). The articles by Lieber, "Derivational Morphology", and Stump, "Inflectional Morphology", give a broad synthesis of the main issues related to derivation and inflection, respectively. Further reading on psycholinguistic approaches to affixation and, more specifically, the role of morphemic representations in the comprehension and processing of morphologically complex words can be found in the article by Gagné, "Psycholinguistic Approaches to Morphology." An overview of recent quantitative methods in morphology is provided by Marelli ("Quantitative Methods in Morphology"). Furthermore, a key resource for the topic of affixation from a cross-linguistic perspective is the typological survey on word-formation in the world's languages (Štekauer, Valera, & Körtvélyessy, 2012); this article contains multiple references to this work. Moreover, Manova (2014) provides an exhaustive bibliography on the topic of affixation, including a list of dictionaries, databases, and corpora that can be used for empirical research in this field. Finally, a complete overview of the theoretical issues relevant to word-formation and inflection can be found in the *Oxford Handbook of Morphological Theory* (Audring & Masini, 2018).

2. Typology and Universals

The great majority of human languages make use of some form of affixation. Nevertheless, languages may greatly differ in the strategies they employ to express the same concepts: for instance, the English noun *biolog-ist* involves suffixation, whereas its Russian equivalent *biolog* "biologist" is the result of *subtraction* (cf. section 3.3.2) from *biolog-ija* "biology" (Manova, 2014, p. 1).

As is the case for other word-formation processes, the importance of affixation significantly varies in the world's languages. Whereas some languages hardly use affixation, others make extensive use of it. Extensive affixation is typical of polysynthetic languages (Evans & Sasse, 2002) but the process hardly occurs in languages of the isolating type. The distribution of affixation ranges from about 400 suffixes in use in West Greenlandic to only one genuine prefix in Estonian and Finnish (Štekauer et al., 2012, p. 135). In languages that employ affixation, suffixation is generally preferred to prefixation.

Štekauer et al. (2012) examined a study sample of 55 languages, belonging to 28 language families from all over the world (Africa, America, Eurasia, South-East Asia and Oceania) and to 4 different language types (agglutinative, fusional, isolating, polysynthetic) to carry out a typological investigation into word-formation. Their typological study in-

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dicates that suffixation is recorded in 96.36% of the languages included in their sample, while prefixation is observed in 70.91% of the study sample. Only two languages in the sample of 55 languages do not use suffixation for word-formation: Vietnamese has no affixation at all, and Yoruba employs only prefixation for coining new words (Štekauer et al., 2012, pp. 138–141). All other languages have suffixation and most display prefixation as well. Infixation and circumfixation (cf. section 3.2) are much less frequently attested when compared with prefixation and suffixation.

In earlier work, Hawkins and Gilligan (1988) had already observed that suffixation is preferred over prefixation in inflectional morphology. Grandi and Montermini (2005) claim that a general preference for suffixation holds for derivation as well, to the exception of evaluative morphology.

Lieber and Štekauer (2014A, pp. 780–784) reviewed a number of universals on derivation that had been proposed in earlier studies, such as those by Bauer (1997), Dressler (1988), Greenberg (1963), and Štekauer et al. (2012). Their study confirms the validity of some of these: for instance, all languages indeed display some form of derivation, and the occurrence of circumfixation (cf. section 3.2.1) in a particular language implies that the language also displays prefixation and suffixation. Nevertheless, the study also adduces counterexamples to particular claims, showing for instance that non-concatenative derivation (Davis & Tsujimura, 2014) (cf. section 5.1) in a particular language does not automatically imply that the language displays some kind of concatenative derivation as well (see Lieber, “Derivational Morphology,” pp. 14–15).

3. Form-Based Classification

Suffixes and prefixes are the most common types of affixes, but other types of affixation occur as well, such as circumfixes and infixes. Moreover, derivational word-formation processes without affixation are attested too, such as conversion and back-formation. In the next sections, we present these major (section 3.1) and minor (section 3.2) types of affixation, and briefly compare affixation with cases of word-formation that do not involve the addition of an affix (section 3.3).

3.1 Prefixation vs. Suffixation

The typological survey by Štekauer et al. (2012) shows that suffixation is more widespread than prefixation. Estonian and Finnish, for instance, only have one prefix (Estonian *eba-* “false, pseudo-, quasi-” and Finnish *epä-* that expresses negation). The number of exclusively prefixing languages is small in comparison to the number of exclusively suffixing languages (Mithun, 2003). These cross-linguistic differences in frequency between prefixation and suffixation may indicate that the distinction between both processes is not merely positional. Other (formal) distinctions between prefixation and suffixation concern, among others, their word-class changing ability (section 3.1.1), their frequency in multiple affixation (section 3.1.2), and their role in morphophonological modification of

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the base (section 3.1.3) (Štekauer et al., 2012, pp. 135–167). Section 3.1.4 deals with productivity of affixes and indicates how it can be measured.

3.1.1 Word-Class Changing and Word-Class Maintaining Affixes

While prefixes typically maintain the word class of the base (e.g., *organize* (V)—*reorganize* (V)), suffixes regularly change the word's category (e.g., *organize* (V)—*organization* (N)). This fact has led to the general assumption that suffixes function as heads—in line with the *Right-hand Head* rule of Williams (1981)—whereas prefixes always act as modifiers. Štekauer (2001), however, puts prefixes and suffixes on a par, arguing that both can actually function as heads, although not necessarily in the same proportions. Dupanović (2019), for instance, lists seven potentially class-changing prefixes in English (*a-, be-, de-, dis-, en-, non-*, and *un-*). The fact that both prefixes and suffixes can be *class-changing* and *class-maintaining* is illustrated in (4) and (5):

(4)

a. class-maintaining prefixation:

kind (adjective)–***un****kind* (adjective)

edit (verb)–***co****-edit* (verb)

b. class-changing prefixation:

friend (noun)–***be****friend* (verb)

bug (noun)–***de****bug* (verb)

(5)

a. class-changing suffixation:

happy (adjective)–*happi****ness*** (noun)

remove (verb)–*remov****able*** (adjective)

b. class-maintaining suffixation:

child (noun)–*childh****ood*** (noun)

green (adjective)–*green****ish*** (adjective)

Whether the creation of (semantic) subclasses by suffixation, such as abstract nouns from concrete ones (e.g., English *child* > *childhood, king* > *kingdom*) or names for trees from the corresponding fruit (e.g., French *poire* "pear" > *poirier* "pear tree"), should be considered a true class-maintaining process, however, is an issue still being debated.

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3.1.2 Multiple Affixation

Like affixation, the occurrence of recursive affixation varies significantly from language to language. Repetition of the same affix can be used to modify a word's meaning (e.g., *great-great-grandmother*). The same holds for different prefixes and suffixes being attached to the same word (e.g., *construction-al-iz-at-ion*). Multiple suffixation is more widely attested than multiple prefixation. In West Greenlandic, for instance, a verb can combine with up to a dozen suffixes (Fortescue, 1980, p. 261; Štekauer et al., 2012, p. 147):

(6) West Greenlandic

allattu-i-vvi-ssaaliqi-sar-sima-qa-anga

write.down-APS-LOC.of-lack-FRE-PVF-INT-1SG.IND

'I was really short of notebooks'

Multiple suffixation is most frequent in nouns and verbs and commonly results in a change of word class, especially from verb to noun (Štekauer et al., 2012, pp. 148–151):

(7) Afrikaans

*skei-**baar-heid***

separate-able-ity

'separability'

(8) Indonesian

*pakai-**an-nya***

wear-NMR-DEF

'the clothes'

Multiple prefixation is cross-linguistically most frequently found in verbs, as illustrated in the examples (9) and (10) from Štekauer et al. (2012, pp. 151–155):

(9) Catalan

***des-en**-caden-ar*

un-en-chain-INF

'unleash'

(10) Modern Greek

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απο-δι-*οργανώνω*

apo-di-organóno

undo-REVERSATIVE-organize

‘deorganize’

Importantly, the occurrence of multiple affixation is subject to severe order restrictions. Greenberg (1963) claimed that derivational affixes are placed closer to the root than inflectional affixes, but counterexamples have been attested (Lieber & Štekauer, 2014A). In a sequence of derivational affixes, it is obvious that input constraints often predict the correct order. For instance, in *read-abil-ity* the suffix *-able* must be attached before *-ity* because *-able* selects verbs as inputs (to create adjectives) and *-ity* selects adjectives (to create nouns) (Booij, 2007, p. 71).

In other cases, the ordering of multiple affixes may also follow the principle of semantic relevance (Bybee, 1985): affixes that affect more significantly the semantics of the base are placed closer to the base than affixes that are less relevant to the lexical semantics expressed by the base. Manova and Aronoff (2010), Muysken (1986), and Rice (2011) review the existing research on affix ordering and define a series of affix-order principles. Manova and Aronoff (2010), for instance, model affix ordering in terms of type of information and attempt to formulate universal principles that are relevant to both well- and less-studied languages. Recent research indicates that affix ordering is also subject to psycholinguistic factors. The *Complexity-based Ordering* principle (Hay, 2002), for instance, implies that affixes that can be easily parsed in a word cannot occur inside affixes that are less easily parsed. Saarinen and Hay (2014) provide a detailed overview of the theoretical debate concerning affix ordering.

3.1.3 Base Modification

Both suffixation and prefixation may alter the form of their base, but this occurs more frequently in the case of suffixation. Base modification is mostly caused by assimilation, but a range of other morphophonological changes are possible too, even within the same language. For instance, in the Estonian example in (11), the stem has to be shortened and has to end in a consonant when a suffix beginning with a vowel is added (Štekauer et al., 2012, pp. 156–167):

(11) Estonian

kal-ur

kala-ur

fish-SFX

‘fisher’

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3.1.4 Productivity

Whereas suffixation is more frequently observed than prefixation, in a large number of languages, especially Slavic and Romance, prefixing derivation is highly productive and allows the introduction of very subtle semantic distinctions, as in the following examples from Slovak (Štekauer et al., 2012, p. 143):

(12) Slovak

a.	*písat'*	'write'
b.	***do**-písat'*	'complete writing'
c.	***na**-písat'*	'write down'
d.	***od**-písat'*	'write back, reply, write off, write down, depreciate, condemn'
e.	***o**-písat'*	'describe, (to take a) copy'

In recent years, much attention has been devoted to the productivity of affixes (cf. among others, Bauer, 2001; Dal & Namer, 2016; Plag, 1999; Rainer, 2005). With respect to affixation, productivity refers to the ability of an affix to create new words. Two factors define the productivity of an affix: its "availability" and its "profitability" (Bauer, 2001; Corbin, 1987). For instance, the English suffix *-th* (e.g., *health, warmth*) is synchronically not available because it can no longer be used to create new derived words. A suffix like *-ment*, by contrast, is still available for affixal derivation (e.g., *amusement*) but does not frequently coin new words and is therefore not fully profitable. Finally, the suffix *-ness* is both available and profitable for coining new derivations (e.g., *nerdiness*) (see Lieber, "Derivational Morphology," p. 15).

The increasing availability of electronic databases and corpora has made it possible to measure the productivity of affixes in a quantitative way. Baayen (among others, 1989, 2001, 2009, 2014) proposes three quantitative measures of productivity that are commonly used to calculate the productivity of a particular affix or to compare the productivity of a set of affixes. For instance, we could try to measure the productivity of the French suffix *-ité* to form deadjectival nouns (e.g., *vitalité* "vitality") and compare it with the productivity of the competing suffix *-itude* (e.g., *exactitude* "correctness") (Dal & Namer, 2016). The first measure of productivity is *realized productivity*: it evaluates the success of a morphological process in the past and corresponds to the number of types observed in a given corpus or dataset. Second, *expanding productivity* assesses the rate at which a morphological category is attracting new members. Differences in expanding productivity can be gauged by comparing the number of "hapax legomena"—words of a specific morphological category that occur only once in a given corpus. Third, to estimate the *potential productivity* of an affix, the number of hapax legomena must be divided by the number of tokens belonging to the same morphological category in the given dataset. A high number of hapaxes relative to the total number of tokens with a given affix is suggestive of its ca-

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pability to create new derivations, while a relatively low number of hapaxes indicates a certain degree of “saturation” of the word-formation process in question.

3.2 Minor Types of Affixation

In this section, two less common types of affixation are presented: circumfixation (section 3.2.1) and infixation (section 3.2.2).

3.2.1 Circumfixation

A *circumfix* is “a combination of a prefix and a suffix that co-occur (at least with bases of a specific type) to fulfil a joint function” (Carstairs-McCarthy, 2006, p. 85). This implies that a circumfix should be considered a discontinuous affix representing one single meaning. For example, the Dutch circumfix *ge*-X-*te* forms collective nouns (13). Crucially, “neither the prefix plus the base nor the suffix plus the base can be shown alone to contribute a recognizable part of the meaning of the derived form” (see Lieber, “Derivational Morphology,” p. 6).

(13) Dutch

a.	*been* ‘bone’	***ge**been**te*** ‘skeleton’
b.	*berg* ‘mountain’	***ge**berg**te*** ‘moutain range’
c.	*dier* ‘animal’	***ge**dier**te*** ‘collectivity of animals’

Applying this narrow definition, circumfixation is not a very common means of word-formation: it is recorded in only 21.82% of the languages in the sample by Štekauer et al. (2012).

Circumfixation should be distinguished from the mere co-occurrence of a prefix and a suffix, each bringing about its own functional load. The latter process is, for instance, productive in German adjectives in *-lich*, combining with a series of different prefixes (cf. Štekauer et al., 2012, p. 205):

(14) German

a.	***ab**-kömm-**lich***	‘available’
b.	***über**-heb-**lich***	‘arrogant’
c.	***ver**-mein(t)-**lich***	‘presumed, presumable’
d.	***zer**-brech-**lich***	‘breakable’

The simultaneous attachment of both a prefix and a suffix is called “parasynthesis” (e.g., Iacobini, 2010; Scalise, 1984). In the example in (15), neither of the affixes can be attached alone to the base:

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(15)

Italian ***de***-*ratt*-***izzare*** *(Fr. dératiser)* 'to rid of rats' < *ratto* 'rat'

However, the boundary between both word-formation processes—circumfixation on the one hand and parasynthesis on the other—is not always straightforward, and not all studies distinguish between them.

3.2.2 Infixation

An *infix* is "an affix that is positioned inside the base" (cf. Moravcsik, 2000, p. 546). The formal and semantic properties of infixation are described in detail by Štekauer et al. (2012, pp. 198–203). The insertion of an infix is conditioned by specific phonological constraints and much attention has been devoted in research to identifying the phonological "pivots" in the base that determine the position of the infix (Blevins, 2014; Yu, 2007).

Infixation is recorded in 25.45% of the languages in the sample by Štekauer et al. (2012), and should therefore, like circumfixation, be considered quite marginal compared with suffixation and prefixation. This limited use of infixation and circumfixation is likely driven by a universal preference for continuous morphemes (Dressler, 2005, p. 273).

It has been assumed that no languages use infixation without employing prefixation or suffixation (Greenberg, 1963) and that, if a language makes use of infixation, it will also employ prefixation and/or suffixation (Plank, 2007, p. 58). However, a language such as Yoruba uses infixation without having suffixation. Verbal infixation predominates in the languages of the world, and the semantics of verbal infixes cover a broad range of aspectual meanings (causativity, imperfectivity, inchoativeness, iterativity, etc.). An example of a causative infix in Tatar is given in (16) (Štekauer et al., 2012, p. 203):

(16) Tatar

asha-***t***-*ïrga*

eat-CAU-INF

'feed'

Infixes are mainly of the derivational type, but in some languages, such as Arabic and Hebrew, infixation is also used to mark inflectional categories.

Infixes should be distinguished from *interfixes* (cf. Bauer, 2003) as the latter are "empty morphs" (exempt from meaning) that regularly occur between compound members (e.g., Dutch *zwangerschap*-***s***-*test* "pregnancy test"), or between a base and its derivational suffix (e.g., Spanish *lam*-***et***-*ón* "lick"). If we define an infix as a bound morpheme, true infixation should also be distinguished from the insertion of free morphemes, so-called *expletive infixation* (McCarthy, 1982). In the English examples in (17), the words are split apart by the insertion of emphatic markers that can also be used on their own (cf. Blevins, 2014, p. 137):

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(17)

*abso-**damn**-lutely, fan-**fuckin'**-tastic, ty-**bloody**-phoon*

3.3 Word-Formation without Affixation

Certain word-formation processes do not involve affix addition in order to form a new word with a new meaning. Such processes include compounding, blending, clipping, reduplication, conversion, and back-formation. This section focuses on conversion (section 3.3.1) and back-formation (section 3.3.2) as they can be considered most closely related to derivational affixation: conversion is sometimes described as zero-affixation and back-formation involves affix deletion. Section 3.3.3 briefly discusses some borderline cases of affixation.

3.3.1 Conversion

Conversion is commonly defined as a morphological process whereby a new word belonging to a different word class is formed, without any formal change (e.g., English *a bridge* (N)> *to bridge* (V)) (see also Martsa, "Conversion in Morphology").

Conversion is rather widespread in the languages of the world: Štekauer et al. (2012, p. 215) have recorded it in 61.82% of the languages in their study sample. It most frequently occurs within the word classes of adjective, noun, and verb. Some examples from Štekauer et al. (2012, pp. 218–219) are given in (18)–(20):

(18) Ilocano

aso 'dog' (N) > *aso* 'be a dog' (V)

(19) Romanian

frumosul 'beautiful' (A) > *frumosul* 'beauty' (N)

(20) Serbian-Croatian

mlada 'young' (A) > *mlada* 'bride' (N)

However, the aforementioned definition and most literature on conversion are strongly connected to the prototypical case of English conversion, and both the notions of word class and formal change are more problematic when applied to other, especially non-Indo-European, languages (cf. Bauer & Valera, 2005; Díaz-Negrillo & Fernández-Alcaina, 2018; Martsa, 2013, "Conversion in Morphology"; Valera, 2014). Word-class systems vary from language to language, and minor changes accompanying conversion, such as inflection, stress shift, and stem modification (21)–(23), are not univocally accepted as to be included in the property of "formal identity":

(21) Spanish (Štekauer et al., (2012), p. 220)

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aceite ‘oil’ (N) > *aceitar* ‘oil’ (V)

(22) Modern Greek (Koutsoukos, 2013, 2015)

γλωσσολόγ(ος) [ɣlosolóɣos] ‘linguist’ (N) > *γλωσσολογ(ώ)* [ɣlosoloɣó] ‘to be a linguist’ (V)

(23) German (Štekauer et al., (2012), p. 220)

schneiden ‘cut’ (V) > *Schnitt* ‘cut’ (N)

Therefore, Bauer (2005A) argues that the concept of conversion should take into account the specific properties of each language, and that a cross-linguistic description should allow that the defining criteria may apply to different degrees.

An interesting related question is whether conversion should be considered a genuine derivational process or whether conversion implies the attachment of a *zero affix* (in the sense of *zero-affixation* or *zero-derivation*; cf. Marchand, 1969; see also Dahl & Fábregas, “Zero Morphemes”). Such an analysis puts conversion on a par with affixal derivation because the lack of formal change in conversion contrasts with overt morphological marking of the same derivational function in comparable cases—for example, English causative verbs *to cool-Ø* “to make cool” versus *to hard-en* “to make hard” (cf. Kastovsky, 2006, p. 153, among others). However, conversion may result in different semantic patterns than affixation, as observed for N > V derivation in English by Plag (1999, pp. 219–225) and Lieber (2004, pp. 89–95). Other approaches consider conversion as the result of relisting items in the mental lexicon (Lieber, 1992, 2004) or a listing of category-less items in the lexicon, as argued in Distributed Morphology (Harley & Noyer, 1999). The debate is not settled yet, and the analysis may strongly depend on the typological properties of the examined language.

Finally, because of the lack of formal change in conversion, the direction of the process is not always easy to detect. Besides etymology, productivity of the derivational relationship and semantic transparency may serve as revealing criteria.

3.3.2 Back-Formation

A second derivational word-formation process without addition of affixes is *back-formation* or *subtraction*. In contrast to affixation, back-formation is a subtractive morphological process whereby a new word is formed by removal of a suffix (e.g., English *editor* (N) > *edit* (V) or *baby-sitter* (N) > *baby-sit* (V)). It can be considered peripheral, as it is only attested in 16.36% of the languages included in the study sample by Štekauer et al. (2012), mostly in European languages. In the majority of cases, back-formation operates from noun to verb (24)–(25), but the opposite direction occurs too (26) (examples from Štekauer et al., 2012, pp. 234–236):

(24) Italian

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gestione ‘management’ (N) > *gestire* ‘manage’ (V)

(25) Swedish

nöjessegling ‘sailing for pleasure’ (N) > *nöjessegla* ‘sail for pleasure’ (V)

(26) Romanian

îngheța ‘freeze’ (V) > *îngheț* ‘frost’ (N)

It has been a subject of discussion as to whether back-formation is relevant from a synchronic point of view and whether it ought not to be analyzed analogically with suffixation (Marchand, 1969). Huddleston and Pullum (2005, p. 286), in fact, note that “[T]here is nothing in the forms themselves that enables one to distinguish between affixation and back-formation: it’s a matter of historical formation of words rather than of their structure.” The removal of a suffix indeed implies that the latter was attached to a base before, even if this base is not attested. Other authors analyze alleged cases of back-formation, such as the verb *to air-condition*, as instances of compounding rather than subtraction (cf. Kiparsky, 1982).

3.3.3 Word-Formation Processes Combining Free Morphemes

Besides affixation, conversion, and back-formation, other types of word-formation are widely attested cross-linguistically. Compounding, incorporation, reduplication, and blending are word-formation processes that combine free morphemes. Since they do not involve affixation, we will not go into these processes any further but refer to the relevant literature (cf. Lieber, Derivational Morphology”; Lieber & Štekauer, 2009, 2014B; Štekauer et al., 2012, pp. 51–134; ten Hacken, “Compounding in Morphology,” among others).

It is, however, noteworthy that some borderline cases with affixation can be observed. Neoclassical compounds, for instance, are a case in point as their combining forms are bound (like affixes), but not necessarily fixed in position (unlike affixes), as illustrated in (27) (Lieber, “Derivational Morphology,” p. 3).

(27)

a. ***derm****atititis* vs. *endo****derm***

b. ***phil****ology* vs. *Anglo****phile***

c. ***path****ology* vs. *homeo****path***

Since most morphologists are reluctant to accept the idea that words can be formed from affixes alone, neoclassical formations are generally considered compounds of a special sort, although composed of bound forms (cf. among others, Bauer, 1998; Bauer, Lieber, & Plag, 2013; Olsen, 2014).

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The boundary between compounding and affixation is also proven gradual from a diachronic perspective, as free morphemes may over time develop into affixes (cf. among others, Bauer, 2005B). *Affixoids* or *semi-affixes* are compound members with certain properties of affixes (abstract meaning, productivity) and provide evidence of this diachronic gradualness. Section 6 discusses this issue further.

4. Function-Based Classification

The two basic functions of morphology are (a) creating new lexemes and (b) expressing the appropriate form of a lexeme in a particular morphosyntactic context. Derivational affixes fulfill the first function (word-formation) (see Lieber, "Derivational Morphology") and inflectional affixes the second one (see Stump, "Inflectional Morphology"). From such a function-based perspective, affixes are indeed commonly divided into derivational and inflectional types. This distinction is based on a number of observations, such as the fact that inflection generally follows derivation, and that—in contrast to derivational affixes—inflectional affixes are relevant to syntax and typically do not change a word's category (cf. the discussion in Anderson, 1982). The claim that both types of affixes should be treated separately is known as the *Split Morphology* hypothesis (cf. Perlmutter, 1988). Nevertheless, many cases of affixation challenge this hypothesis (cf. section 4.1). Sections 4.2 and 4.3 briefly outline the main functions of derivational and inflectional affixation.

4.1 Derivation vs. Inflection

The article by Lieber, "Derivational Morphology" (p. 1), defines derivational morphology as "morphology that creates new lexemes, either by changing the syntactic category (part of speech) of a base or by adding substantial, non-grammatical meaning or both." Inflection is "the systematic relation between words' morphosyntactic content and their morphological form" (see Stump, "Inflectional Morphology," p. 1). As pointed out by Booij (2000, p. 36), the distinction is functional rather than formal, as both derivation and inflection may be expressed by the same morphological processes: affixation, reduplication, internal modification of the base, and so on. By definition, inflectional distinctions concern different forms of the same lexeme, whereas derivational distinctions realize separate but related lexemes. In addition, prototypical derivation is category-changing (e.g., *employ* > *employer, employable*), while inflection is not (e.g., *employ, employs*, and *employed*).

Many studies have concentrated on the need to differentiate both morphological processes (e.g., Anderson, 1985; Booij, 2000; Stump, 2005), although it has to be recognized that the distinction is not always clear-cut. First, as observed in section 3.1.1, derivation is not always category-changing (e.g., *happy—unhappy*, *child—childhood*). Conversely, Haspelmath (1996) has argued that some cases of inflection do change the word's category: for instance, although English *-ing* forms (participles and gerunds) are considered inflectional forms of the verb, they may have adjectival (e.g., *a frightening experience*) or nominal (e.g., *a good beginning*) characteristics. Second, inflection is considered a morphosyntac-

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tic phenomenon, whereas derivation typically affects lexical meaning. Nevertheless, tense distinctions (e.g., *She sings/sang beautifully*), commonly seen as inflections of the verb, are a semantic-pragmatic phenomenon rather than formal variants depending on the morphosyntactic context (cf. the distinction between inherent and contextual inflection in Booij, 1994, 1996). A third frequently alleged distinguishing criterion between derivation and inflection is productivity, inflectional morphology typically being completely productive (inflectional paradigms should not have gaps), and derivational productivity being much more limited and constrained. However, some derivational affixes are highly productive too (e.g., English *-ness* to form deadjectival nouns—e.g., *happiness, loneliness, sadness*), while inflectional gaps regularly occur. For instance, certain Dutch NV compounds are partly defective as they do not display all inflected forms (e.g., *liplezen* "to lip-read", **ik liplees* "I lip-read") and certain nouns are only used in the plural form (e.g., English *scissors*). Fourth, according to the *Split Morphology* hypothesis (Perlmutter, 1988), inflection should follow derivation (e.g., *civil-iz-ation-s*), but many counterexamples show that inflection may occur internally to derivation as well (cf. Booij, 1994, 1996). In Breton, for instance, the denominal adjectivizing suffix *-ek* can be applied to a plural form (e.g., *korn* "horn" > *kerniel* "horns" > *kerniell-ek* "having horns") (cf. Stump, "Inflectional Morphology," p. 5). Sixth, the same category, for instance the diminutive, may be inflectional in one language and derivational in another (Katamba, 1993, p. 212). Štekauer et al. (2012, pp. 19–35) provide ample cross-linguistic evidence for the blurred distinction between derivation and inflection, with intermediate cases showing properties of both derivation and inflection—for instance, in the domains of evaluative morphology, aspect and plurality. To cite one example, in Luganda the prefixes *ka-/bu-* may serve as inflectional singular/plural markers (28) but also as derivational diminutive prefixes (29) (Štekauer et al., 2012, pp. 26–27):

(28) Luganda

***ka**-solya* 'roof' vs. ***bu**-solya* 'roofs'

(29) Luganda

a. *mu-kazi* 'woman' vs. ***ka**-kazi* 'little woman'

b. *ba-kazi* 'women' vs. ***bu**-kazi* 'little women'

Based on Italian diminutive suffixation, Scalise (1984) goes even as far as introducing a third category for evaluative morphology, which is neither inflectional nor derivational.

From the perspective of child language, finally, it has been shown that derivational morphology is acquired much later than inflection (cf. Dressler, 2012). An exception are diminutive suffixes which are acquired as early as inflectional morphemes and which may even facilitate first-language acquisition of inflectional morphology (Savickiene & Dressler, 2007).

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Extensive discussion of the distinction between derivation and inflection can be found in, among others, Aronoff (1994), Beard (1995), Booij (1994, 1996, 2000), Bybee (1985), Dressler (1989), Haspelmath (1996), Spencer (2013, 2016), Stump (2001, 2005, 2016; see also Stump, "Inflectional Morphology,"), and ten Hacken (2014). Many studies conclude that inflection and derivation are best situated on a cline, with prototypical cases of inflection at one end and prototypical cases of derivation at the other.

4.2 Semantic Categories of Derivation

Derivational morphology is employed to create new lexemes, either by adding a semantic value or by changing the word's category (part of speech), or both. Coining new words is needed not only to refer to new entities or concepts (the so-called labeling function of words), such as *e-reader* or *Netflixization* but also to express particular pragmatic nuances, such as endearment, depreciation, attenuation, and so on. Diminutive forms, for instance, are not only used to indicate "small size" but often also to convey a positive or negative evaluation. For example, the Dutch diminutive form *baan-tje* "job-DIM" may refer to a job without any prestige and an appointment at *nine-ish* means that people are not expected to arrive at nine sharp (Booij, 2007, pp. 14–15). For further reading on evaluatives and their morphological expression, we refer to Grandi's article ("Evaluatives in Morphology") and the references therein.

Another important function of derivational morphology is recategorization. Lieber ("Nominalization: General Overview and Theoretical Issues"; see also Lieber, 2016), Sleeman ("Adjectivalization in Morphology"), and Baeskow ("Denominal Verbs in Morphology") provide abundant illustrations of word-class changing derivation making use of affixes (mostly suffixes) and describe the formal and semantic properties of these processes. Some English examples for these three main derivational processes (nominalization, adjectivalization, denominal verb-formation) are provided in (30)–(32):

(30)

*arriv**al** < arrive, employ**ee** < employ, member**ship** < member, happi**ness** < happy*

(31)

*origin**ary** < origin, decis**ive** < decide, beard**ed** < beard, babyi**sh** < baby, age**less** < age*

(32)

*symbol**ize** < symbol, person**ify** < person, **em**body < body, **de**throne < throne, **un**friend < friend*

A semantic classification of derivation, distinguishing between nominal, verbal, adjectival, and other semantic categories, can be found in Lieber ("Derivational Morphology," pp. 9–14). In what follows, each subtype is illustrated by some examples relevant to English affixal derivation.

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4.2.1 Nominal Semantic Categories

A series of English suffixes can be used to derive nouns, belonging to different semantic classes. Some examples (from Lieber, “Derivational Morphology,” p. 10) are given in (33):

(33)

a. eventive	*examin**ation***
b. stative	*own**ing***
c. participant	*read**er***
d. collective	*jewell**ery***
e. abstract	*happi**ness***
f. inhabitant	*Chin**ese***
g. follower, adherent	*Marx**ist***
g. doctrine	*Marx**ism***

4.2.2 Verbal Semantic Categories

The English suffixes *-ize* and *-ify* change nouns and adjectives into verbs belonging to a wide range of semantic categories (Bauer et al., 2013, p. 283; see Lieber, “Derivational Morphology,” p. 11):

(34)

a. inchoative	*acid**ify***
b. causative	*standard**ize***
c. resultative	*crystall**ize***
d. ornative	*glor**ify***
e. locative	*hospital**ize***
f. similative	*despot**ize***
g. performative	*philosoph**ize***

4.2.3 Adjectival Semantic Categories

Unlike other languages, English does not make use of distinct affixes to derive either gradable/qualitative or ungradable/relational adjectives. The suffix *-ic*, for instance, may

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be attached to nouns to form both: *atomic* (relational) versus*toxic* (qualitative). The suffix *-able* is particularly productive in English to express a wide array of modal nuances:

(35)

a. epistemic modality (possibility)	*charge**able***
b. deontic modality (permission)	*question**able***
c. dynamic modality (disposition toward)	*suit**able***

4.2.4 Other Semantic Categories

Affixal derivation may furthermore be used to cause many different types of meaning change.

Examples from Lieber (“Derivational Morphology,” p. 12) are given in (36):

(36)

a. negative (contrary, reversative, privative)	***un****happy*
b. relational	***over****fill*
c. temporal	***ex-****husband*
d. quantitative	***multi****talented*
e. evaluative (diminutive, augmentative)	*dogg**ie***

The onomasiological description of word-formation by Štekauer et al. (2012, pp. 237–303) demonstrates that some semantic categories are widely represented cross-linguistically, in particular agentive nouns, causative verbs, frequentative and intensified verbs, and action nouns. Additionally, most categories can be cross-linguistically expressed by a diversity of word-formation processes (prefixation, suffixation, circumfixation, conversion, etc.).

4.3 Inflectional Distinctions and Paradigms

A lexeme presents different forms according to its position in a morphosyntactic context. These inflectional distinctions amount to different morphological forms that correlate with different morphosyntactic or morphosemantic functions, such as differences in tense (37), person (38), or number agreement (39).

(37)

French *Je chante* ‘I sing’ – *Je chantais* ‘I sang’ – *Je chanterai* ‘I will sing’

(38)

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French *Je chante* 'I sing' – *Tu chantes* 'You sing' – *Elle chante* 'She sings'

(39)

French *Je chante* 'I sing' – *Nous chantons* 'We sing'

The following (non-exhaustive) list of grammatical functions may be marked by inflectional markings on nouns, verbs, and adjectives in the languages of the world (Booij, 2007, p. 100):

(40)

a. *Nouns*: number, case, definiteness, gender

b. *Verbs*: tense, aspect, mood, voice, number, person, gender

c. *Adjectives*: degree, number, gender, case, definiteness

A lexeme's inflectional paradigm refers to a word's complete inventory of inflected forms, as illustrated in Table 1 for the French verb *chanter* "to sing."

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Table 1. Inflectional Paradigm of French *chanter* “sing”

Non-finite forms	**Infinitive**	**Present participle**	**Past participle**	
	chanter	*chantant*	*chanté, chantée, chantés, chantées*	
Indicative	**Present**	**Imperfect**	**Future**	**Past**
1sg *2sg* *3 sg* *1pl* *2pl* *3pl*	*chante* *chantes* *chante* *chantons* *chantez* *chantent*	*chantais* *chantais* *chantait* *chantions chantiez* *chantaient*	*chanterai chanteras* *chantera* *chanterons* *chanterez* *chanteront*	*chantai* *chantas* *chanta* *chantâmes chantâtes chantèrent*
	Subjunctive present	**Subjunctive past**	**Conditional**	**Imperative**
1sg *2sg* *3sg* *1pl* *2pl* *3pl*	*chante* *chantes* *chante* *chantions chantiez* *chantent*	*chantasse chantasses chantât chantassions chantassiez chantassent*	*chanterais* *chanterais* *chanterait chanterions chanteriez chanteraient*	/ *chante !* / *chantons ! chantez !* /

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Canonical inflectional paradigms have exactly one form per cell and a different form in each cell. Nevertheless, non-canonical paradigms are very common. For instance, in defective paradigms, one or more cells are empty (cf. the aforementioned example of Dutch defective NV compounds). Syncretic paradigms, on the other hand, have the same form occurring in more than one cell. For instance, the English form *put* refers to infinitive, present indicative, past, and so on (Hippisley & Stump, 2016, p. 23). For a more detailed description of the relation between form and function in inflectional paradigms and the main kinds of deviations from the canonical "one form-one function" mapping (including defectiveness, deponency, syncretism, etc.), we refer to Baerman (2015A), Hippisley and Stump (2016), and Stump, "Inflectional Morphology."

5. Form-Function Mapping in Affixation

A prominent issue in current research on affixation is the relationship between form and function in derivation and inflection. After defining the properties of canonical form-function mapping in affixation (section 5.1), we discuss cases of non-canonical mapping in derivation (section 5.2) and inflection (section 5.3).

5.1 Canonical Morphology

Hippisley and Stump (2016, p. 1) attribute the following properties to so-called canonical morphology:

- It is *concatenative*: complex word forms are assembled from the combination of a stem with affixes (prefixes, suffixes, infixes);
- It is *regular* and *productive* (i.e., morphological rules apply to entire classes of stems);
- A word form's morphological and semantic structure is *compositional*;
- Morphological form and morphological content are *isomorphic* (i.e., there is a one-to-one correspondence between morphological units and their content).

Following the Saussurean tradition, it has indeed long been assumed that there exists one-to-one correspondence between form and meaning in any given sign, and this at two different levels (cf. the state of the art on form-function asymmetries and mismatches in Koutsoukos et al., 2018A). The *One Form-One Meaning* principle, commonly attributed to Wilhelm von Humboldt (1767–1835) (cf. Vennemann, 1972; Zwanenburg, 2000), stipulates that one morphological unit ideally corresponds to one semantic function. The *Compositionality* principle (among others, Cohnitz, 2005) stipulates that the semantic and grammatical content of a complex word form can be derived from the content expressed by the morphological parts from which it is assembled, and the properties of the complex word itself.

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Affixation can be assumed to be in line with the Compositionality principle because typically the addition of an affix goes hand in hand with an addition or change of meaning or function (e.g., *book* “singular”—*books* “plural). This compositional morpheme-based analysis is in line with the “Item-and-Arrangement” approach to morphology (cf. Hockett, 1954). However, many exceptions and deviations from these principles characterize the morphology of human languages (cf. Davis & Tsujimura, 2014, on non-concatenative morphology). Conversion (e.g., *a bridge—to bridge*) and subtraction (e.g., Russian *psixologija* “psychology”—*psixolog* “psychologist; cf. Manova, 2011), for instance, run counter to the principles of “canonical morphology” because the addition of meaning is not supported by any addition of a derivational morpheme. This also holds for certain cases of inflection—for instance, plural or past tense formation without affixation (e.g., *mouse* vs.*mice, sing* vs. *sang*). An alternative approach, “Item-and-Process” (cf. also Hockett, 1954) was proposed to account for such problematic cases, and paved the way for “A-morphous morphology” (Anderson, 1992). An attempt to “save” the Compositionality principle is the postulation of “zero-affixes” (cf. Dahl & Fábregas, “Zero Morphemes”), although these are controversial. In the case of conversion, for instance, many morphologists prefer the term *conversion* to *zero suffixation* (section 3.3.1). From a lexeme-based approach to affixation, as provided in Construction Morphology (Booij, 2010, “Construction Morphology”), affixes are considered not to bear meaning by themselves and to receive semantic interpretation only when used in the construction of words. In this approach, form-meaning regularities in word-formation are captured by more or less abstract templates. For instance, agentive suffixation by *-er* (e.g., *teacher, swimmer, seller*) can be expressed by the following template:

(41)

$[[x]_V\ er]_N \leftrightarrow$ “one who Vs”

The relationship between form and function in the domain of affixation is a theoretical issue that has been prominent in recent research in this field. The debate has centered on the motivation and theoretical modeling of these form-function asymmetries. Manova (2014, pp. 16–18) provides a short overview of the insights from different theoretical points of view and refers to the relevant bibliography. Koutsoukos et al. (2018B) provide a constructionist approach to various cases of form-function asymmetries in morphology and syntax. The next sections survey some non-canonical instances of both derivational (section 5.2) and inflectional morphology (section 5.3).

5.2 Non-Canonical Form-Function Mapping in Derivational Affixation

Derivation is typically characterized by a many-to-many relationship between form and function: one derivational affix may express different meanings (*polysemy*) and several affixes may concur to express the same meaning or function (*competition* and *allomorphy*).

Affixal polysemy can be illustrated by the English suffix *-er* that derives agent nouns (*writer*), instruments (*printer*), locations (*diner*), means (*stroller*), and patients (*loaner*) (Lieber, “Derivational Morphology,” p. 13). The diminutive suffix is a well-described case

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of polysemy in evaluative morphology, conveying semantic nuances such as smallness, endearment, and contempt (42) (Grandi, “Evaluatives in Morphology”; Grandi & Körtvélyessy, 2015; Jurafsky, 1996; Körtvélyessy, 2015).

(42) Italian (Grandi, “Evaluatives in Morphology,” p. 5)

a. *libr**ino*** ‘small book’

b. *marit**ino*** ‘dear husband’

c. *dottor**ino*** ‘unexperienced doctor’

Bauer et al. (2013) describe polysemy of affixes in detail in English. Štekauer et al. (2012, pp. 168–183) provide a cross-linguistic overview.

The inverse of affixal polysemy is *competition* between different affixes to express the same function. The English suffix *-er*, for instance, competes with other suffixes to derive agent nouns (e.g., *worker, dentist*, and *consultant*). The suffixes *-al* (*refus-al*),*-ion* (*celebrat-ion*), and-*ment* (*establish-ment*) all derive event nouns from verbs (among others, Jackendoff, 1975, p. 651; Zwanenburg, 2000, pp. 842–844). Competition between formal variants of the same affix is called *allomorphy*. Derivational allomorphy is often caused by phonological conditions, in particular assimilation. In some verbs in Udihe, for instance, the stem-final /n/ is assimilated with the suffix-initial /g/ of the repetitive suffix *-gi-*, which results in the allomorphic suffix *ŋi-* (Nikolaeva & Tolsjaya, 2001, p. 301; Štekauer et al., 2012, p. 186):

(43) Udihe

*ilaktan-**ŋi-***	<	*ilaktan*
‘appear again’		‘appear’

Štekauer et al. (2012, pp. 183–195) provide a cross-linguistic survey of affixal allomorphy.

Closely connected to the notion of competition is the concept of *blocking*—that is, “the nonoccurrence of one form due to the simple existence of another” (Aronoff, 1976, p. 43). Blocking would be motivated by the universal tendency of languages to avoid synonymy (Rainer, 1988). The word *barbaric*, for instance, would block the creation of *barbarous*, unless both forms have distinct semantics. However, Bauer et al. (2013, ch. 26) provide numerous counterexamples from which it should be concluded that blocking is a tendency rather than a universal principle of derivational morphology.

5.3 Non Canonical Form-Function Mapping in Inflectional Affixation

Similar reflections hold for the domain of inflection. The term *exponence* (Matthews, 1972) refers to the mapping of inflectional morphemes to morphosyntactic features. An exponent or inflectional marking may be concatenative (e.g., *talk—talked*) or not (e.g., *sing—sang*). Matthews (1972), Coates (2000), and Stump (“Inflectional Morphology”)

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present different types of exponence relations. One-to-one-mapping implies that each exponent expresses one single morphosyntactic feature and vice versa. However, exponence relations are typically more complex.

In instances of *cumulative exponence*, one single exponent expresses a combination of inflectional categories. For instance, the Latin inflectional suffix in *am-o* “I love” simultaneously realizes first person, singular number, indicative mood, and active voice. The correspondence of multiple functions to one inflectional suffix but in different contexts can be illustrated by the Dutch inflectional suffix *-s* that can be used to indicate the plural (e.g., *tafel-s* “tables”) or the genitive case (e.g., *iets mooi-s* “something beautiful-GEN”) (Moortgat & van der Hulst, 1981).

Multiple (or *extended*) *exponence* denotes the co-occurrence of multiple exponents in the same word form to realize the same morphosyntactic property. For example, in German *Hals* “neck”—*Häls-e* “necks,” the plural is marked both by umlaut and suffixation (Matthews, 1972, 1974). Harris (2017) presents a book-length survey of the most important questions related to multiple exponence. Moreover, the book provides a typology and abundant examples from a broad variety of languages.

Finally, *inflectional allomorphy* can also be considered a deviation from one-to-one mapping since the same function is realized by distinct inflectional affixes according to the context. For instance, the past tense is expressed by /d/ in *clean* > *cleaned* but by the combination of /t/ and ablaut in *mean* > *meant* (Hippisley & Stump, 2016, p. 2).

6. Affixation and Language Change

This final section focuses on two opposite diachronic phenomena: the emergence of affixes from free morphemes through grammaticalization (section 6.1) and the possible development of affixes into free morphemes through degrammaticalization (section 6.2). Obviously, only cases of morphological change that are relevant for affixation are taken into account. The processes of (de)grammaticalization and morphological change, more generally, are the topic of separate articles (Norde, “Grammaticalization in Morphology”; Trips, “Morphological Change”).

6.1 Grammaticalization: From Free to Bound Morpheme

Marchand (1969) already noted that suffixes arise by passing through three stages: free morphemes may be used as compound constituents and further develop into derivational affixes. In addition, Bauer (2005B), Heine and Kuteva (2007), Hopper and Traugott (2003), and Trips (2009), among many others, pointed out that affixes often go back to compound members, through a process of bleaching and grammaticalization. This is, for instance, the case of the English suffix *-less*, historically derived from the adjective *less* “devoid of, free from,” and of the suffix *-ship* going back to the Old English noun *scipe* “form, state, condition” (Štekauer et al., 2012, pp. 135–136).

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Trips (2009) and Olsen (2014) trace similar trajectories for the English suffix *-hood* and the German suffix *-heit* (cf. also Dutch *-heid* and Danish *-hed*), all derived from Proto-Germanic **haidus* "manner, quality" (see Online Etymology Dictionary). Trips (2009) assumes that it is the relational nature of nouns such as *hād* "status, office, rank" and *scipe* "form, state, condition" that facilitated their development into suffixes (e.g., *childhood, friendship*) (see also Trips, "Morphological Change").

Not only lexical categories (e.g., nouns), but also grammatical categories (e.g., prepositions) may undergo grammaticalization into affixes. The studies by Amiot (2004) and Van Goethem (2009), among others, show that prepositions and prefixes can indeed be situated on a cline. For instance, in French *survoler l'océan* "to fly over the ocean," *sur-* still functions as a prepositional relator, whereas in *surestimer ses capacités* "to overestimate one's abilities," it is closer to an evaluative prefix. Los, Blom, Booij, Elenbaas, & van Kemenade (2012) analyze the diachrony of Germanic particle verbs from a similar perspective.

Grammaticalization from compounding constituent to affix generally includes semantic bleaching, frequent occurrence in a fixed position, and dissociation from the corresponding free form (Trips, 2009, p. 10). Prosodic weakening and increased phonological integration with the base (Bauer et al., 2013, p. 440) also often accompany the process.

Compound members that occupy an intermediate position on this diachronic cline and that have developed a specific meaning as compound constituents, while their free form is still available, have been called *affixoids* (Booij, 2010, "Construction Morphology"; Fleisher, 1969; Ralli, 2010; Van Goethem, 2008, 2010), *pseudo-affixes* (Bauer, 2005B, p. 99), or *semi-affixes* (Marchand, 1969, p. 356). Affixoids have features of both bound morphemes (abstract meaning, productivity, sometimes even phonological reduction) and free morphemes (being compound members corresponding to free morphemes) and can therefore be considered synchronic witnesses of a diachronic cline from compounding to derivation. They are particularly productive in Germanic languages and regularly develop intensifying semantics in adjectival compounds. See examples (44A), (44B), and (44C) from Dutch intensifying prefixoids that still have corresponding nominal, adjectival, or verbal free forms, respectively (from Booij, 2010, p. 56):

(44)

a. *reus/reuze* 'giant' in ***reuze****leuk* 'very nice', ***reuze****goed* 'very good'

b. *dol* 'mad' in ***dol****blij* 'very happy', ***dol****gelukkig* 'very happy'

c. *piep* 'squeak' in ***piep****jong* 'very young', ***piep****klein* 'very small'

Van Goethem (2008) proposes phonological, morphological, semantic, and distributional parameters to indicate how adjectives may develop into prefixoids. For instance, in Dutch compounds like *oud-leerling* "lit. old-pupil," the adjective *oud* "old" has acquired the meaning "former" and alternates with the prefix *ex-*. Van Goethem (2010) presents a par-

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allel analysis of the development of the French adjective *nouveau* “new” into a prefix-like element (e.g., *nouveau-né* “newborn (baby)”).

Obviously, grammaticalization of compound members is not the only source of affixation. Phonological change may play a role as well in the rise of new (especially non-concatenative) affixes (Manova, 2014, p. 33). Borrowing from other languages (Seifart, 2012) is another important source, which can enrich a language’s stock of affixes (e.g., the pan-European use of Greek prefixes like *pseudo-*).

6.2 Degrammaticalization: From Bound to Free Morpheme

More exceptional than grammaticalization of free forms into bound morphemes is the opposite development of bound morphemes into less bound or even free morphemes. Although these kind of changes are counterdirectional to grammaticalization and therefore controversial, Norde (2009) provides a wide array of examples of degrammaticalization. Relevant subtypes of degrammaticalization for the case of affixation are *deinflectionalization* and *debonding*. *Deinflectionalization* involves a shift from an inflectional affix to another type of bound morpheme (e.g., a derivational affix or a clitic). An example is the shift of the Swedish suffix *-er* from inflectional marker (masculine, singular, nominal in Old Swedish) to derivational item (nominalization suffix in Modern Swedish) (Norde & Trousdale, 2016). More examples and exhaustive description of the changes are provided in Norde (2009, “Grammaticalization in Morphology”).

Unlike deinflectionalization, *debonding* is relatively common. It is defined as “a composite change whereby bound morphemes (clitics, affixes, affixoids) in a specific context develop into free morphemes” (Norde, 2009, p. 186). Debonding of prefixoids, for instance, is a productive process of lexical innovation in Germanic languages, which may lead to the creation of new intensifying adverbs or evaluative adjectives (cf. Battefeld, Leuschner, & Rawoens, 2018; Norde & Van Goethem, 2014, 2018; Van Goethem & De Smet, 2014; Van Goethem & Hiligsmann, 2014; Van Goethem & Hüning, 2015). While some free affixoids are merely orthographic variants of the bound form (Norde & Van Goethem, 2014, make this case for Swedish *jätte* “giant”), many others have truly developed into new free lexemes. Dutch *reuze*, for instance, developed first into an intensifying prefixoid (45A) that subsequently debonded and gave rise to adverbial (45B) and adjectival (45C) use (Van Goethem & Hiligsmann, 2014):

(45)

a. Intensifying prefixoid: *een **reuze**leuk weekend* ‘a great (lit. ‘giant-nice’) weekend’

b. Intensifying adverb: *De kinderen hadden het **reuze** naar hun zin* ‘The children enjoyed themselves very much (lit. ‘giant’)’

c. Evaluative adjective: *Het weekend was **reuze**!* ‘The weekend was great (lit. ‘giant’)!’

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The “extravagant” debonding of the English suffix *-ish* has also attracted the attention of many morphologists: from a derivational suffix (e.g., *blue-ish*) it has developed into a degree operator that attaches to entire phrases (e.g., *light-at-the-end-of-the-tunnelish*) and even occurs as a free lexical item (*Did you enjoy the movie?—Ish!)* (cf. among others, Norde, 2017; OltraMassuet, 2017).

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