On the grammaticalization of some processes of word formation in Africa Bernd Heine, University of Köln, Germany

The paper is concerned with linguistic data suggesting that one and the same lexical source of grammaticalization can give rise to different morphological processes, leading not only to compounding and lexicalization but also to derivation, and even to inflection. Based on data from African languages for which little or no earlier written documents are available, the paper argues that even in the absence of historical records it is possible to reconstruct some features of earlier processes of word formation.

Keywords: compounding, derivation, diminutive, grammaticalization, inflection

1. Introduction

It is probably a general property of languages that they show multifunctionality, that is, they dispose of morphological units belonging simultaneously to more than one grammatical category. For some linguistic schools of thought this fact poses a problem since it is at variance with a presumed one-form-one-meaning principle, according to which monosemy is more natural than polysemy or, more generally, multifunctionality. For other schools again it is more of the expected case and in need of explanation. The latter applies in particular but not only to students of transcategoriality,¹ who account for multifunctionality of linguistic units either in terms of synchronic principles of discourse processing or else in terms of diachrony (Robert 2003a; 2003b; 2004; Do-Hurinville & Hancil 2015; see also Enfield 2006).

The present paper is concerned with a case of multifunctionality as it relates to word formation processes. To this end, an example from an African language is discussed in more detail. The remainder of this section is concerned with methodological issues. The subsequent sections propose an account of multifunctionality in terms of grammaticalization, where §2 focuses on derivation and §3 on inflection. While these two sections are largely restricted to data from the !Xun language of southwestern Africa, the final §4 then draws some conclusions from the analysis presented in the paper.

1.1 An example

In the Khoisan language !Xun of southwestern Africa there is a morphological unit which provides a paradigm case of a multifunctional category. As the examples in (1) show, this unit, $\ddot{m}h\dot{e}$, is associated simultaneously with several different morpheme types.

¹ The term *transcategoriality* refers to a structure where in a given language one and the same kind of linguistic expression is used simultaneously on two or more different planes of linguistic organization based on some regular pattern; cf. English *well*, which serves, on the one hand, as a manner adverb and, on the other hand, as a discourse marker (Robert 2004).

(1) The status of the morpheme *mhè* of !Xun (W2 dialect, Kx'a family; König & Heine 2001; 2008; Heine & König 2015)

	Expression	Meaning	Morphological status
a.	mí mhè	'my (own) children'	Noun
	(my child:PL)		
b.	!xō mhè	'elephant calves'	Head noun in modifying N-N
	(elephant child:PL)		compounds
c.	n!āō- mhè	'small houses'	Derivational diminutive suffix
	(house-DIM:PL)		
d.	xā- m̀hè	'old men'	Inflectional plural suffix
	(old.man-PL)		-

In (1a), $\ddot{m}h\dot{e}$ is a plural noun, a relational noun meaning '(one's own) children', where the corresponding singular form is $m\dot{a}$ '(one's own) child'.² In (1b), $\ddot{m}h\dot{e}$ forms the head of a modifying compound construction, productively taking animate nouns as modifiers and meaning 'children of X' or 'young X'. With inanimate nouns as modifiers, $\ddot{m}h\dot{e}$ expresses 'small quantity or quality', that is, it has the structure and function of a productive diminutive plural suffix. Finally, in (1d), $\ddot{m}h\dot{e}$ functions as a plural form of the noun $x\bar{a}m\dot{a}$ 'old man', having features of a plural inflection (König & Heine 2001; 2008; Heine & König 2015).

In sum, one and the same element, $\tilde{m}h\tilde{e}$, occurs in four different constructions, instantiating four kinds of morphological expressions, extending from lexical to derivational and inflectional uses. This raises the question of how the presence of such a set of multifunctionality can be explained. Judging from what has been written on multifunctionality of this kind, the hypotheses in (2) are perhaps the ones that come into one's mind.

- (2) Lines of explanation
 - a. There is no reasonable explanation and, hence, no need to search for an explanatory account.
 - b. Since speakers of the language consistently distinguish the four different uses of the set, it must serve some purpose; hence, it should be explained with reference to the motivations that speakers have when using the set.
 - c. The presence of the set is a result of diachronic processes and, hence, can be explained with reference to these processes.

These hypotheses have been looked at in some form or other in the literature on transcategoriality (Robert 2003a; 2003b; 2004; Do-Hurinville & Hancil 2015). To my knowledge, the null hypothesis in (2a) has never been seriously proposed and will not be pursued here any further. An account in terms of (2b) is proposed by Robert (2003a, 2003b). Building on the notion of schematic form, Robert suggests explaining transcategoriality (*transcatégorialité*) in terms of economic motivation, which she views as a means for the optimization of linguistic systems since it allows having a maximum of functions with a minimum of forms. In a related fashion, Enfield (2006: 297) invokes *rule economy* as a way

² This noun differs from the non-relational !Xun noun *dàbà*, pl. *dèbē* 'child' (König & Heine 2001: 149).

of dealing with certain kinds of heterosemy, that is, of multifunctionality having a diachronic base.³

Economic motivation is an attractive notion, but so far the empirical evidence presented in its support is limited. The present paper will be restricted to (2c), and more specifically to grammaticalization to account for transcategoriality of the kind illustrated in (1).⁴

1.2 Grammaticalization

There is a wide range of definitions of grammaticalization (e.g. Campbell 2001; Heine & Kuteva 2002: 2; Hoper & Traugott 2003: 18; Kuteva et al. 2018) but in their major concern, most of them are essentially in accordance with the following classic definition by Kuryłowicz (1975 [1965]): "Grammaticalization consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from a less grammatical to a more grammatical status, e.g. from a derivative formant to an inflectional one" (Kuryłowicz 1975 [1965]: 52)

In order to identify processes of grammaticalization, a wide range of criteria have been proposed (see e.g. Lehmann 1982; Hopper 1991; Heine & Kuteva 2002; Hopper & Traugott 2003). In the present framework it is the four parameters listed in (3), which, as we argue, take care of most of the relevant criteria that have been proposed in other frameworks. Henceforth, these parameters are used as a tool for identifying instances of grammaticalization.

- (3) Parameters of grammaticalization (Heine & Kuteva 2007: 33–46)
 - a. Extension: linguistic expressions are extended to new contexts that invite the rise of grammatical functions (context-induced reinterpretation),
 - b. desemanticization (or semantic bleaching): loss (or generalization) of meaning content,
 - c. decategorialization: loss of morphosyntactic properties characteristic of lexical or other less grammaticalized forms, and
 - d. erosion (or phonetic reduction): loss of phonetic substance.

Each of these parameters concerns a different aspect of language structure or language use; (3a) is pragmatic in nature, (3b) relates to semantics, (3c) to morphosyntax, and (3d) to phonetics. Except for (3a), these parameters all involve loss of properties. But the process cannot be reduced to one of structural "degeneration". There are also gains: in the same way as linguistic items undergoing grammaticalization lose in semantic, morphosyntactic and phonetic substance, they also gain in properties characteristic of their uses in new contexts – to the extent that in some cases their meaning and syntactic functions may show little resemblance to their original use.

³ The term *heterosemy* was first proposed by Persson (1988) and subsequently modified and popularized by Lichtenberk (1991), for whom heterosemy obtains when within a single language "two or more meanings or functions that are historically related, in the sense of deriving from the same ultimate source, are borne by reflexes of the common source element that belong in different morphosyntactic categories" (Lichtenberk 1991: 476).

⁴ This procedure is in accordance with Robert (2004: 119–20) when she observes that "grammaticalization is the diachronic aspect of the more general phenomenon of transcategoriality".

The ordering of these parameters reflects the diachronic sequence in which they typically apply: grammaticalization tends to start out with extension, which triggers desemanticization, and subsequently decategorialization, and finally erosion. Erosion is the last parameter to come in when grammaticalization takes place, and in many of the examples to be presented below it is not (or not yet) involved. Paradigm instances of grammaticalization involve all four parameters but, as we will see below, there are also cases where not all of the parameters play a role.

The theoretical status of the distinction between lexical and grammatical forms is questioned in some studies of Construction Grammar, and Hüning & Booij claim that "[I]t is especially the dichotomy of "the lexical" vs. "the grammatical" that turns out to be inadequate for a proper account of word formation phenomena [...]" (Hüning & Booij 2014: 599–600). That this claim must be taken with care is demonstrated in Heine et al. (2016). The transition from lexical to grammatical is not only transitional but also overlapping. Nevertheless, as a rule, there is cross-linguistically no problem distinguishing lexical from prototypical grammatical forms.

1.3 Reconstructing in the absence of written documents

Work on grammaticalization is based on historical reconstruction, and the safest way to achieve reconstruction is by drawing on historical documents that provide information on earlier states of language use. However, restricting the study of grammaticalization to written languages would mean that the vast majority of the world's languages would have to be excluded. I therefore adopt also an alternative, but well-established methodology of reconstruction that has been employed mostly for unwritten but also for written languages to reconstruct grammaticalization. This methodology relies mainly on three components, namely diachronic reconstruction, e.g. by means of the comparative method (CM), internal reconstruction (IR), and typological generalizations (TG).

The following example may illustrate this methodology (see also Heine 2003: 580). The Bantu language Swahili of eastern Africa has a future tense prefix -ta-, which is hypothesized to be historically derived from the volition verb -taka 'want' on the basis of the following evidence. By using the CM it is possible to establish that the verb must be older than the future tense marker: The application of the comparative method shows that the verb -taka is a modern reflex of the Proto-Bantu verb *-càk-a 'desire' while it is not possible to reconstruct the future tense marker back to Proto-Bantu (Guthrie 1967-71). Internal reconstruction (IC) suggests, for example, that the earlier form of the tense marker is likely to have been -taka- since the form -taka- is still retained in relative clauses.⁵ TG allow for two kinds of generalization: First, it establishes that verbs of volition ('want', 'desire') quite commonly give rise to future tense markers in the languages of the world, the English will-future being a case in point (see Kuteva et al. 2018, WANT > FUTURE). And second, processes of this kind tend to involve a specific type of semantic, morphosyntactic and phonological changes: Loss of lexical in favor of grammatical meaning (desemanticization), loss of morphosyntactic properties such as loss of word status (decategorialization), and loss of phonetic substance (erosion).

⁵ Note that subordinate clauses tend to be more conservative in grammatical change than main clauses; for example, the English item *will* developed into a future auxiliary but retained its lexical meaning in subordinate clauses as, e.g. in *Do as you will*!

On the basis of these methodological tools it is possible to formulate a strong hypothesis to the effect that the Swahili future tense marker -ta- is the result of a common grammaticalization process, having lost its lexical meaning of volition (desemanticization), its status as an independent verb (decategorialization), and part of its phonetic substance, being reduced from -taka to -ta- (erosion). To conclude, while it is always desirable to search for historical records, such records are not a requirement for the reconstruction of grammaticalization processes.

1.4 Compounding, derivation, and inflection

Since the paper is concerned with word formation, a note on the key concepts that will figure below seems in order. Compounding and derivation are commonly classified as word formation, that is, as the creation of new lexemes (e.g. Lieber & Štekauer 2014: 3). The former is defined by Bauer (2003: 40) as "the formation of a new lexeme by adjoining two or more lexemes", cf. English *football*. Compounding may take on a number of quite divergent forms and, accordingly, has been used for a range of different kinds of meaning (e.g. Bauer 1978; Bisetto & Scalise 2005; Wälchli 2005; Lieber & Štekauer 2009).

My interest here is exclusively with right-headed modifying or endocentric compounds having two constituents, C_1 and C_2 , where C_1 is a modifier and C_2 the head. Derivation is more difficult to define, I am not aware of any concise definition that is likely to be acceptable to the majority of the linguistic community (cf. the contributions in Lieber & Štekauer 2014); I therefore follow Booij (2010: 454) in using a negative definition, namely: "The common denominator for all word formation processes except compounding is derivation".⁶

Derivation shares with compounding that it belongs to word formation, and with inflection that it typically, though not necessarily, involves affixation. But in the same way as the distinction between compounding and derivation, that between derivation and inflection is complex, having been portrayed as being either problematic, essentially undefinable, or even as non-existent (see the discussions in Bybee 1985; Anderson 1992: 72ff.; Carstairs-McCarthy 1992). This issue is immediately relevant to the subject matter of the present paper, but we will not be able to deal with it in as much detail as might be desirable.

2. From compounding to derivation

2.1 From 'child' to diminutive suffix in !Xun

Given the unsatisfactory state of defining compounding, derivation, and inflection one can characterize the subject matter of this paper in more general terms as one that is concerned with a transition from one morphological type to another, as sketched in (4).

⁶ Hence, one is tempted to follow other authors in characterizing derivation with reference to clear instances of it. Thus, English suffixes such as *-ness*, *-hood* and *-ation* are instances of derivational markers while units such as *foot*- in *football* or the plural marker *-s* or the past tense marker *-ed* are not.

(4) Compounding > derivation > inflection
 (Bybee 1985: 82; Heine et al. 1991: 17–8; Brinton & Traugott 2005: 85–7)

The first part of the chain of grammaticalization sketched in (4) (compounding > derivation) is well established (see Heine et al. 2016) while the second part (derivation > inflection) is far from uncontroversial, since a number of counterexamples have been identified (e.g. Norde 2009). As we will see in \$3, the present paper nevertheless is in support of this pathway, even if it does not seem to be a canonical process of diachronic change.

This section is restricted to the example mentioned in (1) of \$1.1, that is, my concern is with the !Xun language. !Xun, also called Ju, is a traditional hunter-gatherer language spoken by approximately 15000 people in Angola, Namibia, and Botswana. The language, classified by Greenberg (1963) as forming the Northern branch of the Khoisan family, has recently been re-classified as forming one of the two branches of the Kx'a family (Heine & Honken 2010). The language is unusually context-dependent, showing fairly substantial analytic-isolating morphology; there is only a small pool of items having exclusively grammatical functions (Heine & König 2005). Typological characteristics include contiguous serial verb constructions and a noun class system having four genders, distinguished in pronominal agreement but not on the noun. The basic word order is SVO, although there is a minor SOV order, and a modifier-head construction in nominal possession. It is a tone language distinguishing four tone levels ($\dot{a} = \text{high}, \bar{a} = \text{mid}, \dot{a} = \text{low}, \ddot{a} = \text{extra-low}$), and with its five different click types (/ = dental, ! = alveolar, !! = retroflex, \ddagger = palatal, and \parallel = lateral) and well over 100 phonemes it belongs to the phonologically most complex languages in the world (Heine & König 2015). Our interest here is, unless indicated otherwise, only with the W2 dialect, which belongs to the northwestern branch of !Xun.⁷

Nouns are essentially transnumeral in !Xun, that is, they are unspecified for number. This applies to the vast majority of nouns, but not to all of them. The predominant means of obligatorily marking number distinctions are listed in (5).

(5) Obligatory number marking of nouns in !Xun (W2-dialect)

	Kind of marking	Example		Type frequency
a.	No marking	g!áùn, pl. g!áùn	'tree'	Predominant
b.	Suppletion	<i>n!hùnwà,</i> pl. <i>cūwā</i>	'footprint';	Few nouns
		mà, pl. m̀hē	'child (of), offspring'	
c.	Plural suffix -mhè	<i>xām</i> a, pl. <i>xā-mhè</i>	'old man' ⁸	Few nouns

There are, however, two plural enclitics that can be added to nouns. These enclitics, which are $h\dot{\eta}$ with kinship terms and $h\ddot{\eta}$ elsewhere, are used optionally to emphasize plurality. They can be added when the noun is already marked for plural, as in (6b). Since the concern of this paper is with affixal morphology these enclitics are henceforth ignored.

⁷ According to Heine & König (2015), !Xun has eleven dialects. Subsequently, Heine & König (2016) found yet another dialect, the total number now being twelve.

⁸ It might also be possible to analyze $x\bar{a}$ - $\bar{m}h\dot{e}$ 'old man' in (7c) as a suppletive form, as noted by an anonymous reviewer. But since - $mh\dot{e}$ shows some productivity (see (11)), there is reason to classify it as a suffix.

(6) !Xun (W2 dialect; König & Heine 2001: 63)
a. mí dàbà 'my child (not my own)' my child
b. djù dèbē (hỹ) 'our children (not our own)' our child:PL (PL)

The suppletive noun daba, pl. $deb\bar{b}$ is not the only noun for 'child'; there is a second suppletive noun, namely ma, pl. $mh\bar{e}$ which, unlike the former, is an inalienable noun denoting 'child (of), offspring' (cf. (7a)). The latter is used productively as a head noun in modifying compounds where the modifier is an animate noun (X) and the meaning is 'young or small X', as exemplified in (7b). But the use of ma/mhe was extended further to inanimate nouns, and in this case, and in this case it has given rise to a fully productive diminutive suffix denoting 'a small X', as the examples in (7c) show.

(7) !Xun (W2 dialect; König & Heine 2001: 61)

	Head noun	Singular	Plural	Meaning	Literally
a.	Lexical	mà	mhè	'child (of), offspring'	
b.	Animal	!xō-mà	!xō-m̀hè	'young or small elephant'	'elephant-child'
	('child of')				
c.	Inanimate	tc'āō-mà	tc'āō-m̀hè	'small tooth'	'tooth-child'

We observed above that with few exceptions, nouns in !Xun do not distinguish number. Obviously, this does not apply to suppletive nouns and nouns taking the diminutive suffix $-m\dot{a}/-\ddot{m}h\dot{e}$, which are obligatorily marked for number by means of this derivational suffix, as can be seen in (7c).

The case just discussed is not an isolated phenonemon in !Xun. As can be seen in (8), there is a small range of other cases that appear to have followed the same pathway from free noun via head noun of a modifying compound to derivational suffix.⁹

(8) Lexical sources of !Xun derivational suffixes (König & Heine 2001)

	Nominal sou	rce	Derivation	Function	
a.	mà, pl. m̀hè	'child (of)'	<i>-mà,</i> pl. <i>-mhè</i>	'small', diminutive	
b.	<i>g∥</i> ồq, pl. <i>n∥àē</i>	'man'	<i>-g∥òq,</i> pl. <i>-n∥àē</i>	'male'	
c.	dē	'mother'	$-d\bar{e}$	'female'	
d.	kx'àò	''owner'	-kx'àò	'agent of an action'	

⁹ All four derivational suffixes appear to have evolved from endocentric noun-noun compounds, with one exception: The $-kx'\dot{a}\dot{o}$ suffix must have originated from verb-noun compounds, that is, the modifying conjunct is always a verb, not a noun, e.g. $tc'\dot{a}$ 'to steal' > $tc'\dot{a}-kx'\dot{a}\dot{o}$ 'thief'.

2.2 The mechanism of change

A development from a noun meaning 'child (of)' to diminutive affix like the one sketched in !Xun in §2.1 is not unheard of in other languages. In fact, according to a quantitative survey of 99 African languages, nouns for *child* are used productively as derivational forms in half of the languages (50.5 %) to express diminutive meaning (Heine & Leyew 2008; Heine & Kuteva 2009). That this process is cross-linguistically fairly common has been demonstrated in a number of studies (Heine & Hünnemeyer 1988; Heine et al. 1991: 79–97; Jurafsky 1996; Heine & Kuteva 2009).

Two examples from genetically unrelated African languages, presented in (9), may suffice to illustrate the pattern of change involved, where one is from Ewe, a West African language spoken in Ghana and Togo, and the other from Ik, an East African language spoken in northeastern Uganda.

(9)	Le	Lexical sources of derivational suffixes in Ik and Ewe (Heine et al. 2016: 153)					
		Language and reference	Lexeme	Meaning	Diminutive suffix	Example	
	a.	Ik (Kuliak, Nilo-Saharan; Schrock 2014: 180) ¹⁰	ím (imá-)	'child'	-ima-	<i>kɔfɔ̈-ima-</i> (gourd-child) 'small gourd'	
	b.	Ewe (Kwa, Niger-Congo; Heine et al. 1991: 79)	vi	'child (of)'	-ví	<i>kpé-ví</i> (stone-child) 'small stone'	

In both languages of (9) the general process leading from free noun to derivational suffix appears to have been the same as in !Xun, and this process was in accordance with the parameters listed in (3). First, all three languages use a pattern of endocentric noun-noun compounding where first noun (C_1) constitutes the modifier and the second noun (C_2) , which is the word for 'child', the head of the construction. Second, in all three languages the construction was extended to contexts where C_1 was an inanimate noun (extension, (3a)). In this context, the lexical meaning of 'child' made little sense and was lost; what was highlighted is an inference typically associated with the concept of 'child', namely smallness (desemanticization, (3b)), and this inference was conventionalized in the resulting derivational suffix. Third, having lost its lexical meaning, C₂ also lost most of the morphosyntactic features defining it as a noun (decategorialization, (3c)): It turned into an affix of C_1 , its erstwhile modifier, and as an affix it is no longer able to take modifiers or to be placed in positions other than the one immediately after C₁. And fourth, it also tended to lose phonetic features. For example, being an affix of C₁, it lost the ability to occur as a distinct prosodic unit, as its lexical counterpart does: As an affix it is part of the intonation contour of the noun. These changes are summarized in Table 1.

¹⁰ Inverted commas signal that the genetic classification of the family concerned is controversial.

Parameter	Changes likely to occur
Context extension	The use of C_2 (the head) is extended to a range of different C_1 constituents
Desemanticization	As a result, C_2 loses part or all of its lexical meaning, gradually acquiring a generalized and a grammatical meaning
Decategorialization	C ₂ loses morphosyntactic properties characteristic of its lexical category of nouns, gradually turning into an affix
Erosion	C ₂ tends to lose phonological properties

Table 1. Changes commonly observed in the grammaticalization from compounding to derivation ($C_1 = \text{modifier}$, $C_2 = \text{head of a lexical compound}$; Heine et al. 2016: 153)

Note that for none of the languages there are historical records to assist reconstruction. Hence, reconstruction of pathways of grammaticalization in such languages is based on diachronic reconstruction as sketched in §1.3. We may illustrate the approach used with the Ewe example in (9). The Ewe noun vi 'child' can be reconstructed back to an earlier Proto-Niger-Congo noun *-bi 'child' while this is not possible for the derivational suffix -vi (cf. Mukarovsky 1976: 18–9; Heine et al. 2016, fn. 25). Accordingly, we hypothesize that the lexical meaning preceded the grammatical one in time and that there was a development from the former to the latter rather than the other way round.

This general process had the effect that the languages concerned now dispose of a productive means of word formation, namely a derivational suffix which is $-m\dot{a}/-\ddot{m}h\dot{e}$ in !Xun, -vi in Ewe, and -ima- in Ik. Salient morphological characteristics of these suffixes are listed in (10).

- (10) Morphological features of the diminutive derivational suffixes *-mà/-mhè* of !Xun, *-vi* of Ewe, and *-ima-* of Ik
 - a. The suffixes are part of the paradigm of nominal derivation.
 - b. Their function is to form diminutive nouns, even in specific contexts they may also assume other, derived functions (Heine et al. 2016: 155–9).
 - c. They are essentially fully productive morphemes.
 - d. They can create new nouns.
 - e. Their use is optional.

The process from compounding to derivation that was looked at in the present section is cross-linguistically common, and it is a regular one leading from one kind of word formation to another. This is different with the process from derivation to inflection, which is the subject of the next section.

3. From derivation to inflection

While being clearly less common than the evolution dealt with in §2, processes whereby derivational markers gradually give rise to inflectional markers can be observed in all major regions of the world. Suffice it to mention a couple of examples from Eskimoan and Iroquoian languages in North America. In the Eskimoan language Yup'ik, some derivational

nominalizers have evolved into inflectional mood suffixes, and in Cherokee of the Iroquoian language family, an earlier derivational instrumental suffix, whose ultimate source can be traced to a verb root meaning 'use', evolved into an inflectional infinitive marker (Mithun 2000: 252).

The present section, however, is restricted to the language that is the focus of discussion in the present paper, namely the Khoisan language !Xun.

3.1 *!Xun*

As was observed in §2.1, nouns in !Xun are essentially transnumeral, that is, they are unspecified for number. Thus, the noun $!x\bar{o}$ can mean 'elephant' or 'elephants'. But there is a small number of exceptions: Some frequently used nouns, typically denoting human beings, follow a suppletive pattern, in that singular referents use a different form than plural referents. We had one of these nouns above: $m\dot{a}$ 'child (of), offspring' has the suppletive plural form $\ddot{m}h\dot{e}$ 'children'. Accordingly, we saw in §2.1 that in nominal compounds having this noun as their head there is an obligatory singular/plural distinction. Thus, whereas $n!\bar{a}\bar{o}$ 'house' is not number-sensitive, in combinations with $-m\dot{a}$ as its head it is – hence $n!\bar{a}\bar{o}-m\dot{a}$ 'small house' has an obligatory plural form $n!\bar{a}\bar{o}-\ddot{m}h\dot{e}$, that is, whenever $m\dot{a}$ is a derivational suffix there is an obligatory number distinction.

Now, with a number of nouns, $-m\dot{a}/-\ddot{m}h\dot{e}$ has been lexicalized as a part of new nouns. In some cases, the non-derived noun still exists even if its meaning is not exactly the same as that of the derived noun. For example, $tc'\dot{a}m\dot{a}$ in (11a) denotes a prototypical wild bird which can fly. The non-derived noun $tc'\dot{a}m$, by contrast, denotes birds as an abstract life form and as such it also includes birds that cannot typically fly, such as ostriches and chickens.¹¹ Thus, $tc'\dot{a}m\dot{a}$ and $tc'\dot{a}m$ are closely related but distinct nouns. In a similar fashion, the noun $||h\bar{a}m\dot{a}$ 'animal' in (11b) can be traced back to the non-derived noun $||h\bar{a}$ 'meat' and, again, the two are semantically closely related but distinct nouns.

(11) Examples of !Xun nouns taking the inflectional suffix -mhè (König & Heine 2008)

	Singular	Plural	Meaning	Non-derived source
a.	tc'ámà	tc'á-mhè	'bird'	<i>tc'ám</i> 'bird as a life form'
b.	∥hāmà	∥hā-ṁhè	'animal'	<i>∥hā</i> 'meat'
c.	xāmà	xā-mhè	'old man'	$*x\bar{a}$
d.	!!'ùìmà	!!'ùì-mhè	'caracal, lynx'	*!!'ùì
e.	dàhmà	dềh-mhè	'woman'	*dàh, *dềh

In other cases, such as (11c-e), however, the earlier non-derived noun is no longer retrievable and the singular form is an unanalyzable noun, and the erstwhile diminutive plural suffix *-mhè* has been reduced to and reinterpreted as a plural suffix, e.g. $x\bar{a}m\dot{a}$, plural $x\bar{a}$ -mhè 'old man', having the appearance of an inflectional number marker. In short, with the grammaticalization of the noun mhè 'children (of)' in modifying compounds and its subsequent lexicalization, a lexical free form has turned into a *bona fide* inflectional suffix.

¹¹ In addition, *tc'ám* denotes 'aeroplane' (König & Heine 2008).

The development from lexical noun to plural marker is well documented, but rather than nouns for 'children' it is in most cases nouns for 'people' that serve as the input of grammaticalization (Heine & Kuteva 2002; Kuteva et al. 2018).

In (10) above, some morphological features of diminutive derivational suffixes such as !Xun -*mhè* were listed. Table 2 provides an overview of how this suffix differs from the inflectional plural suffix -*mhè*. In accordance with this table, the two are structurally clearly different. First, the derivational suffix belongs to a paradigm of nominal derivational suffixes, which include those listed in (8). The inflectional suffix, by contrast, does not belong to a paradigm since it is the only inflectional suffix on nouns.¹² Second, whereas the derivational suffix can be applied productively to essentially any noun, the inflectional suffix is restricted to a small number of nouns such as the ones in (11c-e). Third, whereas the derivational suffix is used to build new nouns, the inflectional one is restricted to number marking, that is, the latter does not change the status of the noun concerned. And fourth, unlike the derivational suffix, the inflectional one is an obligatory feature of specific nouns.

Features	Derivational suffix	Inflectional suffix
a. Is part of the paradigm of nominal affixes	+	_
b. Is productive	+	_
c. Can create new nouns	+	_
d. Its use is optional	+	_

Table 2. Features distinguishing derivational -*mhè* from inflectional -*mhè* in !Xun

To conclude, the two suffixes exhibit contrasting features, even if not all of these features are typically expected on the basis of conventional observations on the distinction between derivation and inflection (see, e.g. Stump 1998). For example, inflectional affixes have been found to be more likely to form morphological paradigms than derivational ones, and to be more productive than derivational affixes.

While the process from compounding to derivation like the one described above is cross-linguistically fairly widespread (Heine & Kuteva 2009; Heine et al. 2016), that from derivational to inflectional suffix appears to be less common. It involved, on the hand, lexicalization in that a few compositional forms of noun-affix combination such as the ones in (11c-e) turned into frozen, non-compositional new nouns. On the other hand, it also must have involved grammaticalization in accordance with two of the parameters in (3): When the erstwhile derivational plural suffix was reinterpreted as a new plural marker, the suffix lost its diminutive function, being reduced to a plural marker (desemanticization). And there was also decategorialization in that the plural marker lost its earlier derivational function, namely its ability to form new diminutive nouns.

¹² We are restricted here to the W2 dialect of !Xun. The situation is different in other dialects (see Heine & König 2015). Note further that according to an anonymous reviewer "some people would claim that only inflection shows paradigms". This is not the position adopted here: unlike the derivational suffix, inflectional $-\ddot{m}h\dot{e}$ clearly does not serve word formation – like in languages such as English, French, or Swahili, its function is restricted to expressing the plural of nouns.

3.2 Discussion

A process from derivation to inflection does not seem to be cross-linguistically very common, but it has been observed in a number of languages, as the following examples may illustrate.

The first case is taken from the Ik language that was mentioned already in §2.2, and it provides a direct parallel to the case of !Xun looked at in the preceding sections, as the examples in (12) suggest. That the process from free noun (cf. (12a)) to derivational diminutive suffix (12c) was apparently the same as that in the genetically and a really unrelated Ik language was demonstrated in §2.2. Note that in both languages there must have been an intermediate stage, illustrated for !Xun in (7b) above and for Ik in (12b), where the noun for 'child' appears to have been extended first to animate nouns with the meaning 'young or small offspring of X' before being further extended to inanimate nouns as a diminutive suffix, as exemplified in (7c) for !Xun and (12d) for Ik.

(12) From noun to inflectional suffix in Ik: The suppletive noun *im*, pl. *wik* 'child' (Schrock 2014: 180–1)

	Head noun	Plural	Meaning	Literally
a.	Lexical	im (imá-), pl. wik (wicé-)	'child'	
b.	Animal	dódo-im, pl. dódo-wik	'lamb'	'sheep-child'
	('child of')			
c.	Inanimate	<i>emútí-ím</i> , pl. <i>emút-íka-wik</i>	'little story'	'story-child'
d.	Lexicalized	<i>dúnéim</i> , pl. <i>dúné-ík</i>	'old woman'	'age-child'

And (12d) illustrates the final stage of lexicalization: There are a number of Ik nouns, including *dúnéim* 'old woman', which are frozen forms, but the earlier lexical or derivational meaning of *im/wik* (or its contextual variants *imá-/wicé-*) was reinterpreted as one signaling a distinction of number – that is, -(w)ik in (12d) can be analyzed reasonably only as a plural inflection in such nouns (see Schrock 2014: 180–1).

The second case is of a different nature and involves a European language (Nikos & Ralli n.d.). Griko, is a Greek variety of Southern Italy, spoken by approximately 20000 speakers in nine villages in the center of the Salentine peninsula. Griko has a productive derivational morpheme, *-idz-*, whose function it is to derive verbs from nouns. But the morpheme was extended to a number of verbs, and in this context it lost its derivational function, nowadays serving only to mark the verbs as belonging to Inflection Class 1. Thus, *katalo* and *katal-idz-o* both mean 'destroy', but the latter belongs to Inflection Class 1, which is the most productive of the Griko inflectional verb classes.

The processes in !Xun and Ik, on one hand, and in Griko, on the other, were strikingly different. First, the input was provided by the semantics of diminutiveness in !Xun and Ik. In Griko, by contrast, it was a morphosyntactic function, namely that of deriving one word class from another. Second, whereas lexicalization played a crucial role in the transition from derivation to inflection in !Xun and Ik, this role was played in Griko by context extension (see (3a)), in that the use of *-idz-* was extended from nouns to verbs. And finally, while the output in !Xun and Ik is a number marker, in Griko it is a marker of morphophonological classification. From a grammaticalization perspective, however, the processes were similar: All involved the desemanticization of a lexical or a derivational function resulting in the rise

of an inflectional affix.¹³

4. Conclusion

The observations made in this paper take care of just a small segment of the issues that word formation is concerned with. And the paper was restricted to one theoretical perspective, namely that of grammaticalization. The scope of grammaticalization theory is limited, it has little to contribute to many processes of word formation. Nevertheless, the observations are on the whole compatible with the generalizations on derivation as proposed in Lieber & Štekauer (2014).

The main goal of the paper was to account for why one and the same linguistic form can be associated simultaneously with the status of a lexeme, a conjunct of a compound, a derivational, and an inflectional form. The development from head of modifying compounds to derivation has been observed in a number of African languages, but it does not seem to be intrinsically different from corresponding developments in other languages as, for example, that of the Old English lexeme $h\bar{a}d$ 'status, office, rank' developing into the derivational suffix *-hood* of Present-Day English (Traugott & Trousdale 2014).

The development from derivation to inflection, by contrast, does not seem to represent a very common pattern across languages. In the !Xun example examined the development was what one may portray as a parasitic product of a frozen derivational pattern. Nevertheless, this development is overall in accordance with general parameters of grammaticalization.

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¹³ Conceivably, the direct input of grammaticalization in !Xun and Ik was not provided by the derivational but rather by the lexical use of the form concerned. More reconstruction work is needed on this issue.

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