

Word-class-changing inflection and morphological theory*

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1. INTRODUCTION

One of the most common claims made about the difference between inflection and derivation in the morphological literature is that derivational affixes change the word-class of their base, while inflectional affixes do not change the word-class. In this paper I argue that this view is wrong, and that important insights about the nature of inflection and derivation are lost if word-class-changing inflection is not recognized. In §2, I present a number of examples of word-class-changing inflection, and in §3-5 I discuss several potential objections to my analysis. I show that the cases in question can be regarded neither as word-class-changing derivation (§3-4) nor as non-word-class-changing inflection (§5), and that a description in terms of feature neutralization is not a general solution (§6). In §7 I argue that to account for the syntactic properties of words, two types of word-class have to be distinguished: lexeme word-class and word-form word-class. §8 discusses some problems that arise in the formal representation of this proposal in constituent-structure trees and observes that Tesnière's dependency grammar provides an interesting perspective. Finally, §9 discusses the universal correlation between inflection and preservation of internal syntax, and derivation and the non-preservation of internal syntax.

2. DESTROYING A MYTH: WORD-CLASS-CHANGING INFLECTION EXISTS

As is well known, derivational affixes often change the word-class¹ of their base, i.e. they are transpositional.² A few examples of word-class-changing derivational affixes are given in (1).

- (1) a. Adj → N German
schön → *Schönheit*
'beautiful' 'beauty'
- b. V → Adj Latin
flecto → *flexibilis*
'I bend' 'bendable, flexible'
- c. V → N Yimas (New Guinea; Foley 1991: 377)
ampa- → *amparmanj*
'weave' 'weaver'

- d. N → V Samoan (Mosel and Hovdhaugen 1992: 188)
pou → *tapou*
 'house-post' 'prop up with posts'

But in addition to transpositional derivational morphology, transpositional inflectional morphology also exists. A few examples are given in (2a-d). I will discuss the evidence that these are inflectional word-class-changing affixes below, and I will give further examples in §5 (7a-d).

- (2) a. V → Adj (participle)
 German
der im Wald laut sing_V-ende_{Adj} Wanderer
 the in:the forest loud sing-PTCP hiker
 'the hiker (who is) singing loud in the forest'
- b. V → N (masdar)
 Lezgian (Nakh-Daghestanian; Haspelmath 1993: 153)
wun fad q̄arağ_V-un_N-i čun tažub iji-zwa
 [you:ABS early get.up-MASD-ERG] we:ABS surprise do-IMPF
 'That you are getting up early surprises us.'
- c. Adv → Adj (attributivizer)
 Turkish
şimdi_{Adv}-ki_{Adj} kriz
 now-ATTR crisis
 'the present crisis'
- d. N → V (predicativizer)
 Blackfoot (Algonquian; Frantz 1991:23)
nít-aakii_N-yi_V-hpinnaan
 1-woman-PRED-PL.EXCL
 'We (excl.) are women.' (*aakíí* 'woman')

The PARTICIPLE, illustrated in (2a), is a familiar phenomenon, and the view that participles are verbal adjectives is very old.³ The examples in (2b-d) are less familiar from European languages, but similar cases are found again and again in the languages of the world. Example (2b) shows an inflectional VERBAL NOUN from Lezgian. Verbal nouns (also called *action nominals*) are generally derivational in European languages, so I prefer to use the term *masdar* (originating in the Arabic linguistic tradition) for such inflectional verbal nouns. In the Lezgian example (2b), the masdar is the head of the equivalent of a complement clause. In (2c) we see the Turkish suffix *-ki*, which turns an adverb into an adjective. I call this an ATTRIBUTIVIZER. Finally, (2d) shows an equational sentence from Blackfoot, expressed by turning the predicate noun into a verb by means of an inflectional affix (called PREDICATIVIZER here).

These are my first counterexamples to the claim that word-class-changing affixes always have derivational status. One should think that linguists would have

become aware of the existence of these cases, but nevertheless the myth that transpositional morphology is always derivational is found again and again in the literature, as the quotations in (3) show. The claim is repeated especially in introductory works like Nida (1946), Hockett (1958), Langacker (1972), Bauer (1988), but also in purely theoretical contributions like Selkirk (1982), Scalise (1988), Anderson (1992). Sometimes the claim is only indirect and implicit, as in Hockett (1958) and Langacker (1972), or is even presupposed, as is clear from the quotation of Jensen (1990).

- (3) a. Nida (1946:99):
 derivational formations: may exhibit changes in major distribution class membership;
 inflectional formations: exhibit no changes in major distribution class membership
- b. Hockett (1958):
 p. 240: "When all inflectional affixes are stripped from the words of a language, what is left is a stock of stems..."; p. 221: "The part of speech of a word is that of its stem."
- c. Langacker (1972:75):
 "...derivational affixes have the potential to change the grammatical class of the elements to which they are attached. For example, the addition of the derivational suffix *ful* to the noun *care* results in an adjective... By contrast, an adjective inflected to agree in gender and number with the noun it modifies remains an adjective."
- d. Selkirk (1982:77):
 "One nice result of [the generalization that inflectional affixes are never heads] would be the apparently universally attested fact that inflectional affixes are not "category-changing". If the inflectional affix is not the head, then its sister category is, and hence always shares category features with the mother node."
- e. Scalise (1988:562):
 "Derivation rules change the syntactic category of their base, while inflection rules do not."
- f. Bauer (1988:12):
 "If an affix changes the part of speech of the base, it is derivational."
- g. Anderson (1992:78):
 "It is also often noted that inflection and derivation, as usually understood, may differ with respect to the *syncategorematicity* of the relation marked by a particular rule. Inflectional rules do not change word class (that is, a verb marked [+Past] is still a verb), while derivational ones can."
- h. Jensen (1990:133):
 "...adjective formation is clearly derivational, since it results in a change of category."

Thus, the position that I argue against in this paper is not a straw man, but seems to be widely accepted in the literature by linguists of various theoretical persuasions.

Now there are two obvious routes of argumentation that are open to those who wish to defend the view that transpositional morphology is always derivational. First, one could maintain that examples such as those in (2a-d) do not show inflectional morphology, but derivational morphology after all. Second, one could argue that the affixes in (2a-d), while being inflectional, do not change the word-class of their bases. In the following three sections I will examine the possible counter-arguments and argue against them.

3. INFLECTION AND DERIVATION

In this section I will discuss and argue against the claim that my cases of word-class-changing morphology are in fact instances of derivational morphology. In order for a meaningful debate to be possible, we must of course agree on what we mean by inflection and derivation. I will argue that on an understanding of the terms that is in accord with the traditional intuition behind them, the examples in (2a-d) cannot be interpreted as derivation.

It is of course possible to arbitrarily define the terms inflection and derivation in such a way that transpositional morphology automatically falls under derivation. This is done, for instance, by Drijkoningen (1992). His classification of affixes is shown in (4) below. According to Drijkoningen, an affix is “derivational” if it is the categorial head of the construction, i.e. if it determines the resulting word class; otherwise it is inflectional. Another distinction that cross-cuts the first distinction is that between “syntactic” and “lexical” affixes.

(4) four-way classification of affixes according to Drijkoningen (1992)

	<i>syntactic</i> (part of syntactic study)	<i>lexical</i> (not part of syntax)
<i>derivational</i> (=categorial head of the construction)	e.g. English <i>-ing</i> (participle, masdar)	e.g. German <i>-ig</i> (<i>Stein</i> → <i>steinig</i>)
<i>inflectional</i> (=not categorial head)	e.g. Latin <i>-em</i> (Acc. sg.)	e.g. German <i>Geist-es-blitz</i> (compound interfix)

What I would call word-class-changing inflection is called “syntactic derivational” morphology by Drijkoningen. My objection against Drijkoningen’s classification is purely terminological. An important general principle of good terminological usage is that old, well-established terms should not be used in a completely novel sense, but that the intuitions underlying the old terms should be reconstructed. If that is not possible in a coherent way, the term should be dropped. Completely new senses should be expressed by completely new terms. It is clear that Drijkoningen’s distinc-

tion “syntactic/lexical” is much closer to the traditional inflection/derivation distinction than his own “inflection/derivation” distinction.

So what is the intuition underlying the inflection/derivation distinction? I think that the most basic property of inflectional forms is that they are described exclusively in grammatical paradigms, whereas derivational formations are described by listing them individually in a dictionary (there may also be a section on derivation in a grammar, but it is never organized in paradigms and it never gives all the relevant information). A brief look into any reference grammar or dictionary will confirm that this characterization of inflection and derivation by their modes of description is universally valid. Since paradigms and dictionaries are among the most elementary components of any language description, the characterization is also highly theory-independent, and I find it intuitively satisfying.

But we have to ask further: Why do linguists universally describe some morphological formations by paradigms and others by listing them in a dictionary? The answer is of course, because they have quite different properties. The following is my definition of inflection and derivation that follows from the general characterization that I have just proposed:

(5) Definition of *inflection* and *derivation*

Formations are *inflectional* to the extent that they are regular, general and productive;
 formations are *derivational* to the extent that they are irregular, defective and unproductive.

This definition follows from my initial characterization because words can be described by means of abstract paradigms only if their formation is productive (i.e. if new words can be formed according to the rule), regular (i.e. if the words do not have any additional idiosyncratic properties), and general (i.e. if all the bases to which a rule could apply do in fact allow the formation of the word). By contrast, if a rule is unproductive, irregular and defective, an abstract paradigm is not sufficient for the description, and each form must be listed individually in the dictionary.

By this definition, there is no doubt that the formations in (2a-d) are indeed inflectional forms. For instance, the German participle can be formed from any verb, i.e. it is maximally general, and its forms and meanings show almost no idiosyncrasies, i.e. it is very regular, and of course it is also productive. The same is true for the Lezgian masdar, which serves as the citation form of verbs in Lezgian dictionaries, i.e. it is the paradigmatic word form *par excellence*. The Turkish attributivizer and the Blackfoot predicativizer have analogous properties.

At this point I should mention that the inflection/derivation distinction is not absolute but allows for gradience and fuzzy boundaries. As Stephany (1982), Bybee (1985), Corbett (1987) and especially Plank (1994) have demonstrated, we are dealing with a continuum from clear inflection to clear derivation, with ambiguous cases in between. Note that this view of inflection and derivation follows from my definition in (5): Productivity, regularity and generality are gradient properties, not binary,

all-or-nothing features. Some linguists (e.g. Dressler 1989, Luraghi 1994) have discussed inflection and derivation in terms of prototypicality, pointing out that some types of affixes are prototypically inflectional (e.g. case affixes and person/number agreement affixes), whereas others are prototypically derivational (e.g. instrument nouns). It is possible and even probable that word-class-changing inflection is not prototypical inflection, and that it is not on the extreme inflectional end of the inflection-derivation continuum, but I insist that the examples that I discuss in this paper are much closer to prototypical inflection than to prototypical derivation. Thus, there may be some languages in which participles are more derivational than inflectional, but German is a good example of a language where participles are truly inflectional; in many languages *masdars* (verbal nouns) are more or less derivational, but in Lezgian they are clearly inflectional, and so on.

Before concluding this section, I would like to mention another definition of inflection that has become quite popular recently. According to Anderson (1992), inflection is morphology that is relevant (or visible) to the syntax.⁴ According to this definition, too, the examples in (2a-d) constitute inflection because all of them are highly relevant for the syntax. Their relevance lies precisely in the fact that they change the word class: Thus, the participle in (2a) allows the verb (or the clause) to be used as a modifier, the *masdar* in (2b) allows it to be used as an argument, and so on. Thus, even if my definition in (5) is not accepted, there are very good reasons to accept my claim that (2a-d) are inflectional.

4. INFLECTIONAL (SUPER-)CATEGORIES

Another potential objection to the inflectional status of participles, *masdars* etc. is that inflectional forms normally belong to an inflectional super-category,⁵ e.g. accusative is an instance of the super-category of CASE, past is an instance of TENSE, plural is an instance of NUMBER, and so on. What super-category would participles, *masdars*, attributivizers and predicativizers belong to? In a sense, the answer to this question is trivial, because new super-categories can easily be created ad hoc for any inflectional form, e.g. PARTICIPIALITY, which has only the two sub-categories participle and non-participle. Another way to counter the objection would be to point out that super-categories are artifacts of a certain kind of (structuralist) linguistic description that have no reality for the speakers (cf. Bybee et al. 1994: 3).

However, it may be interesting to point out that such a super-category has already been postulated in the structuralist literature, although it did not become widely known. In several publications, the Moscow linguist Aleksandr Smirnickij has proposed a morphological super-category REPRESENTATION, whose members are the major word-classes (e.g. Smirnickij 1959: 247). At least in Moscow linguistic circles Smirnickij's idea has been adopted widely. In this parlance, one says that the English participle is the adjectival representation of the verb, and the English gerund is the substantival representation. Analogously, we could say that the Turkish form *simdiki* (example 2c) is the adjectival representation of the adverb *simdi*,

and that the Blackfoot form *n̄taakiyihpinnaan* in (2d) is the verbal representation of the noun *aakíí*. Thus, for instance Boguslavskaja 1989 says that the suffix *-še* in (6) marks the attributive, i.e. adjectival representation of the noun 'cow'.

- (6) Akhvakh (Nakh-Daghestanian, Boguslavskaja 1989: 16)
babade žin-La-še ĩeni b-eq'ari
 mother:ERG cow-DAT-ATTR water N-brought
 'Mother brought [the water for the cow].'

Thus, it is no more than a historical accident that there are no well-known super-categories for the inflectional categories of (2a-d).

5. MORPHOLOGICAL AND SYNTACTIC GENERALIZATIONS

After I showed in §3 that transpositional inflection is indeed inflection, skeptics might still doubt that these forms are indeed transpositional. One could say that the participle *singende* is a verb and not an adjective, the masdar *q̄arağuni* is a verb and not a noun, and so on. This view seems to be widespread at least for participles (e.g. Scalise 1988:566).

However, there are good reasons for rejecting this view because it does not allow us to capture the morphological and syntactic generalizations that are expressed by the word-class-changing hypothesis. Morphologically, German participles behave just like adjectives, sharing the same two types of inflection patterns. The Lezgian masdar behaves just like other nouns, forming all sixteen cases that other nouns have;⁶ and so on for the other instances. Thus, a significant morphological generalization is lost if one does not recognize the transpositional nature of these forms. Similarly, there are syntactic properties in which participles and masdars behave just like adjectives and nouns. For instance, German participles are always preposed, like other adjectives but unlike most genitive modifiers and relative clauses, and the Lezgian masdar can appear in any argument position, like other nouns.

Let us now look at a few further cases of transpositional inflection. The cases illustrated in (2a-d) are not the only types of this phenomenon. Completely analogous are the following examples:

- (7) a. Adj → Adv (adjectival adverb)
 English
She sings beautiful_{Adj}-ly_{Adv}
 b. Adj → N (substantivized adjective)
 Lezgian (cf. Haspelmath 1993: 110-112)
Za-z č'exi_{Adj}-di_N k'an-zawa.
 I-DAT big-SUBST:ABS want-IMPF
 'I want a big one.'

- c. V → Adv (converb, cf. Haspelmath and König (eds.) 1995)
 Kannada (Dravidian; Sridhar 1990: 73)
Yaar-ig-uu hee_v-ade_{Adv} eke bande?
 who-DAT-INDEF say-NEG.CONV why come:PRET:2SG
 ‘Why did you come without telling anyone?’
- d. N → Adj (possessive adjective)
 Upper Sorbian (Corbett 1987: 301)
wučerj_N-owe_{Adj} blido
 teacher-POSSADJ:N.SG.NOM table[N](NOM)
 ‘the teacher’s table’

The English DEADJECTIVAL ADVERB in *-ly* is sometimes classified as a derivational affix, but this is rarely justified. In the grammar by Quirk et al. (1985) it is treated in the section on derivation, but the authors say: “*-ly* can be very generally added to an adjective in a grammatical environment requiring an adverb, so that it could almost be regarded as inflexional”. Example (7b) shows a SUBSTANTIVIZED ADJECTIVE, (7c) shows a CONVERB (often called “adverbial participle”, “gerund” or “conjunctive participle” in descriptions of individual languages), and (7d) shows a POSSESSIVE ADJECTIVE, quoted from Corbett’s (1987) comprehensive study of Slavic possessive adjectives.

The examples in (7a-d) again illustrate the crucial properties that we discussed earlier: They are formed by highly productive, regular and general rules, i.e. they are inflectional, they are relevant to the syntax, and they behave like the derived word-class morphologically and syntactically, so that the conclusion is inescapable that they are cases of word-class-changing inflection.

Thus, the myth that word-class-changing inflection does not exist is not more than a myth and should be quickly forgotten.⁷ But it is nevertheless interesting to ask how it arose and how it was possible that it could survive for such a long time. I suspect that it has to do with the fact that grammatical theory has been dominated by thinking about English grammatical structure for the past decades and continues to be dominated by Anglophone linguists. English has very little morphology, and although it has several cases of transpositional inflection (participle, gerund, adjectival adverb), these were not sufficient to direct grammatical theory in the right direction. I have not investigated the history of this question in any depth, but I have not found a single example of the view exemplified in (3a-h) in the literature of the 19th century or the first half of the 20th century, when linguistics was not yet dominated by English-speaking linguists. For Charles Bally and Lucien Tesnière, who developed their theories of grammar in the 1920s and 1930s, it was clear that word-class-changing inflection is possible (on Tesnière, see below §8). Thus, it may be that the myth discussed above is another example of an error introduced into the mainstream of grammatical theory due to insufficient consideration of linguistic diversity.

6. FEATURE NEUTRALIZATION IS NO SOLUTION

Before I present my own proposal for describing word-class-changing inflection, let me discuss one further attempt at characterizing these forms: feature neutralization. It is sometimes claimed in the literature on participles (e.g. Hoekstra 1984, Toman 1986) that the “intermediate” status of participles between adjectives and verbs can be captured by neutralizing the relevant word-class feature. These studies adopt Chomsky’s feature system for major word-classes, in which nouns are classified as [+N, -V], verbs are [-N, +V], adjectives are [+N, +V], and adpositions/adverbs are [-N, -V]. Thus, verbs and adjectives share the feature value [+V], but they differ with respect to the feature [αN]. The neutralization approach now proposes that participles are not specified for this feature, i.e. that their feature values are [∅N, +V]. My first objection against this approach is that it is not general enough: It would be impossible to apply this approach to the other instances of word-class-changing inflection, because there are not enough categories that arise by neutralization. The possibilities are shown in (8).

- (8) word-classes that can be described by the Chomskyan features $\pm N$, $\pm V$ plus neutralization

	+N	-N	∅N
+ V	Adj	V	participle/predicative adj.
- V	N	P/Adv	?
∅ V	substantivized adj./ possessive adjective	converb	

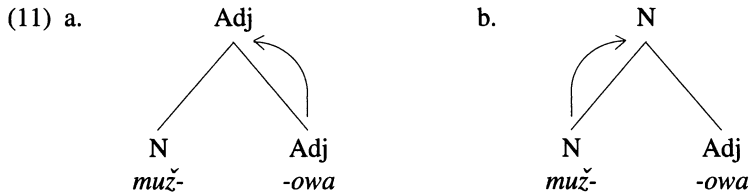
In addition to participles, only three other types of “intermediate” word-classes can be described in this way. There is no way of describing, for example, *masdars* (cf. 2b), because nouns and verbs are not a natural class in Chomsky’s system and do not share a feature value.⁸ My second objection is that feature neutralization does not specify the precise relation between the two word-classes. Thus, the feature combination [+N, ∅V] could describe either substantivized adjectives (Adj → N) or possessive adjectives (N → Adj).

I conclude that feature neutralization is neither general enough nor precise enough to account for transpositional inflection in general. Equally problematic is the account of Quechua nominalizations proposed by Lefebvre and Muysken (1988), which is similar in spirit to the neutralization view. These two authors argue that Quechua nominalizations (i.e. participles/*masdars*) have the feature values [+N, +V] and thus constitute “mixed categories” (in the Chomskyan system, these feature values would characterize adjectives, but Lefebvre and Muysken claim that adjectives are a subclass of nouns in Quechua). This approach is even less general than neutralization, and it is equally incapable of distinguishing between nominalized verbs and verbalized nouns.

Thus, my conclusion is not as radical as it may have seemed at the beginning: I do not say that participles are adjectives pure and simple, but they are adjectives with respect to their word-form word-class. In terms of lexeme word-class, they are verbs. However, this leads to radical consequences for widely accepted methods of formal representation.

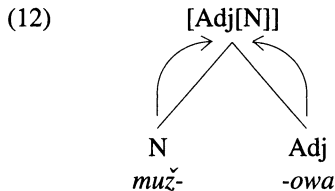
8. PROBLEMS OF FORMAL REPRESENTATION

First of all, we note that Lieber's percolation mechanism does not work. If we assume that word-class-changing inflectional affixes are heads, we get representations like (11a) for Sorbian *muž-owa* (see example (9)).



In (11a), the whole word turns out to be an adjective, so this representation fails to capture the fact that the internal syntax is noun-like. If the feature of the non-head percolates, or if the stem is considered the head, as in (11b), then the whole word turns out to be a noun, again not the correct result.

What we need are two independent layers of word-class features that both percolate up. The lexeme word-class becomes the inner feature, the word-form word-class becomes the outer feature of the whole word. This can be represented as in (12).



It seems that there is no way to capture the facts without an innovative notational device such as the layered word-class features in (12).

Another difficulty is that expressions with transpositional inflection are not easily shown in trees that represent immediate constituent structure, but simultaneously have only morphological words as their terminal nodes. Let us take, for example, the tree representation in (13), which shows the relevant aspects of the structure of the Lezgian sentence (2b).

languages. However, these cases are not the normal state of affairs. I propose that the lexicalist principle should be seen as a preference principle, i.e. a “soft” constraint that can be overruled in certain circumstances, but that is observed in the large majority of cases (cf. Dressler 1987). Some cases of real morphology-syntax mismatches in which the lexicalist principle is violated are shown in (15).

(15) a. English

The woman I saw yesterday’s hat.

b. Somali (Berchem 1991:51)

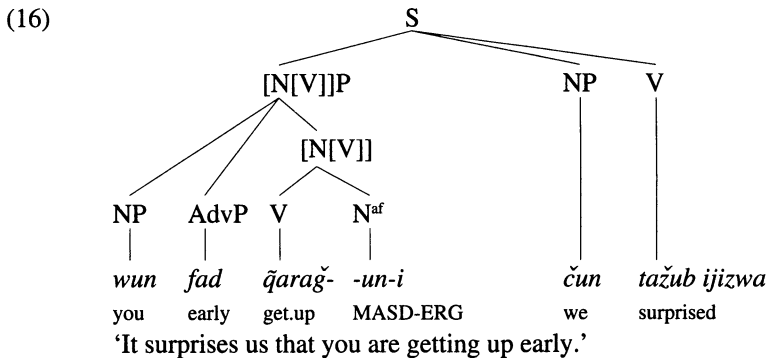
Macallim-iin-ta dugsi-gu waxay tegayaan qolal-ka.
 teacher-PL-DEF:ABS school-DEF:SUBJ FOC:3PL go:3PL rooms-DEF:ABS
 ‘The teachers of the schools go into the rooms.’

c. Yagua (Columbia; Payne 1983)

Sa-puuchu Pauro-nii Anita.
 3SG.SUBJ-carry Paul-3SG.OBJ Anita
 ‘Paul is carrying Anita.’

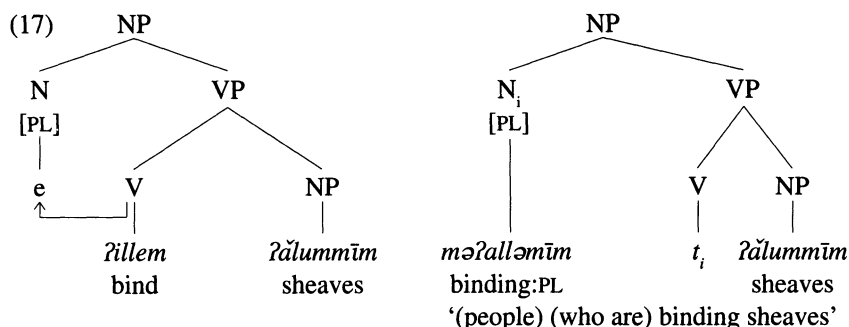
In (15a) the genitive suffix is found on the last word of the relative clause; in (15b) the nominative suffix is found on the possessor dependent; and in (15c) the direct-object marker *nii* is found on the word preceding the direct object. Cases such as these truly violate the lexicalist principle, and I would predict that they are unstable and tend to be eliminated or restructured.

The cases of word-class-changing inflection are of a very different nature. They are not rare or unusual across languages, and they show no signs of diachronic instability.¹¹ Thus, it would not be correct to treat them in the same way as true mismatches. How can we represent constructions with transpositional inflection in such a way that they do not involve a mismatch? One possibility is to project the word structure that was proposed in (12) into phrase structure, i.e. to admit two layers of word-class features not just at the word level, but also at the phrase level. The representation of the Lezgian sentence (2b) would then be as in (16).



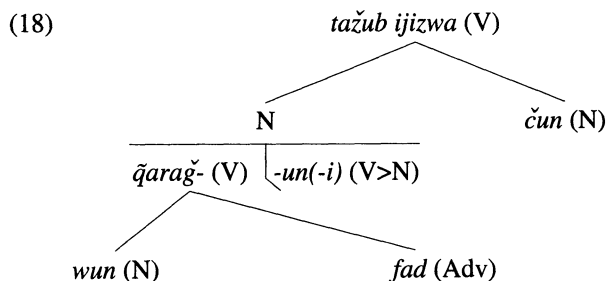
Thus, the subordinate clause *wun fad qarag-un-i* is an NP for external purposes, but a VP for internal purposes. This kind of representation departs fairly radically from

standard assumptions about word-classes and phrasal categories in constituent structure representations, but it seems to be the only non-transformational solution for constituent structure. A transformational solution has been proposed by Dyk (1994), discussing Biblical Hebrew participles. On this account, the participial verb is generated under a V-node and forms a VP which is the complement of an empty nominal node, to which the participle is moved in order to get its nominal properties. This is shown in the somewhat simplified trees in (17), which represents the participial phrase *məʔalləmīm ʔālumīm* '(people) who are binding sheaves'.



Clearly, this account is as radical a departure from ordinary assumptions about constituent structure as (16). Since the empty node N exists exclusively for the purpose of turning the verb into a noun, the structure in (17) is not really a pure constituency representation.

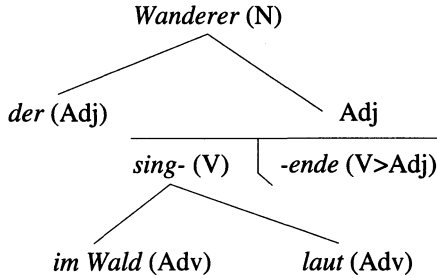
If one adopts a dependency representation rather than a constituency representation, these problems disappear. Word-class-changing inflection can be represented very naturally, for instance, in Tesnière's (1959) model of dependency syntax. Sentence (16) would be represented as in (18). As in any dependency structure, each word is a node of the tree, and the connection of a lower node to a higher node represents an asymmetric dependency relation. In addition to the words themselves, the word-class is given in parentheses in the tree in (18).¹²



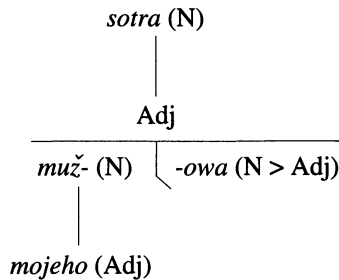
The part of Tesnière's theory that is particularly relevant for the problem at hand is his TRANSFERENCE THEORY ("théorie de la translation"). Transference is Tesnière's term for word-class change or transposition. Words that involve a word-class change

are represented in two lines separated by a horizontal dividing line, as for instance *q̄araḡ-un* in (18). Above the line the word-class of the whole word (i.e. the word-form word-class) is given, in this case N. Below the line the stem with the lexeme word-class and the transferring affix are shown separately. The dependency link between the governing head *tažub ijizwa* and *q̄araḡ-un* sees only the upper part of the node, so only the word-form word-class is relevant for external syntax. However, the dependency link between *q̄araḡ-un* and its dependents sees the lower part of the node, so only the lexeme word-class is relevant for internal syntax. Thus, Tesnière's framework expresses word-class changing inflection in a quite natural fashion, and in particular the relation between word-form word-class and external syntax, and between lexeme word-class and internal syntax is expressed succinctly.¹³ The dependency trees in (19)-(20) below further illustrate Tesnière's representation system.

(19) German (= 2a):



(20) Sorbian (= 9):



It may well be that the phrase structure representations in (16) and (17) will turn out to be a notational variant of Tesnière's dependency trees with transference, if a number of plausible additional assumptions are adopted. However that may be, I hope to have shown that Tesnière's approach to the formalization of syntax, which has been all but forgotten even in Europe,¹⁴ has certain virtues that are not shared by the constituency-based formalisms that have come to dominate syntactic thinking in recent decades.

The most important prediction made by transference theory (and its notational variants) is that word-class-changing inflection is admitted only on the head of the construction. Structures such as those in (15a-c) cannot be represented naturally in Tesnière's framework if we adopt the restriction that the transferring affix must be next to the transferred stem not only in the dependency trees, but also in the surface structure. Given this, the structures in (15a-c) can only be expressed in some roundabout way, reflecting the fact that they show a dispreferred morphology-syntax mismatch.

9. INFLECTION/DERIVATION AND THE (NON-)PRESERVATION OF INTERNAL SYNTAX

Up to now this paper has been an exercise in formal grammar, in the sense that I have asked how grammatical structures are best described and represented. In this final section I would like to venture briefly into substantive grammatical theory by making an empirically falsifiable claim regarding a universal correlation between certain morphological and syntactic properties, concluding with the question (and a tentative answer) of why this correlation should hold. There is no space in this paper to document the supporting evidence for my claim in any detail, and a few suggestive examples must be sufficient. The phenomenon in question is the universal correlation in (21).

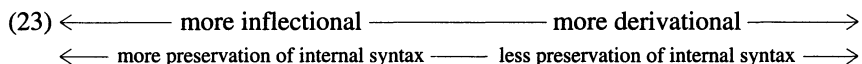
- (21) a. In words derived by *inflectional* word-class-changing morphology, the internal syntax of the base tends to be preserved.
 b. In words derived by *derivational* word-class-changing morphology, the internal syntax of the base tends to be altered and assimilated to the internal syntax of primitive members of the derived word-class.

This correlation has not gone entirely unnoticed in the literature (cf. Bauer 1988: 76-77, Rainer 1993: 38), but it is rarely discussed in this general form. It is best illustrated with the well-known example of nominalization constructions in English:

- (22) a. inflectional gerund
Indonesia annexing East Timor
 b. derivational action nominal
Indonesia's annexation of East Timor

In (22a), the subject and direct object (as well as other potential dependents) are expressed in more or less the same way as in finite clauses,¹⁵ whereas in (22b) the subject is turned into an 's-genitive and the object is turned into an *of*-genitive. In other words, (22a) preserves the internal syntax of the verbal base (or at least preserves it to a much greater extent than (22b)), and (22b) does not preserve the internal syntax of a verb and shows the internal syntax of primitive nouns. This correlates with the inflectional vs. derivational status of the transpositional affixes. The correlation is not a hundred percent: Sometimes inflectional word-class-chang-

ing affixes force a slight change in internal syntax, and part of the internal syntax may be preserved even with derivational word-class-changing affixes. More generally, the correlation can be represented as two covarying continua:



Just as there is overwhelming evidence that the inflection/derivation distinction is a continuum, the distinction between preservation and non-preservation of internal syntax is not a matter of all or nothing. This is already clear from example (22a-b): As was observed in note 15, the subject of the gerund in (22a) may also be marked as genitive (*Indonesia's annexing East Timor*), which means that the internal syntax is not preserved completely, but still to a greater extent than in (22b). Despite this slight weakening of the correlation, it is still quite easy to see what would be a counterexample to the correlation: Whenever there are two comparable transpositional processes in a language and one is more inflectional than the other from the morphological point of view, the prediction is that it will also preserve internal syntax to a greater extent, and vice versa.

The example of the English gerund and action nominal is of course well-known and has often been discussed in the literature. But this is only one instance of a much more general correlation which in principle applies to any kind of transposition. The following two subsections will give two examples of less well-known types of word-class changes, from noun to adjective, and from verb to adjective.

9.1. Possessive adjectives

Corbett (1987) adduces an impressive range of data showing that the diversity of the syntactic behavior of possessive adjectives in Slavic can be expressed very well by a hierarchy of syntactic properties that possessive adjectives in different languages have to different degrees. The three most important properties are:

- (i) being the antecedent of a personal pronoun, as in (24) from Russian;

(24) Russian

Grišiny_i roditeli poprosili ego_i vernut'sja.
 Griša's(ADJ) parents asked him to return
 'Griša's parents asked him to return.'

- (ii) being the antecedent of a relative pronoun, as in (25) from Macedonian;

(25) Macedonian

Pred nas e majčiniot stan, koja što saka da go prodade.
 before us is mother's(ADJ) apartment who REL wants SUBJV it sell
 'Before us is mother's apartment, who wants to sell it.'

(iii) allowing attributive modifiers, as in (9) above from Upper Sorbian. The four languages shown in (26) illustrate the fact that possessive adjectives may have these properties to different extents.

(26)	personal pronoun	relative pronoun	attributive
English	*	*	*
Russian	OK	*	*
Macedonian	OK	OK	*
Upper Sorbian	OK	OK	OK

In English, the closest analog to possessive adjectives (person-derived adjectives such as *Shakespearean*, *Orwellian*, etc.) have none of these properties:

(27) English

- a. **The Shavian dramas took him, a long time to write.*
- b. **The Gricean program, who was more interested in philosophy than in linguistics, was developed further by linguists.*
- c. **the early Marxian writings* (i.e. the writings of the early Marx)

Russian possessive adjectives can be the antecedent of personal pronouns (cf. 24), but not of relative pronouns. In Macedonian, possessive adjectives may be the antecedent of both personal pronouns (cf. 28) and relative pronouns (cf. 25), but they may not have attributive modifiers.

(28) Macedonian

Pred nas e majčiniot stan. Taa saka da go prodade.
 before us is mother's(adj) apartment she wants SUBJV it sell
 'Before us is mother's apartment. She wants to sell it.'

The most liberal are Upper Sorbian possessive adjectives, which allow all three processes, as is illustrated in (29) and (9).

(29) Upper Sorbian

- a. *To je našeho wučerjowa zahrodka. Wón wjele w njej džěla.*
 this is our teacher's(ADJ) garden he much in it works
 'This is our teacher's garden. He works in it a lot.'
- b. *Wićazowy hlós, kotryž je zastupil.*
 Wićaz's(ADJ) voice who has entered
 'Wićaz's voice, who has entered.'

Thus, Corbett's data clearly show that the preservation of internal syntax is not a matter of all or nothing, but that different languages may preserve fewer or more properties of internal syntax. Now the crucial point for my universal (21) is that the continuum in (26) correlates with the derivational/inflectional status of the possessive adjectives. In English, "possessive adjectives" like *Shavian*, *Orwellian* are clearly derivational. They are formed from an extremely limited set of nouns (only

personal names) and show idiosyncratic formal properties. In Russian and Macedonian their formation is more regular and more general (not just person names, but also kinship terms allow possessive adjectives), and in Upper Sorbian the possessive adjective is even more regular and general (all person nouns in the singular allow it), so that it is much closer to inflectional status.

9.2. Verbal adjectives/participles

A similar hierarchy can be established for adjectives derived from verbs (cf. Haspelmath 1994:§10). When these are derivational, they are called “verbal adjectives”, and when they are inflectional, they are called “participles”. If we restrict our attention to active participles/verbal adjectives, then we can contrast Italian, German and Lezgian in the following fashion:

	verbal government with non-subjects	verbal government with subjects
(30) Italian (verbal adjective)	*	*
German (participle)	OK	*
Lezgian (participle)	OK	OK

In Italian, active participles do not exist. There are verbal adjectives like *sorprendente* ‘surprising’, but these can never have verbal government, i.e. they never preserve the internal syntax (**un fatto sorprendente il giudice* ‘a fact that surprises the judge’). In German and other conservative Indo-European languages, active participles have verbal government with non-subject dependents (*ein den Richter überraschendes Faktum* ‘a fact that surprises the judge’), but not with subjects. Finally, in Lezgian the participle has no restrictions on its government properties at all (Haspelmath 1993). Now this continuum of preservation of internal syntax again correlates with the inflection/derivation continuum. In Italian, verbal adjectives are not very productive, show idiosyncratic meanings and are clearly derivational. In German and other conservative Indo-European languages, active participles are mostly considered as inflection, but not prototypical inflection. Finally, Lezgian participles are quite typical inflectional forms, in that they are as frequent as other inflectional forms and can be combined with different aspectual stems of the verb.

Similar correlations between two continua would be found for all cases of transposition. There is no space here for more examples, but in the following section I would like to speculate briefly on why the correlation should hold universally.

9.3. Toward an explanation of the universal correlation

Probably the best-known attempt at explaining the correlation is Stephen Anderson’s (1992). It says that inflection is part of the syntax, and derivation is part of the lexicon, and the syntax and the lexicon are each autonomous and separated from

each other in a clear-cut manner (cf. also Chomsky 1970). With further assumptions it follows from the architecture of the formal grammar that syntax is preserved with inflectional affixes, while derivational affixes in the lexicon obey quite different principles. This explanation is unsatisfactory for two reasons. First, inflection and derivation form a continuum that cannot be split up into two discrete formal blocks. Generalizations across inflection and derivation, like Corbett's hierarchy in (26), cannot be captured in this model. Second, the architecture of the grammar is not a real explanation – the question is only shifted one step further: Why does the grammar have this particular architecture and not a different one?

A real explanation has to establish a relation between grammatical and extra-grammatical facts, or in other words, real explanations are always functional. In the following I will speculate a little about where such an explanation might be sought. A complete account is beyond the scope of this paper.

An important property of inflectional forms that distinguishes them from derivational forms is that they are more frequent in discourse. The Lezgian participle must be more frequent than the Indo-European participle because it is the major relative-clause-forming strategy in the language, and the Sorbian possessive adjective is a major strategy for expressing possession, so it must be more frequent than the possessive adjective in English. The more frequent a word-forming process is, the more economical it is if the syntax does not deviate from the usual, i.e. if it is identical to the syntax of the base word. Derivational formations, by contrast, are much rarer in discourse, and they are not associated as closely with their base. For instance, a derivational action noun such as *arrival* or *detainment* is more closely related to non-derived abstract nouns like *power* or *future*, which of course have nominal rather than verbal syntax. Thus, considerations of frequency and economy make it quite plausible that this correlation should be universal, and a complete explanation should be sought in this direction.

10. CONCLUSION

To conclude this paper, I will briefly summarize its main points: First, I have argued that word-class-changing (or transpositional) inflection exists, is widespread across languages and cannot be explained away. Second, this has a number of consequences for morphological description, in particular that several levels of word-class within a word have to be recognized, and that phrasal categories, too, must allow two-fold word-class status (or, alternatively, a dependency notation must be used). Third, the recognition of word-class-changing inflection helps us see more clearly that there is a universal correlation between the inflectional vs. derivational status of a transpositional affix and its syntactic properties.

ABBREVIATIONS

ABS	absolute case	MASD	masdar
ACC	accusative case	N	neuter; noun
ADJ	adjective	NOM	nominative
ADV	adverb	OBJ	object
ATTR	attributivizer	PL	plural
CONV	converb	POSSADJ	possessive adjective
DAT	dative	PRED	predicativizer
DEF	definite	PRET	preterite
ERG	ergative case	PTCP	participle
EXCL	exclusive	REL	relative marker
F	feminine	SUBJ	subject
FOC	focus marker	SUBJV	subjunctive
GEN	genitive	SUBST	substantivizer
IMPF	imperfective aspect	V	verb
INDEF	indefiniteness marker		

NOTES

* Versions of this paper were presented at the Annual Meeting of the DGfS (Münster, March 1994) and at the 6th International Morphology Meeting (Szombathely, September 1994). Useful comments were provided by the audiences at these conferences, by Geert Booij, Grev Corbett, Davide Ricca, Richard Waltereit, and an anonymous reviewer. I am grateful to all of them.

¹ Other common terms for what I call *word-class* are *part of speech*, (*major* or *lexical*) *syntactic category*, or simply *category* or *class*.

² The convenient term *transposition* is not employed much in current Anglophone mainstream linguistics. The term was apparently introduced in Bally (1932:§179-196) and used to be common in European theoretical linguistics. It is entirely synonymous with *word-class change* (or “syntactic category change” etc.), and I will use the two terms interchangeably.

³ See Haspelmath (1994) for a cross-linguistic study of participles. In that paper I argue that the active vs. passive orientation of participles can be understood on the basis of their adjectival nature.

⁴ This cannot be a necessary condition for inflectional status, because there are clearly inflectional affixes that have no syntactic consequences, such as plural affixes in languages lacking number agreement, or aspectual affixes. However, it may well turn out to be a sufficient condition.

⁵ I use the term *super-category* for precision, because the term *category* is sometimes also used in the sense “sub-category”. The following are pairs of terms that are equivalent to my terms *super-category* and *sub-category*:

super-category	sub-category	(Haspelmath)
category	property	(e.g. Booij et al. (eds.))
categorial system	category	(e.g. Wurzel 1987)
categorization	category	(e.g. Eisenberg 1989)

⁶ It is true that German participles cannot be inflected for comparative and superlative degree, and the Lezgian masdar cannot form a plural. But there are also other adjectives that have no comparative and superlative degree forms, and other nouns that have no plural. This is due to purely semantic factors which are present in participles and masdars as well.

⁷ This myth has not often been explicitly rejected in the literature. Bybee (1985:85) expresses a view similar to mine, but she states it very cautiously: "In fact it is possible that the principle that morphology that changes the syntactic category of a word is always derivational is a false principle, and that *-ly*, gerundial *-ing* and comparable morphemes in other languages should be considered inflectional."

⁸ Note that it does not help to adopt a different two-feature system along the lines of Jackendoff (1977), which groups the four major word-classes differently. In Jackendoff's system, other neutralizations would be expressible, but it does not allow for more possibilities.

⁹ I have made up the terms *external syntax/internal syntax* because I am not aware of any established term pair (note that *internal syntax* should not be confused with word-internal constituent structure). As an anonymous reviewer points out, these terms are transparent mainly if one conceives of syntactic structure as constituent structure. On a dependency view (cf. §8 below), the terms *upper syntax/lower syntax* might be more appropriate (see Koch and Krefeld (1993), who use the terms *upward/downward combinatory potential* (*Konnectionspotential* 'nach oben'/'nach unten')).

¹⁰ He even questions the widely held belief that words are grammatically relevant units in all languages, pointing to the observation that often newly literate speakers have massive problems with word division when they know the principles of spelling but are not yet familiar with all the orthographical conventions.

¹¹ These statements are formulated impressionistically, because so far I lack systematic cross-linguistic data on the distribution of mismatches and word-class-changing inflection. Until such data is available, we will have to make do with impressions, which I hope the readers share.

¹² Tesnière himself uses different word-class labels, but in substance the tree in (18) does not deviate from Tesnière's approach.

¹³ Tesnière actually extends his notion of transference to both derivational transposition and function words. However, Koch and Krefeld (1993) argue convincingly that it should be restricted to the phenomena that I call word-class-changing inflection.

¹⁴ But note that interest in Tesnière's theory has recently been revived in German Romance linguistics circles, see, e.g., Koch and Krefeld (1993), Lambertz (1991, to appear), Werner (1993), Wunderli (1989).

¹⁵ When the subject is a pronoun, it becomes clear that there is a difference after all: The pronoun appears in the objective case (*I dislike him riding my bike*), and even the genitive is possible in formal style (*his riding my bike*). However, the genitive is the only option in the structure of (21b).

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