

Morphology and its Demarcations

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MORPHOLOGY AND ITS DEMARCATIONS

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and Franz Rainer (eds)

Morphology and its demarcations
Selected papers from the 11th Morphology Meeting, Vienna, February 2004

MORPHOLOGY AND ITS DEMARCATIONS

SELECTED PAPERS FROM
THE 11TH MORPHOLOGY MEETING,
VIENNA, FEBRUARY 2004

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Introduction*

Wolfgang U. Dressler, Dieter Kastovsky,
Oskar E. Pfeiffer, and Franz Rainer

This volume contains selected papers from the International Morphology Meeting held in Vienna from February 14 to 18, 2004, which was the eleventh of a series of morphology conferences held alternatively in Austria and Hungary. This volume includes those papers which addressed the main topic of the meeting¹ and which were selected by an international reading committee. This topic concerns external and internal demarcations of morphology.

Several authors deal with the *external demarcation between syntax and morphology*:

David S. **Rood** claims, with his concept of “syntactic morphology”, that the incorporating-polysynthetic language Wichita possesses several instances of affixes which would be expected, in typologically different languages, to either belong to noun inflection or be constituents of noun phrases, but are in fact bound morphemes of Wichita verbs.

Michael **Cysouw** surveys, in many typologically and genetically unrelated languages, so-called ditropic clitics, i.e. clitics which exhibit a mismatch between their semantic and positional relations to their neighbours, i.e. host and clitic do not form a semantic unit. Such paradoxical constellations differ both from morphological arrangements of affixes and from syntactic positions of corresponding non-clitic constituents.

Jasmina **Milićević** devotes her study to standard Serbian future tense markers and argues that they are clitics rather than affixes, in spite of the fact that they share some properties with the latter. The frame-work used is the Meaning–Text model and the methodology of using lexical, morphological, syntactic and morphonological criteria.

Corrien **Blom** describes those particle verbs of Dutch which can be identified as separable complex verbs. By combining this synchronic with a diachronic perspective, she concludes that most of them exhibit a stronger degree

of grammaticalization than of lexicalization. Thus she can locate different types of particle verbs in different slots of the syntax–morphology continuum.

Andrés Enrique-Arias argues that the restriction in mobility which Old Spanish unstressed object pronouns have suffered in the historical process of cliticization and morphologization was due to two main factors, namely the frequency of the sequence pronoun + finite verb in Old Spanish and the fact that this order allowed to preserve the most natural prosodic pattern in Spanish, while no correlation has been found with word order typology.

Bernd Heine and Christa König discuss grammaticalization and claim that grammatical hybrids of the African language !Xun do not allow a clear-cut distinction between verb serialization, compounding and derivation. This is inserted into the typological and diachronic perspective of chains of grammaticalization.

In contrast to theoretical discussions in previous literature on internal boundaries within morphology, which have concentrated on the boundary between inflection and derivation, this volume attributes equal importance to *demarcations between compounding and derivation*:

Laurie Bauer deals with this borderline and concludes that, although it is permeable, it nevertheless allows a certain demarcation of the two domains on the basis of the independence of the involved elements. This is demonstrated by discussing instances of diachronic shifts from compounding to affixation and from affixation to word-status of the affixes resulting in compounds. Other related topics deal with the ambivalent status of synthetic compounds, unique morphs, and neo-classical compounds.

Geert Booij discusses compounding vs. prefixes, prefixoids, suffixes and suffixoids and argues within the framework of construction morphology that compounding and affixal derivation differ in degrees of abstractness of their construction schemas. Thus he rejects Steven Anderson's dichotomic approach of A-morphous Morphology.

Sergio Scalise, Antonietta Bisetto and Emiliano Guevara set out to show that selection is not exclusively found in suffixation but also in compounding, and that both in suffixation and compounding it is the head which selects the base. Despite these similarities, they claim to have identified differences with respect to how selection works in suffixation and compounding, and even within different types of compounding.

Pavol Štekauer, on the basis of a cognitive-onomasiological approach to word-formation, which regards the latter basically as an act of naming, argues that there are no principled differences between compounding and affixation, nor between prefixation and suffixation. This follows from his assumption

that there is a general principle of Morpheme-to-Seme Assignment and the identification of the head with the “onomasiological base”, regardless of its position. His analysis thus is basically semantic-referential rather than formal-morphological.

Bernard **Fradin** shows that the French suffix *-eur* places “strong and precise” restrictions on its verbal base, whereas French V+N compounds allow any semantically plausible instantiation of V. This difference is argued to follow in a principled way from general differences between derivation and compounding.

Dany **Amiot**’s contribution is dedicated to the borderline between composition and prefixation in French. The author analyses eight formatives that appear both in compounding and in prefixation and concludes that “[t]here is a continuum between elements which have to be considered real prefixes and others that are still prepositions”.

A wide variety of phenomena regarding commonalities and *demarcations of inflection and derivation* is discussed in the following contributions:

Davide **Ricca** presents evidence that cumulative exponence, a common phenomenon in inflection, may also involve derivational categories. The fact that cumulative exponence is rare in derivation is explained as a consequence of more general properties such as the scarcity of semantically relevant derivational categories and their far weaker paradigmatic structuring.

Maria-Rosa **Lloret** focuses on the evidence of phonological (and morphonological) patterns which are distinct for inflection and derivation and for nominal vs. verbal inflection in regional variants of Oromo and Catalan and accounts for them within the framework of Optimality Theory.

Stela **Manova** modifies differentiation criteria for assigning the transitional categories of diminutive formation, gender change (from masculine to feminine) and imperfectivization in Bulgarian, Russian and Serbian dominantly to either inflection or derivation (only in the case of diminutives).

Sergey **Say** investigates so-called reflexive Russian *sja*-verbs and develops a complex picture of the interplay between derivation and inflection in different subtypes of these “anti-passive” verbs.

Rok **Žaucer** studies verbal prefixes in Slovenian and other Slavic languages to which he assigns an event value of state. They have derivational properties when they express, e.g., directionality or attenuation, but have inflectional characteristics of verbal aspect formation as well.

Gregory T. **Stump** studies Sanskrit causatives and explains why criteria arguing for a derivational status are insufficient, whereas the criteria of paradigmatic opposition and of uniformity entail that the causative suffix *-aya-* (or *-ay-a-*) is a mark of inflection-class membership.

Notes

* We would like to express our profound gratitude for financial support to the Gemeinde Wien, to the Österreichische Forschungsgemeinschaft and to the Wiener Fremdenverkehrsverband, for patronage to the University of Vienna and to the Austrian Academy of Sciences, for help in the selection of papers especially to Ursula Doleschal (University of Klagenfurt), Ferenc Kiefer (Hungarian Academy of Sciences), Hans-Christian Luschützky (University of Vienna) and to the main speakers of the meeting: Geert Booij (Free University of Amsterdam), Bernd Heine (University of Cologne), Martin Maiden (University of Oxford), Ingo Plag (University of Siegen), Keren Rice (University of Toronto).

1. Several papers on other morphological topics, are published in *Folia Linguistica* 38, 3–4 (2004) [Paolo Acquaviva, Martin Maiden, Ingo Plag] and in the *Yearbook of Morphology* 2004.

Wichita word formation*

Syntactic morphology

David S. Rood

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1. Introduction

At least since Postal (1969) articulated it clearly, a primary assumption by many students of morphology has been that words have internal integrity, i.e. that the components inside a word do not have independent referential properties. From this it follows that all the morphemes in the word must relate only to that word. Even agreement morphology, which is controlled from the outside, functions to categorize the word of which it is a part, not the item with which it agrees; we speak, for example, of the “third person singular feminine form” of a verb, meaning that the verb is expressing redundantly certain properties of a relevant nominal, not that this inflection is telling us something new. The announced theme of the conference at which the papers in this volume were initially presented covertly perpetuated this assumption by proposing that the discussion of inflection, derivation, and compounding exhausts the categories of word formation.

Challenges to the absolute validity of the principle of lexical integrity have generally looked at lexical morphemes. Thus the debate about noun incorporation between Marianne Mithun and Jerold Saddock in the 1980s (Mithun 1984, 1986; Saddock 1986), during which Saddock claimed that elements inside Greenlandic words could be referred to independently, concerned the possibility of reference to the incorporated noun part of a complex word. Likewise, Robert Sproat (1993) reported English examples from natural conversations in which one member of a compound is later treated as the antecedent of an anaphoric pronoun (e.g. “I refer you to the [*Schachter* paper]; *he* is very proud of it” (Sproat 1993:182)) and even an example of the stem of a form

with a bound derivational suffix treated similarly (“Mary has been [*fatherless*] for several years. *He* died when she was five.” (Sproat 1993:186)). In contrast with these examples of pronominal reference into words, however, Alice Harris (2004) has recently shown that in Udi and Georgian other kinds of words may fail to have total internal integrity. For example, Georgian allows referential pronouns to be the heads of derived lexical items.

This paper will present evidence from a language whose whole grammar relies almost entirely on bound verbal morphology that lexical integrity can be violated by morphemes that are not lexical roots or stems. I will describe two of them. These morphemes signal properties of an argument, but they occur in the verb. They are not agreement, because they do not agree with anything; they are the only representatives of their function in the sentence, and that function is discourse-specific (i.e. it is not an inherent property, like gender). In one case, a multi-part morphological construction in the verb modifies one of the arguments of the verb in an adjective-like way. In the other case, the verbal morpheme signals an argument property that would, in many familiar languages, be taken to be an inflection on the argument. These morphemes thus provide new information about components of the syntactic construction other than the word to which they are bound; I therefore call them “syntactic morphemes”, claiming they are neither lexical, inflectional, nor derivational.

The existence of morphemes like these correlates with another fact of Wichita structure which I hold is important for understanding the overall pattern of the grammar, namely, that the notion of “phrase” is only weakly relevant to the syntax of this language. Phrase structure correlates a linear dimension of morphemes sequenced in time with a hierarchical dimension of groups of words or morphemes functioning together. In Wichita and languages like it, despite Baker’s (1996) abstract analyses to the contrary, the hierarchical organization diverges from the linear. Many “constituents” in the English translations of Wichita are represented non-contiguously by combinations of independent words and bound verbal morphemes. Despite this poorly developed phrase structure, Wichita utterances are coherent syntactic constructions; the syntactic information is made available through the morphology.

The claim that phrase structure is not very important for the grammars of languages like Wichita has also been made by Zellmayer (mss. 2003a, b); he discusses Pawnee and Arikara, especially with regard to the weak manifestation of the notion “noun phrase”. He refers to this grammatical phenomenon insightfully as “syntactic underspecification”.

To summarize: I am claiming that Wichita verbs may include, in part, a class of morphemes which is syntactic, in that its members function like ele-

ments of NP structure. These morphemes occur in the verb, but they indicate properties that an argument has in the current discourse, and they are required by the demands of the current discourse, not parts of stored words.

In Rood (2002), I made a similar claim about the existence of syntactic morphology, based on two kinds of evidence. The first is the fact that person and case marking affixes in this language are pronouns, and not agreement morphemes, and consequently words in this language are syntactic constructions if sentences with pronouns in other languages are syntactic constructions (cf. the extensive discussion of the “pronominal argument” hypothesis, beginning with Jelinek 1984). Second, the fact that the open-ended nature of noun incorporation allows the creation of unlimited numbers of words with self-contained, internal predicate-argument structure, exactly the same way other languages allow for the creation of an unlimited number of sentences, argues for syntactic input into word formation. Below I will present two additional examples of Wichita word formation in which the morphological components are more like syntactic elements than the usual kinds of word-forming material, but before that, I provide an overview of Wichita structure and a description of the Wichita substitutes for locative prepositional phrases (to emphasize the low functional load of phrase structure as a device for showing syntactic relationships).

Two additional disclaimers are in order, however. First, I am not entering into the formalist debate about whether morphological and syntactic rules are of the same kind or not (see e.g. Borer 1998 and other papers in the same volume); I am interested in morphological function instead. Second, and related, I am not looking into whether polysynthetic languages can be analyzed to reveal a configurational structure or not. Some examples of that debate include Spencer (1991:208–214), Baker (1996) and Rice (1998).

2. An introduction to Wichita

Wichita is spoken in central Oklahoma, in the southern plains of the U.S. It belongs to the small Caddoan family; its closest relatives include Pawnee and Arikara. There are about eight people still alive who can more or less speak the language, though only one of those is really fluent. I have been studying the language for nearly 40 years, however, and have data that no one today could provide. Almost all of the examples I use in this paper are from spontaneously produced narratives or conversations, or were elicited from a fully fluent speaker at least 20 years ago.

The language is structurally an extreme example of polysynthesis. Most of the information needed to associate arguments with predicates or predicates with other predicates is presented in bound verbal morphology. Word order plays only pragmatic roles, though there are clear preferences for word sequencing which suggest that it could be classified OV. A minimal verb contains four morphemes (tense/mode, argument person marker, root, and aspect/subordination), and every verb is marked for all its arguments: there are no non-finite forms, though there are subordinate clauses. In addition to the root, many verbs require an additional morpheme called a “preverb” near the beginning of the word. Some preverbs can also be used optionally to show that a pronominal affix has changed its case role to dative (for objects) or possessive (for subjects or objects). Verbs are assembled according to a rigid template for morpheme sequences comprised of roughly 30 position classes. The phonology at morpheme boundaries is complex, but otherwise the morphemes line up in a well behaved, agglutinative sequence.¹

3. Locatives: Derivational substitutes for adpositions

Let us turn now to a consideration of some of the morphemes in Wichita verbs. The first ones to be discussed are the least problematic, for they can easily be classified as derivational. I include them here, however, to introduce the idea that phrase structure in this language is considerably different from that of most other languages. These forms are the only semantic analogs to the locative adpositions found in most languages, but they occur as modifiers of the verb stem rather than as particles. They are not applicatives, for they do not promote an oblique argument to core argument status; they merely specify details about the location of the event. Examples are in (1), all from the same episode in a story about a land turtle who is trying to hitch a ride across a river on a buffalo; the turtle and the buffalo are negotiating where the turtle should ride. Note that the morpheme-by-morpheme analysis is often incomplete when it is irrelevant to the present point, and you are witnessing only the buffalo’s contributions to the conversation.²

- (1) a. iskiteʔe:ki nackwi:rʔicʔirih
 i- s- *kita-* ʔi:ki na- t- wi:rʔic- ʔi- hrih³
 imper- 2sub- *on-* sit ppl- 1sub- shoulder- be- loc
 ‘sit on my shoulder’

- b. *nati:ʔarihkiteʔerʔi:ʔarikirih harah isteʔerhi:kawa*
 na- t- i:- ʔarik- r- *kita-* ʔirʔi:ʔariki- hrih harah i-
 ppl- 1sub- poss- horn- pl- *on-* protrude- loc there imper-
 s- *teʔerhi:* *ka-* wa
 2sub- *brush-covered.area-* in- go
 ‘Get into the long hair up where my horns stick out’
- c. *iskawa natiriʔiskirikʔirih*
 i- s- *ka-* wa na- t- i:- riʔiskirik- ʔi- hrih
 imper- 2sub- *in-* go ppl- 1sub- poss- anus- be- loc
 ‘Go into my anus’
- d. *nakhissah harah wah naka:ʔicakih a:kihiʔiyaskwa*
 na- *ka-* hissa- h harah wah na- *ka:-* ʔicaki-
 ppl.3sub-*in-* go- subord there now ppl.3sub-*inside-* sit-
 h a:ki- hiʔiyaskwa
 subord quot.3sub.past- cross.water
 ‘Going in and sitting inside there, he crossed the water.’

These examples illustrate four of the 20 or 30 morphemes in this category: *kita* ‘on top’, *teʔerhi:* ‘where stuff sticks up and you have to push it aside, as in tall grass, or a cornfield, or a crowd of people’, *ka* ‘in a topless place’ and *ka:* ‘in something with a covering over it’. Example (1b) also illustrates the fact that more than one locative can occur in the same verb. When a nearby word is marked with a locative suffix, as illustrated with the words for ‘shoulder’, ‘where my horns stick out’, and ‘anus’, the combination of the locative in the verb and the locative nominal translates into English as a prepositional phrase. But if no such object is available, as in the words for ‘up where my horns stick out’, ‘going in’, and ‘sitting inside’, the morpheme translates as a locative adverb. In both types of cases, the Wichita morpheme can be analyzed as derivational, creating verb stems meaning things like ‘sit on’, ‘protrude on top’, ‘go into brush’, ‘go in’, and ‘sit inside’. That these locatives are derivational is also indicated by the fact that they do not combine freely with all verbs. For example, there is a locative *hita* meaning ‘at the edge of a body of water’, but if you want to say ‘we are going to eat beside the creek’, you cannot add that locative to the verb ‘to eat’; you must use two verbs, ‘eat’ and one that means ‘to be a certain kind of place’, and say ‘we will eat where the edge of the water is’; cf. example (2).

- (2) a. keʔecirá:kwa:waʔa nahite:hárih
 keʔe- ciy- ra:k- wa:waʔa na- hita-
 fut- incl.sub- 12pl- eat(intrans) ppl.3.sub-*edge.of.water-*
 yiha- hrih
 be.a.place-loc
 ‘we will eat beside the water’
- b. *keʔe-ciy-ra:k-hita-wa:waʔa

The conclusion to be drawn at this point is that Wichita has no locative PP constituents; the equivalentents are expressed by bound verbal morphology which adds derivational locative information to the verb stem. There are no other kinds of PP’s, either: instruments are marked with a suffix or as an argument of the verb ‘to use’, and oblique or adjunct arguments are either unmarked or signaled by other kinds of verbal morphemes.

This is just one fairly unremarkable way in which Wichita uses verbal morphology to express the ideas that are often expressed by phrase structure in other languages. Although these locative morphemes can be analyzed as derivational, other Wichita substitutes for phrase structure are much harder to classify. Two examples follow.

4. Wh-S complements of ‘not to know’: NP information in the verb

Wichita does not have a verb meaning ‘not to know’ that allows a wh- complement clause. To answer a question saying “I don’t know”, one uses a monomorphemic adverb, *hi:ʔa:c*. To assert the absence of knowledge about an event, one uses the list of pieces given in (3):

- (3) – an indefinite pronoun for the unknown quantity (someone, somewhere, etc. (may be omitted for a ‘what kind of’ complement))
 – the event verb (in English, the complement of ‘not know’) in the habitual tense
 – the preverb otherwise used only with ‘come’ or ‘have’ (this is the only preverb that occurs between subject and object prefixes and has allomorphs /i:/ with first and second person subject pronouns but /a:/ with everything else)
 – the morpheme *re:R* in the position after *ra:k* ‘non-third person plural’
 – the “past unrealized” suffix *-:hi:ʔ* if the tense is past.

Let us study the examples in (4):

- (4) a. ka:kíyah ?ákiré:ti:kws
 ka:- kiyah ?a- a:- ki- re:R- ti:kw- s
 indef- person habit- preverb- 1obj- unknown- hit- impf
 ‘I (or they, you or we, etc.) don’t know who hit me.’
- b. ka:kíyah ?atiré:ti:kws
 ka:- kiyah ?a- t- i:- re:R- ti:kw- s
 indef- person habit- 1sub- preverb unknown- hit- impf
 ‘I (etc.) don’t know who I hit’
- c. ka:si:ʔaciyé::ra:rhé:ksʔi
 ka:- si:h ?a- ciy- a:- a:- ra:k
 indef- place habit- incl.sub-preverb with unknown- poss 12 pl
 re:R- ks- ?i
 unknown- put.sg.inan.object stative
 ‘I (etc.) don’t know where ours is’
- d. hasʔaré:ʔichirisʔi:hi:ʔ
 has- ?a- a:- re:R- ?ichiri- s- ?i-
 permanently- habit- preverb-unknown- bird- inc⁴- be
 :hi:ʔ
 unreal.past
 ‘I don’t know what kind of bird it always was’

Examples (4a) and (4b) contrast first person object and first person subject forms for the event verb. Together they show the allomorphy and unique positioning for the preverb: it has the shape /a:/ and precedes the object pronoun, but follows the subject, where it has the form /i:/ (from an underlying /u(:)/). Example (4c) shows the preverb in the shape /a:/, but following the inclusive subject pronoun, and the ‘unknown’ morpheme in position after *ra:k* ‘first or second person plural’, as well as the co-occurrence of several morphemes in the preverb position. Example (4d) illustrates both the ‘kind of’ construction without an indefinite pronoun argument and the “unrealized in the past” suffix marking plain past.

How are we supposed to classify these morphemes, or assign them to the structure of the verb word? The indefinite pronoun and the incorporated noun are arguments or adjuncts; there is no mystery there. But what about the preverb and *re:R*?

The preverb in all its other uses in the language is part of the verb structure. It is either a derivational morpheme marking a change in verbal valence, or a part of the lexical entry for the verb stem. Here, however, it occurs in construction with another morpheme that is not a verb stem. It must therefore be part

of a discontinuous, two-part morpheme. It is the combination that carries the meaning ‘unknown’, not one of the parts alone.

This verbal morphology is supplying information about the pronoun. In a more familiar language, such information would be included as a modification of the head of the noun phrase, and modification is not usually either derivational or inflectional. This Wichita construction then lacks two crucial properties of ordinary word-formation. Its meaning is not related to the meaning of the root or stem to which it attaches, but rather to a different word, and the kind of meaning expressed is neither derivational nor inflectional. Like the locatives we discussed at the beginning of the paper, the ‘unknown’ morpheme fails to form a phrase with its purported head. It is functionally noun or adverb modification, but formally bound verb morphology.

5. The Wichita definite article: A verbal affix

The second example of syntactic morphology in this paper is the morpheme which translates into English as the word “the”. Formally, it is usually the same as the second half of the ‘unknown’ morpheme, i.e. the morpheme *re:R* attached in the middle of the verb. But without the preverb it seems to have completely unrelated meaning and use, so I am assuming homonymy here. In the next few paragraphs, I will show, first, that the morpheme is indeed equivalent to a definite article, and second, that it modifies a variety of different items and structures. The two facts which I hope to demonstrate are that its inclusion in the verb has syntactic motivations, and that despite its function and meaning, it is not part of a noun phrase constituent.

First, the data. I have analyzed about 150 examples from the texts, since elicited forms do not give us any clues about this morpheme’s function. There are two basic occurrence patterns: as a noun suffix, and inside a verb. Although speakers readily give the suffixed forms as translations of “the” during elicitation, I found only one example of it among all the text examples. As is often the case with the suffixed form, the shape is a little different, namely, *-re?eh* for singular, *-re?e:* or *-ri:ʔih* for plurals; cf. example (5). Note that in this example the connecting *-s-* proves that this is a compound (see Footnote 4):

- (5) *kirikse?e:*
kirik-s- *re?e:*
hole-inc- *the*
‘the holes’

A variant of the suffix pattern also occurs, in which the article morpheme begins a word that includes other information, but the word lacks all the verbal prefix morphology. In this form, other material may separate the noun and the article:

- (6) a. híraciya:ká:hí:kŕih *neŕerŕiriwa:h*
 hi- ra- ciy- a:- ka:hik- ŕi- h *reŕeR-*
 nsg.- ppl. incl.sub-poss- mother/woman- be- subord *the-*
 ŕiriwa:h
 be.lying.down
 ‘Mother Earth’ (lit. ‘our mother lying down’)
- b. ti:kŕa ha:wah *né: ŕikih*
 ti:kŕa ha:wah *re:R- ŕiki-* h
 pole also *the-* be.pl.inan.- subord
 ‘also the poles’

These examples are, however, very rare in connected texts. By far the most common occurrence of the morpheme is verb-internal, but there are several ways in which it can then be interpreted. Sometimes it seems to refer to the whole word to which it is attached, although that word translates as a whole English clause. There are three kinds, words designating a place, words designating an event, and words designating a noun:

- (7) a. “place”
- i. *naré:ŕi:sthí:kisárih*
 na- *re:R- ŕi:s-* thi:ki- hisa- hrih
 ppl- *the-* hand.instr- be.among- go- loc.
 ‘where he stuck his hand in’ (lit. ‘where one goes among them with one’s hand’; ref. is to space between bundles of grass on the walls of a house that is under construction.)
- ii. *niré:ŕakharháncaskírih*
 na- iy- *re:R- ŕakhar-* hanca- ski- hrih
 ppl- indef.sub- *the-* house- place.on.flat.surface impf loc.
 ‘where they will put the house’
- b. “event”
- i. *issinnare:wakha:rŕih*
 issiri- na- *re:R- wakhahr-* ŕi h
 thus/how- ppl- *the-* activity be subord
 ‘the way it was done’
- ii. *kharahí:h wickhé:h iyarhah*
 ha:kiré:hiriŕáskih

kharahi:h wickhé:h iyarhah ya- a: ki- re:R-
 negative very plenty subj₁- prev.come- subj₂- the-
 hiri- ?a- ski- h
 rain- come- impf- subord
 ‘the rain was not very heavy’

c. “person, thing”

i. niré:tariwi:k?ih

na- iy- re:R- tariw:k- ?i- h
 ppl- indef.sub- the- round- be- subord
 ‘the round one’

ii. kiyari:cé:hire:we?ekih

kiya- na- uc- re:R- hiri(a:wa)-
 person-ppl- preverb- the- be.in.charge-(distributive)-
 ?iki- h
 be.pl.inan.- subord
 ‘God’ (‘the person in charge of everything’)

iii. hiri:re:ʔarhi?iskih

hi- ra- iy- re:R- ?ak- ri?i- ski- h
 nsg.sub-ppl- indef.sub- the- pl.obj.- seek- impf- subord
 ‘the ones they were seeking’

iv. nacíra:re:r?ih

na- ciy- ra:k- re:R- ?i- h
 ppl- incl.sub- 12pl.- the- be- subord
 ‘those of us here’

The single most common form for this article, however, is in the participle of a verb which modifies a preceding noun. A few examples are included in (8); note that the article can refer either to the subject or to the object of the verb:

(8) a. hi:s nare:ʔó:ckwih

hi:s na- re:R- ?iwackwi- h
 main.one ppl- the- protrude.upward- subord
 ‘Mt. Scott’ (the highest of the Wichita Mountains in southern Okla-
 homa)

b. ti:kʔanné:ʔikih (Analysis same as (8c.))

c. ti:kʔa nare:ʔikih

ti:kʔa na- re:R- ?iki- h
 pole ppl- the- be.pl.inan.- subord
 ‘the poles’

- d. ksá:rʔa naré:rʔih
ksa:rʔa na- re:R- ʔi- h
bed ppl- the- be- subord
‘the bed’
- e. ksá:rʔa naré:ʔikih
ksa:rʔa na- re:R- ʔiki- h
bed ppl- the- be.pl.inan.- subord
‘the beds’
- f. hancʔa nace:rakʔáskih
hancʔa na- t- re:R- rakʔa- ski- h
grass ppl- 1sub- the- talk.about- impf- subord
‘the grass I was talking about’

Occasionally the word to be modified follows the verb with the article, as in (9):

- (9) keʔekice:ʔi:skaʔahi:kih té:sʔa
kaʔ- iy- ki- uc- re:R- ʔi:s- ka- ʔahi- iki-
quot- indef.sub- past- dat- the- hand.instr- in- hold- cause
h té:sʔa
subord corn
‘corn that was put into her hand’

And sometimes the article modifies the noun incorporated into the verb with the article, as in (10):

- (10) assé:hah wáss naré:kicheʔeh
assé:hah wass na- re:R- kic- heʔe- h
all bitter ppl- the- liquid- taste- subord
‘all the bitter tasting liquid’

The construction is not restricted to verbs in the participle form, however:

- (11) a. ka:ʔé:skwakha:rʔas hiyacá:kikiré:ʔakhiya:wa:sskih
ka:- ʔa- a- yis- wakhahr- ʔa- s
neg- habit- prev.come- def.past.neg- event/time- come- impf
hi- ya- ca:ki- ki- re:R- ʔak- hiya:(wa:)s-
nsg.sub- subj₁- incl.obj- subj₂- the- pl.pat- be.hungry(distrib)-
ski- h
impf- subord
‘The time never came when we were hungry’

- b. e:kw wi:c iskiri:re:rʔi
 e:kw wi:c iskiri- i- re:R- ʔi
 contradictory man exclam- extrav- *the*- be
 ‘on the other hand, there are the men folk’

And finally, *re:R* is used to indicate that the possessor of an incorporated noun is the one which is present in the current sentence – essentially an anaphoric usage:

- (12) a. naré:ʔakʔih
 na- re:R- ʔak- ʔi- h
 ppl- *the*- wife- be- subord
 ‘and his (sua) wife’
- b. náre:ʔáka:ʔasʔih
 na- a: re:R- ʔaka:ʔa- s- ʔi- h
 ppl- poss *the*- grandparent- inc- be- subord
 ‘his (own) grandparent’

It should not be hard to believe that this morpheme is functioning to mark a noun or nominalized construction as definite. The words in the examples are either old, aforementioned information, the names of unique entities (Mt. Scott, God), or otherwise unique in the conversational setting, as in examples (10) and (11). The questions of when and how it is added to the construction, and what, if anything, it forms a constituent with, are serious problems, however.

In discourse contexts, nouns are definite because of their referential status at the moment when they are spoken. Definiteness is not a derivational property of a noun, let alone a verb. Now of course there are many languages in which nouns can be inflected for definiteness – Swedish and Romanian come immediately to mind. If the Wichita morpheme in question were always a noun suffix, I would not hesitate to refer to it as nominal inflection. In fact, however, in most of its occurrences the morpheme is clearly part of the verb word. So either it is a nominal inflection realized in the verb, or it is something unanticipated by our usual theories of word-formation. I would contend that its function is to tie particular pieces of the discourse together, to signal the discourse status of a referent. As such, if the part of grammar that signals these inter-word relationships is syntax, inserting this morpheme (or its homonym in the ‘unknown’ construction) must be part of the syntax of Wichita.

In at least one language, then, I contend that some of the elements of word-formation are syntactically introduced into a word other than the one they modify. They thus belong structurally with one word, but functionally

with a different one. They function as modifiers of words other than those with which they occur, thus providing elements of the “glue” that holds a sentence together.

The fact that this is so is correlated with the other fact that I have been emphasizing all along, namely, that the notion of phrase structure is very weak or missing in this language. In addition to the demonstration at the beginning of the paper of the lack of a PP constituent, consider again example (10), and the observation that the adjective and the quantifier are separated from the incorporated noun they modify. In addition, very strong evidence for the low degree of cohesion among the elements that most languages include in NPs are the two examples I have just discussed at length, the modifying ‘unknown’ and the article. This is not a paper about syntax, however, so I will not belabor this point; but it is tied up with the way in which the morphemes I have identified combine with other morphemes to make up words.

Wichita provides a good laboratory for morphology studies, since its grammar relies so heavily on bound verbal morphemes. We have just seen that some of those morphemes code information that our study of languages with more and shorter words would lead us to expect to be part of NP or PP constructions. Lacking much of this phrase structure, Wichita adds to the inventory of lexical, inflectional, and derivational morphemes a type which deserves the label “syntactic”: morphemes that add information about words other than those to which they are bound, and therefore serve to hold together the parts of an utterance.

Notes

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1. Some of the phonology is crucial to understanding the examples below. First, the consonants written as “r” and “n” represent allophones of a single phoneme realized as [n] initially or before other alveolars and tap [ɾ] elsewhere; hence morphemes with initial “r” will often appear with “n”, and vice versa. Wichitas prefer to write these allophones with separate letters. Second, the surface phonemes /ɾ/ and /ʔ/ each represent two underlying segments with different morphophonemic behavior. Some /ɾ/'s disappear everywhere except between

vowels or before /h/, while others merge with adjacent consonants in complex ways, and some glottal stops also disappear in contexts where others remain. The “disappearing” “r” is written with a capital “R” in underlying representations.

2. Abbreviations used in the data are: **12pl**, first or second person argument is plural (more than two); **1obj**, first person object; **1sub**, first person subject; **2sub**, second person subject; **dat**, object is dative; **def.past.neg**, asserts truth of past negative statement; **exclam**, exclamatory/immediate present; **extraV**, extra vowel (demanded by some proclitics); **fut**, future; **habit**, habitual; **imper**, imperative; **impf**, imperfective; **inan**, inanimate; **inc**, incorporated (see Footnote 4); **incl.obj**, inclusive object; **incl.sub**, inclusive subject; **indef**, indefinite pronoun prefix; **indef.sub**, 3rd person non-focused or plural subject; **instr**, instrumental; **intrans**, intransitive; **loc**, locative; **neg**, negative; **nsg**, non-singular (dual or plural); **obj**, object; **pl**, plural; **pl.pat**, plural patient; **poss**, subject pronoun is possessor; **ppl**, participle (nominalized verb); **ppl.3.sub**, participle with third person subject; **prev.come**, the preverb required by the verb *ʔa* ‘come’; **quot**, quotative (hearsay evidential); **quot.3sub.past**, third person subject past quotative; **subj₁**, first part of discontinuous marker of subjunctive; **subj₂**, second part of discontinuous marker of subjunctive; **subord**, subordinate verb.

3. The verb-final morpheme *-hrih* marks the verb as a noun in the locative case. It is not in the same category as the locative morphemes under discussion.

4. This morpheme, *s*, occurs between incorporated nouns and verb stems as illustrated here, or between elements of a compound. Compare e.g. *ne:rhirʔa* ‘buffalo’ and *ka:hkaks* ‘intestines’ with *ne:rhirʔaska:hkaks* ‘buffalo intestines’ or *taʔa* ‘deer’, *ehe:kʔa* ‘cloth’, but *taʔasehe:kʔa* ‘(tanned) deerskin’.

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Morphology in the wrong place

A survey of preposed enclitics

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1. Introduction

Clitics are a phenomenon on the boundary between words and affixes. A clitic looks like an affix to some extent, yet fails to fulfill all characteristics one might expect from a prototypical affix.¹ A typical characteristic of affixes is their obligatory connection to a particular lexical class. Many clitics do not share this characteristic, but most clitics will at least exhibit some kind of regularity in their choice of host. The most elusive kind of clitics are those that show no regularity at all in the kind of hosts onto which they can attach. In this article, I will discuss various examples of such clitics. The host of these clitics belongs neither to a particular lexical class, nor to a particular kind of syntactic phrase. In contrast, the element on the *other* side of the clitic is easily characterisable. This kind of structure is illustrated schematically in (1). In these structures, the clitic host X is structurally and functionally highly variable. In contrast, the constituent Y on the other side of the clitic is structurally either a particular lexical class or a particular kind of syntactic phrase, and functionally is clearly related to the clitic. I will call this constituent Y the clitic's *attractor*. In such cases, the clitic appears to be attached morphologically on the wrong side. Functionally, the clitic belongs together with Y, yet it is attached morphologically to X. Embick and Noyer (1999:291) have introduced the term *ditropic* clitic for this phenomenon.

- (1) a. [X]=clitic [Y]
b. [Y] clitic=[X]

As an example of a ditropic clitic, consider the Yagua object clitic in (2), to be discussed in more detail below. The object clitic (in boldface) always directly precedes a coreferential full object NP (here ‘Anita’) but it is enclitically attached to whatever constituent comes before the object, in this example the prepositional phrase ‘inside the house’. Yet the object clitic has no semantic relation whatsoever with this phrase – in particular, the prepositional phrase does not mean ‘inside his/her house’.

- (2) Yagua (Payne & Payne 1990:365, ex. 373)
- | | | |
|---|-------------------------------|--------------|
| <i>sa-púúchiy</i> | <i>Pauro rooriy-víímu-níí</i> | <i>Anita</i> |
| 3SG.SUBJ-lead/carry | Paul house-inside-3SG.OBJ | Anita |
| ‘Paul leads/carries Anita inside a/the house’ | | |

In this article, I will present a survey of such preposed enclitics, i.e. structures as shown in (1a). In such cases the clitic is preposed relative to its attractor Y, yet enclitic to a variable host X. In principle, examples of the mirror image phenomenon – postposed proclitics as in (1b) – are just as interesting, but I know of no convincing cases. I do not believe that there is any deep structural restriction at work here, but simply a strong cross-linguistic preference for clitics to be enclitic rather than proclitic, just as affixes show a strong preference for being suffixes rather than prefixes (cf. Halpern 1998:119). As proclitics are only rarely attested, and ditropic cliticisation is also a rare phenomenon, the combination of these two rare phenomena will be extremely rare.

2. Definition and demarcation

Two characteristics are crucial to establishing a ditropic clitic. First, the host and the clitic must not form a semantic unit, in other words, there is a mismatch between the semantic and the morphological structure. In morphological theory, such mismatches are known as ‘bracketing paradoxes’ and have been discussed extensively (cf. Sproat 1988 and Marantz 1988 on the relation between bracketing paradoxes and cliticisation). However, such a mismatch is attested in many kinds of clitics besides ditropic clitics, so a further demarcation is needed. The second characteristic of ditropic clitics is that the host of the clitic should defy all attempts at any unitary structural characterisation. In all cases to be discussed in this article, the only possible way to describe the surface position of the clitic is by stating that it is attached to whatever element happens to come before its attractor.

This second definitional characteristic distinguishes ditropic clitics from several other types of clitics with semantic mismatches. First, second position (or ‘Wackernagel’) clitics often have no regular semantic relation to their host. For example, the Latin enclitic *-que* ‘and’ in *hae-que canunt feminae* ‘and these women are singing’ has no relation with its host *hae* ‘these’. However, as already implied by the name ‘second position’, there is a clear structural characterisation of the clitic’s host, it being the first constituent (or first word) of the clause. Another phenomenon involving no necessary semantic relation between clitic and host is phrasal cliticisation. The most well-known case of a phrasal clitic is the English genitive’s as in *the queen of England’s hat*. There is no semantic relation between the genitive’s and its direct host *England*. However, there is a clear structural characterisation of the clitic’s position, it being attached to the last element of the possessor phrase.

Other bracketing paradoxes involving clitics will likewise not be further investigated in this article because the clitic’s host is easily characterisable. For example, the English auxiliary clitics (like ‘ll in *I’ll go there tomorrow*) also seem to be attached on the wrong side. Semantically, the auxiliary belongs together with the verb, which follows the clitic. However, this is not a case of ditropic cliticisation because the host of the clitic is not variable at all, it being the obligatorily preverbal subject. Similarly, articles cliticizing onto prepositions (e.g. French *du* < *de-le*, German *vom* < *von-dem*) represent a semantic mismatch, as the article would be expected to cluster with the following noun. However, the host is clearly strongly restricted lexically, it necessarily being a preposition.² All these example of cliticisation are interesting in themselves, but they are not as mysterious as real ditropic clitics, which attach neither to a semantically nor to a structurally definable host.

3. Previous approaches

In recent years, much effort has been invested in building theories of cliticisation to explain the various kinds of clitic attachment as attested in the world’s languages. One of the most influential analyses has been proposed by Klavans (1985), who presented a typology of eight different kinds of clitics on the basis of three binary parameters.³ In this typology, the types 1, 4, 5, and 8 are kinds of ditropic clitics. Types 1 and 5 are preposed enclitics, which are the subject of this article.⁴ Types 4 and 8 are the reverse cases, i.e. postposed proclitics. Klavans’ analysis is widely acknowledged to provide an appropriate tool for

approaching the diversity of clitic phenomena, though not all eight types are believed to be equally important.

There is some disagreement in the literature as to which of Klavans' eight types can be considered to be solidly attested and hence in need of explanation in a theory of linguistic structure. The existence of the ditropic clitics in particular has been repeatedly questioned. Sproat (1988:351–353) accepts all eight clitic types, though he argues that types 1 and 8 are only possible for clitics, and not for affixes. Most other commentators are more critical. Marantz (1988:267–269) criticises Klavans on a purportedly empirical basis, as “her system [...] predicts several types of clitics that are not found in the world’s languages”. In particular, he states that her types 4, 5, 6, and 8 are unattested. Spencer (1991:380) has “some misgivings about types 4 and 5”. Sadock (1991:76–77) considers types 4, 6, and 8 to be “vanishingly rare”. Halpern (1995:34–36; 1998:117–119) questions whether types 4, 5, 6, and 8 exist. Finally, Embick & Noyer (1999:290–299) consider the ditropic types 1, 4, 5, and 8 to be impossible, coming back full-circle to the original impetus for Klavans' work, as she considered precisely the (apparent) existence of these four types to be the “most interesting prediction of the system” (Klavans 1985:103). Klavans gives examples of all four ditropic clitic types, though most of her examples are not very convincing or factually doubtful, as has been repeatedly noted by her commentators. Only her examples of Kwakwala (of type 1) and Kugu Nganhcara (of type 5) turned out to be factually irrefutable cases of ditropic clitics.

There have been various strategies to disqualify ditropic clitics as a phenomenon *sui generis* which must be included in a theory of cliticisation. The most thorough argumentation against their existence is given by Embick & Noyer (1999), following a line of attack first sketched by Marantz (1988:268) and Anderson (1992:202–203; 1993:74–76). Anderson claims that the direction of attachment is a result of the “directionality of language-particular phonological rules” (Anderson 1993:75), which makes ditropic cliticisation a purely epiphenomenal effect. This argumentation is built on the fact that, in many cases, the ditropic cliticisation is arguably a result of simple cliticisation (‘simple’ in the sense of Zwicky 1977:6). If the clitic can be analysed as occurring in its syntactically base position, but as being phonologically deficient, then it is simply ‘leaning’ on whatever precedes it. In this way, Embick & Noyer (1999) dismiss the ditropic clitics from Kwakwala (p. 293), Kugu Nganhcara (p. 297) and Northern Mansi (p. 311), arguing that all these clitics occur *in situ*.

Note that in this kind of explanation, the *existence* of ditropic clitics is accepted. Implicitly, Embick & Noyer grant that the direction of cliticisation is

possibly different from the constituency of the clitics. In this way, they subscribe to Klavans' original observation that the direction of cliticisation is in principle independent of the constituency. The problem remains how it is possible that such an *in situ* element on a phrasal boundary can become a clitic, given that the result of this reduction is a morphological bond between a clitic and a host without any syntactic or semantic relationship. Embick & Noyer's analysis seems to make sense only when the clitic is an optional variant of a regular full form (for example, conditioned by fast speech), which makes the 'wrong-sided' bond a truly epiphenomenal effect. However, in many of the examples to be discussed below (and also in the examples discussed by Embick & Noyer), it is not the case that there exist both a clitic and a full version of the same element. In most cases, the ditropic elements are obligatorily phonologically deficient, being unable to occur without a host in the corresponding position.

Another way to view the examples of ditropic clitics as discussed in the literature is formulated by Spencer (1991:380), who states that ditropic clitics "should be excluded on general grounds, unless overwhelming empirical evidence should turn up in their favour".⁵ Such empirical evidence is exactly what I propose to provide in this article.

4. Cross-reference by ditropic clitics

The first set of examples of ditropic clitics mark cross-reference to the arguments of a verb. In almost all examples to be discussed in this section, the verb regularly occurs in sentence final position and there are cross-reference pronouns occurring before this verb. Yet these pronouns are enclitically attached to whatever constituent occurs before them. If the verb is the only sentence constituent (so there is nothing in front of the verb to attach to), then the clitics are in most cases 'moved' to be enclitically attached to the verb.

4.1 Kugu Nganhcara pronominal clitics

Ever since Klavans (1985:104–105) introduced Kugu Nganhcara (a Pama-Nyungan language from Cape York, Australia) as an example of ditropic cliticisation, this language has been discussed over and over again in the relevant literature – primarily to show that it could be analysed differently (Marantz 1988:268; Sproat 1988:356; Spencer 1991:379–380; Embick & Noyer 1999:294–298). However, at least from a purely descriptive point of view,

Kugu Nganhcara is a straightforward example of a language with ditropic clitics (Smith & Johnson 1985: 104–106; 2000: 397–404).

The Kugu Nganhcara ditropic clitics are optional bound pronouns. “Bound pronouns do not occur obligatorily in Nganhcara [...] Nor has the use of free pronouns been diminished by bound pronouns. Indeed [...] free pronouns frequently occur alongside their bound counterparts in the same clause” (Smith & Johnson 2000: 402). Syntactically, the bound pronouns are enclitic to whatever comes in preverbal position (3a). In contrast, the independent pronouns can be placed rather freely in the sentence. If the sentence contains only a verb, the enclitic is obligatorily attached to the verb (3b).

(3) Kugu Nganhcara (Smith & Johnson 2000: 400, ex. 62; 401, ex. 66)

- a. *nhila pama-ng ngathu ku'a-thu waa*
 3SG.NOM man-ERG 1SG.DAT dog-1SG.DAT give
 ‘The man gave me a dog’
- b. *waa-ngu*
 give-3SG.DAT
 ‘Give [it] to him’

The historical development leading to the Kugu-Nganhcara situation is reconstructed by Dixon (2002: 387–390). He argues that the clitics arose in reaction to the loss of cross-referencing verb suffixes, which are still found in other closely related Wik languages. Dixon adduces contact as a reason why the new enclitics in Kugu Nganhcara should occur in preverbal position. “This development can [...] be explained partly in terms of areal diffusion from its northern neighbour, Wik-Ngathan, which has pronominal enclitics which normally attach either to the word immediately preceding the verb or to the verb itself” (Dixon 2002: 388, 390).⁶ Further, Dixon (2002: 375) mentions the neighbouring languages from the South Cape York Peninsular Group (Morroba-Lama, Lama-Lama, Rimang-Gudinhma and Kuku-Waru, i.e. groups ‘Da-b’ in Dixon’s terminology) in which bound pronouns generally follow the verb but can immediately precede it. Hence, the structure of Kugu Nganhcara is not a singularity. Ditropic clitics occur as an areal trait in various languages in its vicinity.

4.2 Djinang/Djinba reduced pronouns

There are two more languages in Australia, not contiguous geographically with the previous area, that show ditropic cliticisation. Djinang and Djinba, two closely related Pama-Nyungan languages from Arnhem Land, have both full and reduced forms of the pronouns (Waters 1989: 30–36, 136–140). In contrast

to Kugu Nganhcara, the reduced pronouns are used very frequently. “Reduced pronouns may occur in the same clause as a coreferential full pronoun. When this obtains, the full pronoun typically marks a switch in participant focus [...] Usually, however, once reference has been established in a given clause, overt subject and non-subject NPs are omitted from surface structure, and the coreferential reduced pronouns function as sufficient referencing forms for the deleted NPs” (Waters 1989: 136). The reduced form of the pronoun always immediately precedes the sentence-final verb (4a). The vowel-initial short pronouns *irr* ‘I’ and *il* ‘we (dual inclusive)’ are “closely bound to the preceding formative (4b), while the consonant-initial enclitics are more able to stand as free forms” (Waters 1989: 281).⁷ However, again in contrast to Kugu Nganhcara, the reduced pronouns occur before the verb even when there are no other words in the sentence (4c), so they appear to be not necessarily enclitics. The ditropic effects as in (4b) are thus best analysed as the result of incidental phonological leaning. The existence of reduced pronouns in Djinang and Djinba is probably the result of contact with neighbouring non-Pama-Nyungan languages. These languages have pronominal prefixes on the verb, which might explain the strictly preverbal placement of the reduced pronouns in Djinang (Waters 1989: 279–281; Dixon 2002: 379–380).

(4) Djinang (Waters 1989: 237, ex. 72; 223, ex. 43; 245, ex. 255)

- a. *nambidi-ban girri prisoner-ban bili-ny djin*
 inside.ALL-FOC COMP prisoner.ACC-FOC 3DU-ACC 3PL.ERG
yagirr-djin
 insert-PAST
 ‘Inside (a prison) they then imprisoned them (as) prisoners’
- b. *nguli wal-d-irr dirradji-la*
 that.LOC food.ACC-?-1SG.ERG eat-PAST
 ‘There I kept eating food’
- c. *bil gir-ali*
 3DL.NOM go-PAST
 ‘They (i.e. the two children) went’

4.3 Kherwarian pronominal suffixes

In various Munda languages the subject markers are suffixed either to the main predicate or to the word that stands directly before the main predicate. Real ditropic clitics are found in the Kherwarian languages, a group of closely related and structurally very similar North Munda languages (e.g. Mundari, Santali,

Ho, Bhumij). In all Kherwarian languages, exemplified in (5) by Santali, the unmarked position of the suffix is on the preverbal constituent. This positional rule holds independently of the kind of element that is present in preverbal position – in (5a), for example, a complex noun phrase, and in (5b) a sentential negator. However, in a few contexts, the suffixes are placed postverbally. First, when the sentence consists only of a verb, then the subject is suffixed to this verb, as illustrated in (5c). Further, in imperative sentences the subject marker is placed postverbally, independent of the presence of other preverbal constituents, as illustrated in (5d).⁸

- (5) Santali (Neukom 2001:203, ex. 5, 207, ex.31, 114, ex. 4, 147, ex. 1)
- a. *gam, kəhni, kudum emanteak'-ko jorao-akat'-a*
 story tale riddle and_such-3PL.SUBJ compose-PERF-IND
 'They have composed stories and tales, riddles and so on'
 - b. *onate cet'-h̄s̄ ba-e met-a-e-kan-a*
 therefore anything-also NEG-3SG.SUBJ say-APPL-3SG.OBJ-INPF-IND
 'Therefore she was not say[ing] anything to him'
 - c. *met-a-pe-kan-a-ŋ*
 say-APPL-2sg.o-ipv-ind-1sg
 'I tell you'
 - d. *mase mit' ghəri d̄ɔhɔ-ŋ̄s̄g-eŋ-pe!*
 PTCL one moment put down-little-1sg.o-2pl
 'Put me down for a moment!'

Ditropic clitics are not attested in Munda outside of the Kherwarian subgroup, but two other Munda languages, Kharia and Gutob, show a similar phenomenon. The default position of the subject suffixes in both languages is postverbal, as illustrated in (6a) and (7a), but in some constructions the suffix occurs immediately preverbally. In Kharia, the suffixes are attached preverbally only when the sentential negator is present (6b). In Gutob, the suffixes are attached to a variety of preverbal elements; Zide (1997:317–323) mentions the wh-pronouns *ūdoj* 'when' (7b), *mono* 'where' and *maŋ* 'why', and the adverbs *eke* 'here', *a* 'now', *begi* 'quickly', and *dapre* 'afterwards'. The clitics in Kharia and Gutob are not ditropic clitics, as the clitic's host is easily structurally definable. Still, these languages show a situation intermediate between the ditropic situation in Kherwarian and 'normal' verb suffixes as found in most of the remaining Munda languages.

- (6) Kharia (J. Peterson p.c.)
- a. *am-bar hokaɾ-te yo-te-bar*
 2-2.HON 3SG-OBL see-PAST-2.HON
 ‘You (polite) saw him/her’
- b. *am-bar hokaɾ-te um-bar yo-te*
 2-2.HON 3SG-OBL NEG-2.HON see-PAST
 ‘You (polite) did not see him/her’
- (7) Gutob (Zide 1997:317, ex. 9; 323, ex. c)
- a. *jom-lai bu-o²-NIŋ*
 name-ACC beat-PAST-1SG
 ‘I will beat up Jom’
- b. *NIŋ ūdoj-NIŋ sorpei-o²-be²-tu*
 1SG when-1SG hand over-PAST-AUX-FUT
 ‘When will/do I hand over (the girl to the tiger)?’

4.4 Udi subject person markers

In Udi, a Lezgian language from Azerbaijan, subject person markers occur encliticised to various positions in the clause. The placement of these person clitics has recently been described in great detail by Harris (2000; 2002). The discussion here only amounts to a small excerpt of the many details in the positioning of the Udi person markers (cf. Ch. 6 of Harris 2002 for a complete analysis of all variants). Roughly summarised, this subject marker is either enclitic somewhere on (or ‘in’) the verb (8a), or on a constituent directly before the verb (8b, c, d). The verb is regularly sentence final (8b). Although some word-order variation is possible, the clitic remains strictly preverbal (8c). The preverbal constituent onto which the clitic is attached is most commonly an object noun phrase, though other kinds of constituents can also function as host (8d). At first sight, there does not appear to be a regular characterisation of the preverbal constituent, so this would again be an example of ditropic cliticisation. However, Harris (2000; 2002: Ch. 3) argues convincingly that the preverbal position in Udi is used for the marking of focus. The preverbal clitic is thus attached to a constituent that, although not identifiable semantically or structurally, is characterisable pragmatically as it is attached to the element in focus.

- (8) Udi (Harris 2002:55–56, exs. 23, 27)
- a. *äyel-en p’a eš a-ne-q’-e*
 child-ERG two apple take-3SG-take-AOR
 ‘The child took two apples’

- b. *äyel-en p'a eš-ne aq'-e*
 child-ERG two apple-3SG take-AOR
 'The child took two apples'
- c. *äyel-en-ne aq'-e p'a eš-n-ux*
 child-ERG-3SG take-AOR two apple-OBL-DAT
 'The child took two apples'
- d. *me xinär-en täksa k'inig-iy-o laxo-ne fikirbeso?*
 DEM girl-ERG only book-PL-DAT about-3SG think
 'Does this girl think only about books?'

4.5 Northern Talysh clitic pronouns

The positioning of clitics in Northern Talysh, an Iranian language from the border area of Iran and Azerbaijan, shows a remarkable similarity to Udi.⁹ In Northern Talysh, the agent (ergative) cross-reference marker is most commonly attested on the preverbal element, the verb being clause final (9a, b). On occasion, the clitic can also be found on other elements of the clause, like the first word in (9c). When there is no preverbal constituent, the clitic will be attached to the verb itself. For all cases, Schulze (2000: 54–55) claims that the position of the clitic is determined by focus. The clitic is attached to the constituent that is in focus, and the most frequent position of the focussed constituent is directly preverbal.

(9) Northern Talysh (Schulze 2000: 55, ex. 80; 53, ex. 72f.)

- a. *de čič-ə epışt-a?*
 2SG.PRON what-2SG tie up-PERF
 'What did you tie up?'
- b. *čay ləng-on-əm epəšt-a*
 3SG.POSS leg-PL-1SG tie up-PERF
 'I tied up his legs'
- c. *albahal-əm tifang ba po pekərn-i*
 this moment-1SG rifle to down take up-AOR
 'In this moment I took up the rifle from below'

Schulze (2000: 52) states that this situation is "also present in a great variety of other Iranian languages". Somewhat more concretely, D. Stilo (p.c.) informs me that such 'floating' clitics are attested in various Northwest and Southwest Iranian languages. As far as I have been able to gather from published sources, the same situation appears to exist in Southern Tati (Yar-Shater 1969: 155–157), a close relative of Northern Talysh (although the description does not

allow far-reaching conclusions on the conditions of clitic placement) and in the Jewish dialect of Hamadān (Stilo 2003:625–626). In all these languages, some restrictions exist as to which constituents can take the clitic. In Hamadān, the clitic cannot be attached to a possessed noun (which would result in a doubled pronominal suffix), and both in Hamadān and Northern Talysh, the clitic cannot be added to the subject. Also, the ‘floating’ clitics only occur in particular tense/aspect forms, mainly past.

5. Clause-chaining ditropic clitics

The next set of examples of ditropic clitics involves clitics that link two clauses together. In the examples from both Ingush and Northern Mansi, the verb in the subordinate clause is clause-final and the clause-linking particle occurs prefinally in this clause, being enclitic to whatever comes before the clause-final verb.

5.1 Ingush clause chaining

In a direct attempt to prove the existence of one of the ditropic types in Klavans’ typology, Peterson (2001) presents the enclitic particle *ʔa* from Ingush, a Nakh-Dagestanian language from the Caucasus (cf. Good 2003:301–331 for a comparable account of *ʔa* in Chechen, a close relative of Ingush). This particle has two main functions. First, it is used to mark some form of emphasis on the element onto which it attaches (Peterson 2001:145–146). Second, and most frequently, this particle is used in chained (subordinate) clauses (Peterson 2001:146–153). In this second function, the particle *ʔa* is best translated into English as ‘and’. In these cases, it is consistently enclitic onto the directly preverbal element, the verb being clause final (10a). If there is no preverbal element, the verb is reduplicated so as to host the clitic (10b).

(10) Ingush (Peterson 2001:147, ex. 10; 150, ex. 23b)

- a. *muusaa gaziət=ʔa dieš-až, aara vax-ar*
 Musa newspaper-and read-CONV out leave-PAST
 ‘Musa left reading the newspaper’
- b. *doaxan daaža=ʔa~daaž-až hʃea-ča či=dax-ar*
 cows graze=and~graze-CONV barn-LOC in=go-PAST
 ‘The cows grazed and went into the barn’

5.2 Northern Mansi conditionals

In their discussion of ditropic clitics, Embick & Noyer (1999:299–310) extensively discuss the case of the conditional particle *-ke* ‘if’ in Northern Mansi (Vogul), a Uralic language from Russia. This example was originally brought up by Nevis (1990:353, 362), who claims that the conditional clause in Northern Mansi is verb final, and the conditional suffix occurs enclitic to whatever word precedes this verb (11).

(11) Northern Mansi (Nevis 1990:353)¹⁰

χum jot-ke āl-ey-em, náurem χani
 man with-if live-PRES-1SG child cling.3SG
 ‘When I live with a man, the child clings to me’

In an in-depth investigation of conditional sentences in various Finno-Ugric languages, Riese (1984:66–70) analyses a corpus of 223 conditional sentences of Northern Mansi, and finds that in 67% the particle *-ke* indeed occurs enclitic on the preverbal element, as in (11). In another 12%, the conditional clause consists of a verb only, and *-ke* is added enclitically to this verb. In an additional 14%, the particle *-ke* is added to the final verb, even though there were preverbal words available as potential hosts in the conditional clause. In the remaining 7%, the particle is positioned elsewhere in the conditional clause. Regarding these last cases, Riese (1984:70) comments that “it is very likely that emphasis plays a major role in such a positioning of the particle”. Thus *-ke* normally occurs prefinally and sometimes finally, with a few exceptions (partly) determined by pragmatic factors.

This situation is found only in Northern Mansi and not in the other Mansi variants. The particle *-ke* originated in Zyrian, where it is generally attached to the first or second element of the conditional clause (Riese 1984:134). The particle has been borrowed into all Mansi dialects, but a preference for encliticisation onto the preverbal constituent is found only in Northern Mansi, geographically closest to Zyrian. In Western Mansi, the particle appears to be rather free in its placement in the sentence (Riese 1984:90). In Eastern Mansi it is generally sentence final, and thus regularly enclitic to the verb (Riese 1984:81). In Southern Mansi, the particle has been incorporated into the verbal inflectional mood marking (Riese 1984:97–98). This dialectal variation probably reflects a grammaticalisation cline from Wackernagel-type second position clitics to purely lexically determined verbal inflection, the ditropic position being an intermediate stage.

6. Ditropic clitics in noun phrases

Cliticisation ‘on the wrong side’ is also attested in noun phrases. In all cases to be discussed in this section, some initial element of the noun phrase attaches enclitically to whatever comes before the noun phrase.

6.1 Kwakwala (Kwakiutl) determiners

Beginning with Klavans (1985), the Wakashan language Kwakwala (Kwakiutl) has been recurrently cited as a case of ditropic cliticisation. The description by Anderson (1984) is quite clear on this issue. In Kwakwala, the NP-initial deictics (often best translated as definite markers) are enclitic to whatever constituent occurs before the NP. For example, in sentence (12), all three nouns have deictics, but each deictic is phonologically enclitic to the constituent before the respective NP. Even the instrumental marker *-s-* of the noun ‘club’ is ditropic, being attached to the preceding direct object ‘otter’.

(12) Kwakwala (Anderson 1984:24)

k^wix?id-ida bəg^wanəma-x-a q’asa-s-is t’əlwag^wayu
 clubbed-DEF man-OBJ-DEF otter-INST-3SG.POSS club
 ‘The man clubbed the sea-otter with his club’

The same situation as in Kwakwala may exist in its close relative Haisla, though the available description is not very informative on this point. Lincoln & Rath (1986:43, 49) note that “in connected speech, several [...] proclitics, for instance certain demonstratives used attributively, have the [...] tendency [...] to behave as enclitics, without the loss of phonemic material” (Lincoln & Rath 1986:43). This statement clearly points towards a case of ‘simple’ cliticisation. In Heiltsuk, another Wakashan language, though from a different subgroup than Kwakwala, unstressed deictics likewise occur initially in the NP. However, in this case the deictic is described as being attached proclitically to its own NP (Rath 1981:87–88).

6.2 Yagua object doubling

A comparable situation is attested in Yagua, a language of Peru. Yagua has pronominal objects that are often, though not always, used coreferentially with a full object NP (a case of ‘clitic doubling’, Everett 1989). The functional difference between a full object NP occurring with and without a coreferential pronoun is unclear (Payne & Payne 1990:366). If present, the singular and the

inclusive object pronouns are obligatorily enclitic. The other pronouns are normally free forms, though in fast speech they can also be enclitic (Payne & Payne 1990: 364–365).

When the clitic ‘doubles’ the object, it is structurally ditropic. As was illustrated in (2), repeated below as (13a), the object enclitic always occurs immediately before the full object NP, being attached to whatever constituent occurs to the left of this NP. The clitic always precedes the entire NP, as in (13b), where the clitic is placed before the complex NP ‘Tom’s two bananas’. It might be questioned whether the clitic truly belongs to the full object NP. This strongly depends on the details of the researcher’s favourite syntactic analysis. Most crucial in this respect are some phonological criteria and the fact that it is not possible for any other element to occur between the object clitic and the full object NP (Payne & Payne 1990: 365–366).¹¹

(13) Yagua (Payne & Payne 1990: 365, ex. 373; 350, ex. 311b)

- a. *sa-púúchiy* *Pauro rooriy-vĩĩnu-níí* *Anita*
 3SG.SUBJ-lead/carry Paul house-inside-3SG.OBJ Anita
 ‘Paul leads/carries Anita inside a/the house’
- b. *ray-vaata-rà* *ána-jo-júy* *Tomáása naváa*
 1SG-want-3SG.OBJ.INAN two-fruit-two Tom banana
 ‘I want Tom’s two bananas’

6.3 Greek pronominal possession

Another example of this exotic phenomenon is found in the possessive marking of Ancient Greek. In Ancient Greek, the genitive pronoun, indicating the pronominal possessor of a noun phrase, could occur initially, finally, or in second position in the noun phrase (Taylor 1996: 484–485). In all these positions, the genitive pronoun is strictly enclitic. This results in a ditropic clitic when the clitic is placed in NP-initial position, as shown in (14).

(14) Ancient Greek (Taylor 1996: 484, ex. 18a)

- kai peisthēso-ntai-sou* *tais* *rhēma-sin*
 and trust.FUT-3PL.MED-2SG.POSS DEF.DAT.PL word-DAT.PL
 ‘And they will trust your words’

In Modern Greek, the reduced possessive pronoun is regularly placed after the noun phrase (15a). Sadock (1991: 71–72) argues that the possessive pronoun can also be placed immediately before the possessed noun, but retaining its enclitic nature (15b). He claims that no other positions are possible for the clitic.

This would make the kind of structure in (15b) an example of ditropic cliticisation, as the head noun regularly occurs in final position in the noun phrase. In direct reaction to Sadock, Halpern (1995: 35–36) argues that an enclitic on the first adjective is also accepted by at least some speakers. He further argues that enclitics are possible on all adjectives.

(15) Modern Greek (Sadock 1991:71)

- a. *o-filos-mu*
 DEF-friend-1SG.POSS
 ‘my friend’
- b. *o-kalos palyos-mu filos*
 DEF-dearest old-1SG.POSS friend
 ‘my dearest old friend’

Neither Sadock nor Halpern (nor Anderson 1993:75, citing Sadock) apparently found it necessary to check some general reference works on Modern Greek. The literature quite uniformly describes a much less constrained situation. Joseph & Philippaki-Warbuton (1987: 163) say that “optionally, however, when the noun is modified by one or more adjectives, the possessive may attach enclitically to one of the adjectives, with no apparent change in meaning”. Mackridge (1987:222) notes in passing that “the possessive pronoun may also follow an adjective or other premodifier”. He claims that there is a slight difference in meaning (without specifying in what respect),¹² but a particular placement also “appears to take place often for purely euphonic reasons”. Most recently, Kolliakou (1999:32) argues that the possessive clitic has a ‘floating’ distribution, as “it can attach to a specifier, any prenominal adjective, or the noun”. Contrary to Sadock’s claim, then, Modern Greek is not a case of ditropic cliticisation.

7. Conclusion

The main conclusion of this survey is that ditropic clitics are indeed attested. It is surely a rare phenomenon, and an extensive search was needed to find examples among the world’s languages. Building on the work of previous scholars, I have been able to enlarge the collection of known cases to the present ten examples of ditropic clitics, many from languages which are arguably part of a larger linguistic area or a small genetic group in which various languages show cliticisation on the ‘wrong side’ (cf. the examples from Kugu-Nganhcara, Kherwarian, Northern Talysh, Ingush and Kwakwala). The

examples discussed in this paper should be taken seriously by any theory of cliticisation. Spencer's (1991:380) proposal that ditropic clitics "should be excluded on general grounds, unless overwhelming empirical evidence should turn up in their favour" is clearly refuted.

All the languages in this survey should ideally be compared on various subsidiary parameters, like their suprasegmental structure, the segmental characteristics of reduction in general and the nature of other clitic-like elements in particular. However, already from this admittedly rather rough survey, the various examples appear to be rather heterogeneous. This first impression suggests that ditropic cliticisation cannot be explained simply by building one overarching structural generalisation into one's theory of morphology. In the remainder of this conclusion, I will sketch some structural, pragmatic and historical approaches to explaining this unusual phenomenon.

One possible explanation for ditropic clitics is to propose that they are simple clitics, incidentally leaning to the 'wrong side'. This approach seems fruitful for the case of Djinang and for the noun phrase clitics from Kwakwala, Ancient Greek, and Yagua. In all these cases, the clitic is an optional variant of a free form, and both clitic and free form have the same syntactic distribution. For these languages, the ditropic cliticisation can thus readily be interpreted as an epiphenomenal effect due to the particular adjunction rules of the language in question.

In Kugu Nganhcara, the ditropic clitics are only sometimes used. However, the corresponding free forms have a completely different syntactic distribution – they are rather freely positioned in the sentence. In this case, the clitics cannot be interpreted simply as phonologically reduced forms of the full pronouns. Even more telling, none of the remaining examples presented (from Kherwarian, Udi, Northern Talysh, Northern Mansi, and Ingush) have any alternative to the ditropic clitics. The clitics are an obligatory part of the construction and cannot be left out. Nor are there any free counterparts that can be used to replace the ditropic clitics. In these cases, the ditropic clitics look more affix-like.

This division between simple cliticisation and the affix-like cases is roughly mirrored in the positional variability of the clitics. In most of the affix-like cases the ditropic position is not the only possible position of the clitic. When no host is available before the attractor, then the clitic will appear after the attractor as an enclitic to it. Such a switch of position is attested in Kugu Nganhcara, Kherwarian, Udi, Northern Talysh, and Northern Mansi. In Ingush, the root of the verb is reduplicated to host the clitic if there is no available preverbal host.

In contrast, Kwakwala and Yagua always have at least a sentence-initial verb to host a ditropic clitic from any following noun phrase.

Summarising, there is something special going on in at least Kherwarian, Udi, Northern Talysh, Northern Mansi, Ingush, and perhaps Kugu Nganhcara. These languages are all verb final, the ditropic clitics occur before this verb, these clitics have no comparable syntactically free counterparts, and when there is no preverbal constituent, the clitics are attached to the verb. The descriptions of Udi and Northern Talysh present a possible explanation for these cases, namely that pragmatic considerations play a role. The clitic is attached to the element that is in focus, the regular position of focussed constituents being immediately preverbal.

A final point of consideration is the diachronic dimension. Clitics are arguably a stage in the grammaticalisation of free forms into affixes. A number of authors have made various comments about the diachronic developments leading to ditropic clitics. Unfortunately, most of these comments are made only in passing and are not worked out in any comparative detail. A further problem is that the few speculations available do not converge on the same historical development. To the contrary, completely opposite developmental paths have been proposed for apparently quite similar cases. For Kugu Nganhcara, Dixon (2002: 387–390) proposes that the ditropic clitics are a stage in the development of prefixes. Clitics in the Pama-Nyungan languages are normally enclitics, so they normally cannot become prefixes. The situation in Kugu Nganhcara, Dixon argues, could be a last step before the development of prefixes. Unfortunately, there is no Pama-Nyungan language (yet?) that has taken this final step.¹³ For the Kherwarian languages, Anderson & Zide (2001: 17–21) propose the inverse scenario. They argue that the affixes were originally prefixes, and through a reanalysis of the boundary became suffixes on the preverbal constituent. Note that this would constitute a strong case of degrammaticalisation (but see Cysouw 2004 for a different interpretation of the Munda diachrony).¹⁴ For Northern Talysh, Schulze (2000: 52) argues that the word order was originally OAV, but has changed to AOV, with the exception of the pronominal clitics for A(gent). These clitics have remained in their original location, giving rise to the ditropic situation. If these three different scenarios describe the real historical developments, then there is little hope for a unified historical pathway to ditropic cliticization. However, a thorough comparison on all cases discussed in this article might shed a different light on the historical developments.

The present survey of ditropic clitics summarises one of the more striking possibilities of human language, which should not be dismissed in the formula-

tion of a theory of linguistic structure. Structural factors, pragmatic influences and historical accidents all have their share in the genesis of these often rather counter-intuitive structures.

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Notes

1. Cf. Zwicky (1985:286–290) and Zwicky & Pullum (1983:503–504) for a list of possible factors distinguishing between clitics and affixes.
2. In the case of both French/German [preposition+article] and English [subject+auxiliary], one might even see an instantiation of (phrasal) second position cliticisation – a line of analysis that will not be pursued further here.
3. In this article, I will only refer to Klavans (1985), though basically the same content is also found in her 1980 Dissertation from University College in London, which was distributed in 1982 by the Indiana University Linguistics Club in Bloomington, and finally published in 1995 by Garland in New York.
4. The difference between types 1 and 5 depends on the parameter INITIAL/FINAL, which determines whether the clitic occurs in the initial or final constituent of the phrase to which the clitic belongs (Klavans 1985:97). I will disregard this parameter, as it does not appear to have any interesting consequences.
5. To be precise, Spencer only makes this statement about ditropic types 4 and 5, but he accepts the existence of types 1 and 8.
6. Dixon here cites the Ph.D. dissertation by Peter Sutton (1978), which I have been unable to consult myself.
7. In Waters' (1989) grammar almost all reduced pronouns, including those with an initial vowel, are written as separate words – example (4b) being the exception. However, note the insertion of the apparently epenthetic *-d-* (unexplained by Waters) between host and clitic, making a strong case for the reduced pronoun being an enclitic.
8. This summary of Santali suffix placement appears to hold for all Kherwarian languages, e.g. for Mundari, see Sinha (1975:94) and for Ho, see Deeney (1975). However, Ramaswami

(1992: 128–132, 143–151) in his description of Bhumij gives many examples of multi-word indicative sentences with the subject marking suffixed to the verb, which indicates that preverbal placement is not the default position in this language.

9. As an explanation for this similarity, Schulze (2000: 56) claims that Udi “is heavily influenced by a yet unidentified (Talysh-like?) Northwest Iranian adstrate”.

10. Nevis here cites a Vogul dictionary by Munkácsi & Kálmán, which I have not been able to consult myself.

11. In Everett’s (1989: 354–355) analysis, this ‘wrong-way’ cliticisation is purely epiphenomenal, depending on case realisation and assignment.

12. C. Gabrielatos (p.c.) also mentions the possibility of a difference in interpretation. His intuitions suggest that the clitic can be attached to any constituent that is used in a contrastive sense.

13. In a different context, Steele (1977) has made a comparable proposal. In her analysis, which deals with cliticisation in Uto-Aztecan languages, she proposes that the Aztecan prefixes arose by reanalysis of originally second position clitics. At some stage, she argues, the verb followed these second position clitics, and by reanalysis the direction of attachment of these clitics changed from enclitics to proclitics to prefixes.

14. A further possible case of ditropic cliticisation is found in Kukuya, a Bantu language from Congo (Hyman 1987: 328–329, citing a reference grammar by Paulian 1974, which I have not been able to consult myself). It seems to be the case here that the typical Bantu subject prefixes have lost their morphological attachment to the verb, but are still positioned in front of the verb. What exactly the status of these morphemes is is unclear to me, but they might synchronically be ditropic clitics. This would then be a strong case of degrammaticalisation, alike to the proposal for Munda by Anderson & Zide (2001).

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Clitics or affixes?

On the morphological status of the future-tense markers in Serbian

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1. Introduction

This paper deals with the morphological status of the future-tense markers in standard Serbian.¹ It is argued that these markers are clitics rather than affixes, i.e., that they are wordforms rather than parts of wordforms – in spite of the fact that they have some characteristics of the latter.

A *wordform* is understood here as a relatively autonomous and cohesive linguistic sign, i.e., a sign

1) which can constitute a full utterance either (i) by itself or (ii) together with a wordform of type (i), meeting in the latter case a set of language-specific criteria, such as separability from a wordform of type (i) by other wordforms, permutability, etc., and

2) whose parts cannot change their position and can interact between themselves in a special way (internal sandhis, etc.).

It is a minimal sign in the sense that it cannot be described in terms of other signs of the same type, i.e., other wordforms.

A wordform must be an element of a lexeme (a lexical unit, stored in the lexicon).

An *affix* is taken to be a part of a wordform different from a stem; an affix within a wordform expresses an inflectional or a derivational meaning bearing on the meaning of the stem of this wordform.

The discussion of the problematic future markers of the Serbian verb is carried out within the Meaning-Text framework, in particular within the system of morphological notions put forward in Mel'čuk (1993–2000). Within this framework, a morphological item can be either a wordform or a part thereof; the existence of a third type of segmental entity, i.e., something which would be neither a wordform nor an affix, is not admitted on logical grounds. In particular, clitics are considered to be word forms (albeit 'bizarre' ones). This viewpoint is not shared by all researchers, and that is why the argumentation is needed.

The paper is structured as follows: Section 2 introduces basic data about Serbian future tense markers. Section 3 proposes a number of criteria (lexical, morphological, syntactic and morphonological) for distinguishing clitics from affixes and applies them to the case at hand. Section 4 summarizes the findings of the research reported in this paper.

2. The problem stated

Consider Serbian sentences (1a–b), featuring, respectively, the so-called *analytical* and *synthetic* future tense forms of the verb RADITI 'to work'.²

- (1) a. *Sutra ću radi+ti.*
 tomorrow FUT.1SG work.INF
 'I will work tomorrow.'
- b. *Radi==ću sutra.*
 work FUT.1SG tomorrow
 'I will work tomorrow.'

When discussing Serbian future markers, the conjugated verb, i.e., the verb which is to be put in the future tense, will be referred to as *lexical verb*. In (1), the lexical verb is RADITI.

Traditionally, the 3sg future tense marker *ću* is taken to be a (second-position) clitic form of the auxiliary-verb lexeme HTETI(aux). The same is true for the other five markers.³ As a form of this lexeme, then, *ću* has to be considered a wordform. However, if *ću* does look like a wordform in (1a), in (1b) it has the appearances of an affix, i.e., of a part of a wordform. Namely:

First, it interacts with the lexical verb in the way typical of affixes, since it provokes the truncation of the infinitive suffix *-ti*:

- (2) *radi+ti ću* ⇒ *radi==ću.*

Second, it triggers the palatalization of the verb stem's final /s/:

- (3) pas+ti ću ⇒ pas==ću ⇒ paš==ću.
 '[to] fall'

However, if a future marker follows an infinitive that is not its lexical verb, the truncation of the infinitive suffix -ti (and subsequent palatalization of the verb's final consonant) is not possible; cf. *Raditi će biti teško*, lit. '[to] work will be difficult' vs. **Radíće biti teško*. Also, no sandhis are possible between the future markers and the infinitive suffix -ći, regardless of the role of the infinitive (whether it is the marker's lexical verb or not); for more on this, see Section 3.

An alternation similar to one in (3) takes place in the noun stem before the nominal inflexional suffix -ju SG.INSTR; cf. *mladost* 'youth'+ju ⇒ *mladošću* ⇒ *mladošču*. I do not know of such an alternation between genuine word-forms. This suggests that *ću* has lost some properties of a wordform and is on its way of being grammaticized – becoming an affix. In other words, this indicates that its morphological status is uncertain.

Cases where the morphological status of a linguistic item is uncertain, or at least not immediately obvious, are not rare. Let me mention some data from Georgian and Polish relevant to the problem 'an affix or a wordform?'

In Georgian, the copula of the 3sg in the present of the indicative has a full and a clitic form: respectively, *aris* and *a*. As shown in (4b), the *a* form attaches to its own attributive dependent:

- (4) a. *Is lamazi aris.*
 he/she beautiful be-FULL.3SG
 'He/She is beautiful.'
 b. *Is lamazi==a.*
 he/she beautiful be-CL.3SG
 'He/She is beautiful.'

The *a* form has to be treated as a (clitic) word form, rather than as an affix, for the following two reasons:

1. It is a form of a full verb. This is parallel to the case of Serbian *ću*.
2. There is only one clitic form in the whole paradigm of the copula, namely the 3sg present indicative form, so that there are no grounds to treat it as a suffix of the adjective to which it attaches, since in that case one should expect to have corresponding forms for all persons in both numbers and all tenses. Thus, the *a* form is a simple morphological reduction of the full form *aris*.

In Polish, the person/number markers of the past indicative, **-em** [1sg], **-ś** [2sg], **-śmy** [1pl] and **-ście** [2pl],⁴ can or must be positioned after some wordform of the sentence (again, under some specific conditions, which will not be discussed); cf. (5). The same holds for the subjunctive-conditional marker **by** and all the person/number markers in this mood; cf. (6).

- (5) a. *Czyta+ł +a +ś.*
 read PAST FEM 2SG
 ‘You [a woman] were reading.’
 b. *Czy czyta+ł+a+ś?*
 INTERR
 ‘Were you [a woman] reading?’
 or *Czy+ś czyta+ł+a?*
 ‘Were you [a woman] reading?’
- (6) a. *By+ł +Ø +em młodszy.*
 be PAST MASC 1SG younger
 ‘I was younger.’
 b. *Gdy+by +m by+ł +Ø młodszy, ...*
 If SUBJ-COND 1SG be PAST MASC younger
 ‘If I were younger, ...’
 vs. **Gdy+by by+ł+em młodszy, ...*
 ‘If I were younger, ...’

Mel’čuk (1997: 180–182) treats these forms as *migrating affixes* (a migrating affix expresses a value of an inflectional category of a wordform w_1 while attaching to another wordform w_2 of the sentence). In a similar vein, Saloni (2000) calls them *moving endings* (*końcówkie ruchome*) and speaks of *agglutinating forms*. Spencer (1991: 371–374), however, considers them as clitics, i.e., wordforms. If we go by stress position, **śmy** and **ście** behave rather as clitics, since they do not displace the stress (which in Polish in most cases falls on the penultimate syllable of a wordform). Thus, we have *czytali**śmy*** ‘[we] were reading’, rather than **czytali**śmy***, i.e., *czytali_[w1]==**śmy**_[w2]* rather than **czytali+**śmy**_[w]* (the stressed vowel is boldfaced). Furthermore, these markers admit factorization in a coordinate construction, like in *Pisali**śmy** i czytali* ‘[we] were writing and reading’. However, **-em** is rather like an affix, as it does cause the stress to shift; cf. *robił+Ø* ‘[he] worked’ vs. *robił+em_[w]* ‘[I] worked’. Thus, we have contradictory indications within the same paradigm: **-em** behaves more as an affix, while **-śmy** behaves more as a clitic.⁵

Let us now turn back to Serbian future markers and consider some consequences of treating them as (clitic) wordforms or as affixes, respectively. If

these markers are to be treated as wordforms, then we must conclude that there is no synthetic future in Serbian (in accordance with what was stated already in Browne 1970). If they are to be treated as suffixes, then the lexeme HTETI(aux) has no clitic forms and, more importantly, the future markers are not part of the clitic cluster. (A clitic cluster is a grouping of all second-position clitics of a clause – pronouns, auxiliaries, the voice marker SE, the emphatic and the interrogative particles – that come in a rigid mutual order and are positioned together within the clause, again according to rigid rules; see Milićević 1999: 231–256.) This is a problematic outcome, which runs counter to the intuition of native speakers and traditional position of Serbian grammars. In what follows, I will give a number of arguments showing that Serbian future markers are indeed clitics. (This is in line with Spencer 1991: 374; Halpern 1995: 66, who also suggest that these markers are still clitics in spite of their several apparent suffix-like features.)

3. Criteria for distinguishing clitics from affixes

Two types of criteria used to distinguish clitics from affixes will be discussed and applied to Serbian future markers: syntactic and morphological. The behavior of these markers will then be tested against the corresponding criteria of Zwicky & Pullum (1983). First, however, let me mention two general considerations – a lexical and a morphological one – which argue in favor of treating Serbian future tense markers as clitics, rather than as affixes.

1) As already stated (Note 3), Serbian future tense markers are homophonous with the clitic forms of the semantically full verb HTETI '[to] want'; in addition, the two sets of forms have identical syntactic behavior. Thus, it does not seem justifiable to treat as suffixes the signs that are completely homophonous with forms of a semantically full verb.

2) Serbian future tense markers are still perceived by native speakers as having an internal structure, i.e., as being non-elementary signs: they are conjugated verbal forms; cf. the forms of the clitic 1sg and 1pl future marker and the corresponding forms of the semantically full verb MOĆI 'can':

\acute{c} _{radical}+ u _{affix}FUT.1SG, $\acute{c}e$ _{radical}+ mo _{affix} FUT.1PL and
 mog _{radical}+ u _{affix} '[I] can', $mo\acute{z}e$ _{radical}+ mo _{affix} '[we] can'.

3.1 Syntactic criteria

Five syntactic criteria will be proposed, all arguing in favor of treating *ću* as a wordform, i.e., a clitic.

- *ću* can take a clause with the conjunction DA ‘that’ as its complement; *Radiću* in (1b) is equivalent to (7):

(7) *Ja ću-synt* → [*da radi+m*]_{CompletiveClause} ·
 I FUT.1SG that_(Conj) work PRES.IND.1SG

In the (surface-)syntactic structure of (7), it is the DA-clause that depends on the future marker, rather than the other way round, and the future marker clearly cannot depend on the subject pronoun. This means that, in the syntactic structure of sentences like (7), the future marker functions as the top node, or absolute head. An affix can never assume this role.⁶

- *ću* can be used alone (i.e., without the lexical verb):

(8) *Kiša će. Sad ću ja. Kuda ćeš?*
 rain_(N) FUT.3SG now FUT.1SG I where FUT.2SG
 ‘It’s going to rain.’ ‘I will come right away.’ ‘Where are you going?’

As an apparent counterargument, one may invoke the case of Hungarian separable prefixes, which, under specific conditions, can constitute the whole utterance, in spite of the fact that they are parts of wordforms. Namely, such a prefix can be used as a positive answer to a question that targets the prefixed verb. Cf. the behavior of the Hungarian perfective prefix *meg-* (Mel’čuk 1993:202): –*Megkapta*_[V_{perf}] *a leveletem?* ‘Have you received my letter?’ – *Meg* ‘Yes.’ However, contrary to Hungarian perfective prefixes, Serbian clitic future markers do not require their lexical verb to be mentioned in the previous context in order to be used without it. (I cannot delve here into the conditions under which the ellipsis of the lexical verb can take place. Let it only be mentioned that the future markers are very frequently used alone; in fact, using the lexical verb along with them in contexts like those in (8) is marked.)

- *ću* can alternate with the full form in questions/answers:

(9) *Radi==će?* *Hoće.*
 work FUT.CL.3SG FUT.FULL.3SG
 ‘Will [he/she/they] work?’ ‘[He/she/they] will.’

This is the standard way of answering general questions, parallel to English usage of [to] DO. DA ‘yes’ can also be used, but it is more idiomatic to use the full form of the auxiliary with it: *Da, hoće*.

– *ću* can be coordinated with the corresponding full form *hoću*:

- (10) *Radi==će ali hoće li završiti posao ne znam.*
 work FUT.CL.3SG but FUT.FULL.3SG INTERR finish work [I] not know
 ‘(S)he will work but whether (s)he will finish the job I do not know.’

This means that there are two wordforms here: a wordform and an affix cannot be coordinated.

The following objection can be raised: *hoće* is coordinated with *radiće* as a whole. In fact, sentence (10) is ambiguous: in addition to the reading indicated above, with a full form of the future marker in the second conjunct, it also has a reading ‘[He/She] will work but whether [he/she] wants to finish...’, i.e., where in the second conjunct we have a full form of HTETI ‘want’ in the present; in this reading, *hoće* is indeed coordinated with *radiće* as a whole. (This is only true at the deep-syntactic level of representation, though.). However, I am here interested exclusively in the first reading, where two future markers are coordinated. Cf. also *Radiće ali hoće li hteti završiti ...* ‘[He/she] will work but whether [he/she] will want to finish...’, where this is also the case.⁷

– *ću* can be factored out in a coordinate construction, as in (11a). Such factorization is never possible in Serbian with genuine suffixes; cf. (11b):

- (11) a. *Peva==ćemo i igra==ćemo.*
 sing FUT.1PL and dance FUT.1PL
 ‘We will sing and will dance.’
 ⇒ *Peva==ćemo; i igradi__j*
- b. *Igra+mo i peva+mo.*
 sing PRES.1PL and dance PRES.1PL
 ‘We sing and dance.’
 ⇒ **Igra+mo; i peva+__j* <**Igra+__j i peva+mo*>

Note that the omission of the future marker is possible only in the second conjunct, never in the first one. This is typical of wordforms that are syntactic governors, not of affixes.⁸ Cf. the same behavior of the French past auxiliary *avoir* in *Il a; lu et __j apprécié* vs. **Il __j lu et a; apprécié* ‘He has read and appreciated’. Affixes in group inflexion behave exactly in the opposite fashion: it is always the last ‘conjunct’ that remains (Mel’čuk 1997:293).⁹

3.2 Morphological criteria

Generally speaking, hosts, i.e., full-fledged words to which clitics attach, are less likely to undergo phonological changes (sandhis) in contact with clitics than stems in contact with affixes. However, sandhis are not uncommon even between full words, let alone between a clitic and its host. Radanović-Kocić (1990: 40ff.) identifies the following sandhis taking place between Serbian clitics and their hosts: voicing assimilation, palatalization, stop deletion and degemination. But, in the case of future markers, sandhis do not happen in all contexts: they seem to be conditioned by the part of speech of the host and its idiosyncratic morphological properties, in particular the length of its stressed vowel.¹⁰ This kind of conditioning is characteristic of internal sandhis, i.e., sandhis between parts of wordforms. Here are some examples with *ću*.

– Palatalization

If the host is the *-ti* infinitive form of the lexical verb on which a future marker carries, palatalization is obligatory irrespective of the length of the host's stressed vowel.¹¹ Cf. (3a), repeated here as (12a), where the host PASTI '[to] fall' features a short [a], and (12b), where the host PASTI '[to] graze' has a long [a:].

- (12) a. [suffix-like behavior]
Pašće [\Leftarrow pasće \Leftarrow pas+ti će [pašće], rather than [pasće]
 '[He] will fall.'
- b. [suffix-like behavior]
Pašće [pa:šće], rather than *[pa:sće]
 '[He] will graze.'

With non-verbal hosts, the situation is different. If the host features a short vowel, as in (12c), palatalization is optional (even though less preferable). With a host featuring a long vowel, as in (12d), the palatalization is not allowed at all.

- (12) c. [clitic- or suffix-like behavior]
Pas će ga ujesti: [pasće] or, less preferably, [pašće]
 lit. '[The/A] dog will him bite.'
- d. [clitic-like behavior]
Pas će staviti: [pa:sće], rather than *[pa:šće]
 lit. '[A] belt [he] will put-on.'

– Stop deletion

Here, there are no examples with a verb as host, since, for phonotactic reasons, no Serbian verb can end in a sequence *b(-ti), *p(-ti), *d(-ti), *t(-ti), *k(-ti), or *g(-ti). With hosts other than a verb, we have a similar situation as above, i.e., optional deletion with a host featuring a short stressed vowel (although with the inverse preference with respect to optional palatalization), and no deletion if the host has a long vowel; cf., respectively, (13a) and (13b).

- (13) a. [suffix- or clitic-like behavior]
Sad će doći: [saće] or, less preferably, [sadće]
 ‘Now [he] will come.’
- b. [clitic-like behavior]
Sad će ovde zasaditi: [sa:dće], rather than *[sa:će]
 ‘[An] orchard [they] will here plant.’

The data examined so far suggest that a future marker has a stronger bond with a verbal host which is its lexical counterpart than with any other type of host, as certain sandhis obligatory with a verbal host are optional with a non-verbal one. This is only natural, because with the host being the lexical verb there is also a semantic link between *ću* and the host. Thus, in this case we have an argument in favor of the suffixal status of *ću*.

An argument to the contrary, that is, in favor of treating *ću* as a clitic, comes from regional usage. Serbian has a number of infinitives ending in *-ći*, which cannot be used in the synthetic future constructions: thus, for instance, only *Doći će* ‘He will come’ is possible in Standard Serbian. But in some regions of Vojvodina (Northern Serbia), forms such as the one in (14) are in use:

- (14) [clitic-like behavior]
 reg. *Doć==će:* [doćeće], rather than *[doće]
 come FUT.3SG

In Serbian, geminate consonants are not found on a stem/suffix boundary; for example, we have Gr+kinja ‘[a] female Greek’, rather than *Grk+kinja (cf. Grk ‘[a] male Greek’).¹² So, the sequence *ćeće*, i.e., the fact that there is no degemination in this case, indicates that there are indeed two wordforms in *Doćeće*.

3.3 Criteria proposed in Zwicky & Pullum 1983

Zwicky & Pullum (1983) propose six criteria for distinguishing clitics from affixes for English data. They examine the reduced auxiliary forms 've (have) and 'd (had or would) and the contracted negative n't, arriving at the conclusion that the former items are clitics and that the latter one is an affix. All the criteria proposed actually say that clitics are more regular in their combination with hosts than affixes are in their combination with stems. Let us try to use these criteria in our case. But, before we proceed, a word of caution is in order: we are dealing here with second-position clitics, which are different from those examined by Z&P (in the received terminology, ours are *special* clitics, while theirs are *simple*). As a result, some of their criteria are difficult to apply to Serbian clitics; cf. in particular the criterion 6. Nevertheless, such a comparison seems useful if only in the sense that it will better show similarities and differences between the two types of clitics.

Criterion 1:

Clitics are less selective with respect to their hosts than affixes are with respect to their stems.

Serbian clitics can attach to a host of any part of speech, while affixes, of course, cannot attach to a stem of any part of speech.

- (15) *On*_(Pron.pers) *će* ... *Ko*_(Pron.interr) *će* ... *Sutra*_(Adv.temp) *će* ... *Doći*_(V) *će*.
 he who tomorrow come.INF

Criterion 2:

There are fewer arbitrary gaps in clitic–host combinations than in affix–stem combinations.

This criterion states that there is no (or few) *particular* hosts that fail to combine with a clitic, while there may be particular stems that do not combine with a given affix.

There is only one host that does not accept the future markers: the semantically full verb HTETI 'want'; both **hteti će* and **hteće* are impossible (the correct expression must be *On/Ona/Oni će hteti* '[He/She/ They] FUT.3SG/3PL want'). This is rather an arbitrary gap in the sense that there are no semantic, morphological or phonological reasons for this incompatibility.

Note as well that, as indicated above, the verbs ending in -ći can host the future markers but they do not undergo the truncation and corresponding sandhis (except in regional usage illustrated in (14)).

Criterion 3:

Morphological idiosyncrasies are less common in clitic–host combinations than in affix–stem combinations.

According to this criterion, hosts are unaffected by the clitics: no special form of the host is required to combine with the clitics. Stems, however, often have to change their form when combining with an affix (for instance, a particular stem allomorph is required in combination with an affix).

In Serbian, the clitic cluster does not condition any irregularities in the form of its host: no suppletion, no unusual alternations (i.e., such that they would be triggered only in this particular combination and not elsewhere) are found. The converse is also true: the clitics do not have special forms depending on some hosts.

Criterion 4:

Semantic idiosyncrasies are less common in clitic–host combinations than in affix–stem combinations.

This criterion states that phraseologization is less likely to occur in a clitic–host combination than in a combination of an affix with a stem.¹³

There are no cases of phraseologization of the combinations of *ću* with its host. This is only to be expected, since, in most cases, *ću* is not even related semantically to its host.

Criterion 5:

Clitic–host combinations cannot be affected by syntactic rules, but affix–stem combinations can.

While syntactic rules normally do not target clitic–host combinations, at least some syntactic rules – e.g., agreement and government rules – must mention affix–stem combinations. This means that a normal syntactic rule may refer to different grammemes (of the number, the case, etc.) that are expressed by suffixes, but it is difficult to imagine a syntactic rule that refers to a host accompanied by a clitic. Thus, there is no syntactic rule in Serbian that mentions a clitic–host combination; in particular, a host and a clitic are never ‘moved around’ together. Serbian clitics are linearly positioned by rules independent from those that order full words of the sentence (because the clitics have to be in the second linear position), and *ću* is no exception to the rule.

Criterion 6:

Clitics can attach to the material already containing clitics but affixes cannot (attach to the material containing clitics).

In other words, this criterion states that an affix cannot follow a clitic.¹⁴

As any auxiliary, *ću* occupies the second position within the clitic cluster. (The clitic *je*, the 3sg form of the auxiliary BITI ‘[to] be’, must go into the cluster-final position, but this needs not interest us here). It follows the emphatic clitic LI:

- (16) a. *Kad li će zvati?*
when EMPH FUT.3SG call-INF
‘When on earth will he call?’

vs.

- b. **Kad će li zvati?*
‘When on earth will he call?’

There is yet another clitic having the form LI (and occupying the first position in the cluster), the interrogative LI. However, due to numerous restrictions on its use, in modern language, it never co-occurs with the future markers and is thus irrelevant from the viewpoint of this paper.

To sum up, according to all of the six criteria of Z&P, Serbian future markers behave as clitics, rather than affixes.

4. Conclusion

The paper has examined the morphological status of the future tense markers in Serbian, ‘deviant’ in that they behave as clitics (wordforms) in some contexts and as affixes (parts of wordforms) in others. To decide whether they actually are clitics or affixes, specific criteria have been used: lexical, morphological, syntactic and morphonological. While morphonological criteria have proven inconclusive, all the others have offered overwhelming evidence to the effect that these markers are indeed clitics, as posited at the outset. (In principle, lexical, morphological and syntactic criteria are much more important in this case because the opposition clitic ~ affix concerns rather the lexicon, the morphology and the syntax of a language.) The behavior of the future markers has been tested against criteria proposed by Zwicky & Pullum (1983), which have confirmed their clitic status. As a consequence, it has been established that the so-called *synthetic future* does not exist in Serbian.

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Notes

1. Most of the data described here are valid for Croatian as well.
2. A morphic boundary will be noted ' + ', a host-clitic boundary ' == '.
3. HTETI(aux) is a defective verb having only the present tense; it is related to the semantically full verb HTETI '[to] want', which also has clitic forms in the present, identical to those of the auxiliary. Here are all clitic forms of the paradigm:

ć +u [1sg] će+š [2sg] će+Ø [3sg]
 će+mo [1pl] će+te [2pl] će+Ø [3pl].

4. The 3sg and 3pl markers are left out of the discussion because they are zero signs.
5. Polish number-person markers are cognate with Serbian past tense markers, which are clitic forms of the auxiliary verb BITI '[to] be'; cf. *čitala si* read-PART.PAST.FEM.SG be-CL.IND.PRES.2SG and *čitali smo* read-PART.PAST.MASC.PL be-CL.IND.PRES.1PL, etc.
6. The future marker is the top node in the syntactic structure of a sentence like *Radiće*, as well, even though this seems less obvious without entering into a more detailed explanation, which I cannot afford here. The interested reader may consult Miličević (to appear).
7. HTETI_(aux) is more often followed by an infinitive than by a DA-clause; for HTETI 'want' it is the other way round. Thus, in *Hoće li završiti?* (= *Da li će završiti?*) the form *hoće* is rather interpreted as future ('Will [he/she] finish?'), while in *Hoće li da završi?* (= *Da li hoće da završi?*) it is rather taken to mean the desire ('Does [he/she] want to finish?'). This fact was noted in Browne 1986: 56–57.
8. In the coordinated construction [X→A] and [X→B], only the second occurrence of X, but not the first, can be omitted: X→A and B (*John reads a book and [he] reads a newspaper* → *John reads a book and a newspaper*).
9. With derivational affixes, it is sometimes the first and sometimes the second conjunct that remains; cf., respectively, the Spanish and the Catalan derivational suffix *-mente* and *-ment*, in the so called *coordinate tmesis*: *clara y detalladamente* 'clearly and in detail' and not **detalladamente y clara* vs. *pobrament i honesta* 'in poverty [lit. poorly] and honestly' and not **pobra i honestament*. However, the behavior of derivational affixes is of less interest for us here.
10. In Serbian, there are four tonal accents (usually not noted in standard spelling): short-falling, short-rising, long-falling and long-rising. However, since only the length seem to be relevant for our purposes here, rising/falling tone will not be indicated. A long vowel will be noted [V:].

11. Recall that in the case of a *-ti* infinitive that is not the lexical counterpart of a future marker no sandhis are possible.
12. Geminate consonants can occur in Serbian only on a prefix/stem boundary, where there is a strong secondary stress on the prefix, as in *naj+jači* ‘the strongest’ and *trans+sibirski* ‘trans-Siberian’.
13. A combination ‘stem+inflexional affix’ is less prone to phraseologization than a combination ‘stem+derivational affix’. However, examples of phraseologized inflexional forms can be found. Thus, we have Lat. *imprimatur* [lit. ‘let it be printed’ = ‘permission to print’]; Sp. *recibí* [lit. ‘I received’ = ‘receipt#1’], *pagaré* [lit. ‘I will pay’ = ‘receipt#2’]; Russian nominal case forms phraseologized as temporal adverbs: *dn+em* [lit. ‘by day’ = ‘during the day’], *večer+om* [lit. ‘by evening’], *utr+om* [lit. ‘by morning’], *noč’+ju* [lit. ‘by night’]; etc.
14. This claim is illustrated in Z&P with the following example: [two clitics] *I’d’ve done that had I known* vs. [a clitic and an affix] **I’dn’t be doing this unless I had to*. Cf., however, an example from the peninsular Portuguese which contradicts the above claim: *Screve+r==lhe+ei* ‘write FUT to-him 1SG’. Here, the person/number marker *-ei* follows the pronominal clitic *lhe*, which is inserted into a future-tense verb form.

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The demarcation of morphology and syntax*

A diachronic perspective on particle verbs

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1. Introduction

This paper discusses Dutch particle verbs, or *Separable Complex Verbs* (SCVs), which consist of a verb and a preverbal element corresponding to an adposition (preposition/postposition). An example is given in (1). As illustrated in (1b), SCVs are separated by Verb Second movement (V2).¹

- (1) a. subordinate clause (OV order):
dat Jan de boeken *opzoekt*
that John the books up-searches
'that John looks up the books'
- b. main clause (VO order):
Jan *zoekt* de boeken *op*.
John searches the books up
'John looks up the books.'

SCVs show both word and phrasal characteristics, and as a consequence, both word analyses and phrasal analyses have been proposed for these predicates.² In this paper I will argue that SCVs are to be analyzed as phrases with a specific morphosyntactic structure and specific lexicalization properties, both of which can be related to their diachrony.

The main argument against a word analysis for SCVs concerns their separability: words are not syntactically separable, syntactic rules (such as V2) generally being unable to refer to parts of words (cf. the Principle of Lexical Integrity, Lapointe 1980; Bresnan and Mchombo 1995). Word analyses of SCVs therefore either abandon or adapt Lexical Integrity. Nevertheless, such analyses

seem to provide a straightforward account of the various semantic and other properties that SCVs share with morphologically complex verbs.

The assumed word properties of SCVs will be discussed in Section 2. We will see that these properties do not constitute conclusive evidence for a morphological analysis of SCVs, and that some of these properties appear to be typical of *lexical units* instead of *morphological units* (i.e. words). In Section 3 a comparison will be made between SCVs and other non-morphological lexical units described in the literature. It will be shown that SCVs are to be analyzed as *partly* lexicalized phrases with a specific morphosyntactic structure. In Section 4 this status of SCVs will be related to their diachrony, SCVs representing an intermediate stage in two separate historical developments: a lexicalization development and a grammaticalization development. Finally, Section 5 will summarize the results.

2. The assumed word properties of SCVs

In this section the four main properties of SCVs that have been assumed to point at their word status will be discussed. It will be shown that these properties can also be accounted for by a phrasal analysis of SCVs.

First, SCVs may be the input for morphological processes such as compounding and derivation, as illustrated in (2).

- (2) a. SCV: *voorlez-en*
'lit. fore-read-INF, to read to someone, to read out (a notice)'
b. compound: *voorlees-boek*
'lit. fore-read-book, a book that can be read to someone'
c. derived N: *voorlez-er*
'lit. fore-read-er, one who reads to someone else'
d. derived A: *voorlees-baar*
'lit. fore-read-able, the property of being suited to be read to someone'

If one assumes a No-Phrase Constraint (Botha 1984), which states that only words or affixes, but not phrases can feed word formation processes, this would imply that SCVs, being able to do so, are words. However, this assumption is not correct, as Booij (2002a:209) points out: syntactic constructs may feed compounding and derivation as well, witness the examples in (3) (the adjectival and numeral inflections of the word-internal phrases, indicating their phrasal status, are printed in italics).

- (3) a. compounding: [oudemannen]huis ‘old men’s home’,
 [jongeondernemers]verbond ‘young entrepreneurs union’,
 [kleinemeisjes]fiets ‘little girls bike, a bike to be used by little girls’
- b. derivation: [vierdeklass]er ‘fourth classer, pupil of the fourth class’,
 [achtstegroep]er ‘eighth grouper, pupil of the eighth group’,
 [jongeondernemers]achtig ‘young entrepreneurs-like’,
 [kleinemeisjes]achtig ‘little girls-like’

The examples in (3) are not exceptional; there is some productivity in forming compounds and derivations with phrasal input.³

It has to be noted that compounds and derivations like the ones in (3) have a specific semantic property: when used in compounds or derived words, phrases lose their referential properties and have a non-referential, classificatory function. For instance, the phrase *kleine meisjes* ‘little girls’ in (3a–b) does not refer to specific little girls, but to the class of little girls in general: *kleinemeisjesachtig* ‘little girls-like, as is typical of little girls’, *kleinemeisjesfiets* ‘little girls bike, a bike to be used by little girls’.

Examples such as the ones in (3) show that there is no absolute No-Phrase Constraint in the sense that phrases can never feed compounding and derivation. This means that the fact that SCVs may feed word formation processes does not constitute conclusive evidence for their word status.⁴

A second assumed word property of SCVs is that they may have a non-verbal base, such as the SCVs *ophopen* ‘lit. up-pile, to pile up’ and *ophogen* ‘lit. up-high, to heighten, to raise’, which contain a nominal and an adjectival base respectively (the verbs **hopen* ‘to pile’ and **hogen* ‘to heighten’ do not exist). The combination of a particle with a noun or adjective, then, may bring about a category change. As category changes are generally assumed to be due to morphological operations, this property of SCVs has been assumed to point at their word status.

According to Booij (2002a: 211), however, the category change in SCVs differs from that in prefixed verbs. This is illustrated by (4a–c), (4c) containing the prefixed verb *vergroten* ‘lit. *ver*-big, to enlarge, to increase’.

- (4) a. De problemen *hopen* zich *op*.
 ‘The problems pile up.’
- b. De fabrikant *hoogde* de prijzen *op*.
 ‘The manufacturer raised the prices.’
- c. De atleet *vergrootte* zijn voorsprong.
 ‘The athlete increased his lead.’

In (4a) *hopen* and *hoogde* have verbal inflections and show up in the second position in the main clause, which is a position that is exclusive to verbs and involves a separation of verbs from the non-verbal parts of the predicate they form. From (4a) it follows that in denominal/deadjectival SCVs there is not only a verbal node on top of the combination of the particle and the nominal/adjectival base. Instead, in these SCVs the base itself appears to have become verbal, as represented in (5a). In this respect denominal/deadjectival SCVs differ from denominal/deadjectival prefixed verbs, as shown in (4b/5b).

- (5) a. SCV: [*op*-[[*hoop*]_N]_V]_V 'lit. up-pile, to pile up'
 [*op*-[[*hoog*]_A]_V]_V 'lit. up-high, to heighten'
 b. prefixed verb: [*ver*-[*groot*]_A]_V 'lit. *ver*-big, to enlarge, to increase'

Booij thus assumes these nouns and adjectives to be converted into verbs. Indeed, restrictions generally applying to conversion, such as the fact that complex words tend to be excluded from feeding it, also apply in these cases (cf. *op-kooien* 'lit. up-cage, to put into a cage' vs. **op-vogelkooien* 'lit. up-birdcage, to put into a birdcage', see Booij 1990).⁵

In sum, the category change in SCVs with non-verbal bases appears to be different from that in prefixed verbs with such bases. Therefore, the category changing data cannot be taken as conclusive evidence for the claim that SCVs are similar to prefixed verbs, i.e. for the claim that they are words.⁶

A third assumed word property of SCVs is that the addition of a particle may change the syntactic valency of the verb. Thus, a particle may transitive a verbal base, as in (6a), and in this respect the particle in (6a) is similar to the prefix *be-* in (6b).

- (6) a. SCV: de schoenen *in-lopen*
 'lit. the shoes in-walk, to break in the shoes'
 base verb: (*de schoenen) *lopen*
 'lit. (the shoes) walk, to walk (the shoes)'
 b. prefixed verb: de straat *be-wandelen*
 'lit. the street *be*-walk, to walk the street'
 base verb: (*de straat) *wandelen*
 'lit. (the street) walk, to walk (the street)'

The Projection Principle states that changes in the syntactic valency are due to morphological operations, syntactic structure being a projection of lexical properties. Consequently, the valency change found in SCVs has been taken as evidence for their morphological status.

However, phrasal combinations may also contain objects that are not licensed by the verbal base (so-called *unselected objects*). This is shown in (7), in which the resultative PP *aan flarden* ‘to shreds’ licenses the object *de schoenen* ‘the shoes’.

- (7) *de schoenen aan flarden lopen*
 the shoes to shreds walk
 ‘to walk the shoes to pieces’
 (cf. **de schoenen lopen* ‘lit. the shoes walk, to walk the shoes’)

Thus, the presence of unselected objects in SCV constructions does not in itself constitute conclusive evidence for the word status of these predicates, as such objects may show up in phrasal combinations as well.

A final assumed word property of SCVs is that their meanings do generally not follow straightforwardly from the combination of the meanings of the particle and the verb: they are conventionalized. As syntactic combinations are in general assumed to be transparent, this property has been claimed to speak against a syntactic analysis of SCVs. Examples of SCVs with conventionalized meanings are in (8).

- (8) a. *de boeken opzoeken* ‘lit. up-search, to look up the books’
 b. *de informatie opvragen* ‘lit. up-ask, to ask for the information’
 c. *de docent opbellen* ‘lit. up-ring, to call up the teacher’
 d. *de dokter oppiepen* ‘lit. up-beep, to beep up the physician’

In the SCVs in (8) *op* means ‘(physically/cognitively/perceptually) accessible’, the meaning of these SCVs being ‘to cause NP to become accessible by V-ing’ (for example, *de boeken opzoeken* means ‘to cause the books to become accessible by searching’, cf. Lindner’s 1983:126–127 discussion of the English particle *up*). In concrete instantiations of SCV constructions with *op* ‘accessible’, the meaning ‘accessible’ may receive a more specific interpretation on the basis of the information provided by the verb and its arguments (for instance, ‘available’ in contexts like (8a, b), containing inanimate direct object referents, and ‘contacted’ in contexts like (8c, d), containing animate direct object referents). The meaning ‘accessible’ is related to the basic, spatial meaning of *op* ‘upwards’ through metaphorical extension: in SCVs such as *opborrelen* ‘to bubble up’, *op* may simultaneously mean ‘upwards’ and ‘visible’. This second (extended) meaning, involving concrete, physical visibility, may be further extended to abstract visibility, that is, to the meaning ‘accessible’. This extended meaning of *op* is conventionalized; it is not available outside the SCV construction (thus, it is construction-specific).

Conventionalized meanings, however, are not exclusive to morphological units, but may also be present in syntactic combinations. This is, for instance, the case in *Sam joked his way into the meeting*, in which the noun *way* has a metaphorical meaning that it only expresses in this specific construction (Goldberg 1995: Chapter 9; Jackendoff 1990:211–223). Such construction-specific meanings have been linked to lexicalization. That is, *way*-constructions are assumed to be formed on the basis of a template like [*to V one's way PP*], containing both fixed and open slots and having specific semantic properties, thus representing a partly lexicalized phrase (see Booij 2002b; Jackendoff 2002: Chapter 6 for other examples of partly lexicalized phrases). Thus, the presence of conventionalized, construction-specific meanings in SCVs does not constitute conclusive evidence for their word status, as (lexicalized) phrases may exhibit this property as well.

The conventionalized meaning of *op* 'accessible' is present in a whole class of SCVs (cf. (8)), and the same holds for the meanings of most other particles. For instance, the particle *in* with the meaning 'in a certain, desired shape/state' is present in SCVs such as *de schoenen inlopen* 'to break in the shoes', *de auto inrijden* 'to run in the car', and *je inlezen* 'to read up'. In these SCVs, both the particle and the verb contribute their meaning to the construction. This means that apart from being conventionalized, these SCVs show compositionality. In the next section it will be shown that the co-occurrence of the properties conventionalization and compositionality is not as exceptional as it might seem to be at first glance.

To sum up, the assumed word properties of SCVs do not constitute conclusive evidence for a word analysis of SCVs, since these properties may also be exhibited by phrases, as far as the last property is concerned by (partly) lexicalized phrases. Thus, those properties of SCVs that are generally not associated with phrases and that have been claimed to be word properties can be analyzed as lexical unit properties instead (lexical units being either morphological units or not). On the basis of this I argue that SCVs, being separable, are non-morphological, lexical units (cf. Booij 1990, 2002a:213–216, 2002b; Jackendoff 1997: 159, 2002:173).

3. "Compositional idioms"?

In the previous section it was shown that SCVs are both conventionalized and compositional. Indeed, these two properties do not exclude one another, as has been argued by Nunberg, Sag & Wasow (1994) (henceforth NSW). NSW dis-

tinguish a special type of idiom: the idiomatically combining expression (ICE). Examples of ICEs are *pull strings* ‘have under control, be in charge’, *keep the ball rolling* ‘keep the conversation (etc.) going’, *hit the hay* ‘go to sleep’, and *come to blows* ‘get into a fight’. They contrast ICEs with idiomatic phrases, such as *kick the bucket* ‘die’ and *saw logs* ‘snore loudly’.

ICEs differ from idiomatic phrases in that they are compositional, that is, their meaning is distributed among their parts (e.g. *pull* and *strings*). In the case of *pull strings*, NSW claim that “*strings* can be used metaphorically to refer to personal connections when it is the object of *pull*, and *pull* can be used metaphorically to refer to exploitation or exertion when its object is *strings*” (p. 496). Thus, both parts are assumed to express metaphorical or otherwise figurative meanings that are dependent on their occurrence in the ICE. Consequently, the meaning of an ICE is compositional and motivated, but at the same time it is not fully predictable: it is conventionalized.⁷

NSW assume the compositionality of ICEs to be related to the fact that they participate in constructions involving passive formation, raising, and topicalization and modification of parts of the ICE, which idiomatic phrases do not. That is, whereas the idiomatic meaning is not available in *logs were sawed*, *he kicked a slow bucket*, and *the bucket, he kicked*, it is so in *the strings were pulled*, *the strings seemed to be pulled*, *pull yet more strings*, and *those strings, he wouldn’t pull for you*.⁸ In addition, the parts of an ICE, contributing their (figurative) meaning to the ICE’s meaning, can be substituted with semantically compatible elements, resulting in families or pairs of idioms, such as *keep/start/get/have/set the ball rolling*, *hit the hay/sack*, and non-causative/causative pairs like *come/bring to blows*.⁹

As we have seen, SCVs also show both conventionalization and compositionality. Similarly, the parts of an SCV can be substituted with semantically compatible parts to form families/pairs of SCVs. For instance, there are non-causative/causative pairs (*uitkomen* ‘to come out’ (of a book) vs. *uitbrengen* ‘to bring out’ (a book)) and families of SCVs with the same particle expressing the same meaning (*op* ‘accessible’: *opzoeken* ‘to look up’, *opvragen* ‘to ask for’, etc., see (8)). Thus, SCVs appear to be similar to ICEs in various respects. However, SCVs differ from ICEs in at least two respects.

First, SCVs cannot participate in all of the constructions mentioned above: whereas they can be passivized (*de boeken werden opgezocht door Jan* ‘the books were looked up by John’) and raised (*hij scheen de boeken te hebben opgezocht* ‘he seemed to have looked up the books’), their particles cannot be modified (**de boeken helemaal opzoeken* ‘to look up the books completely’), nor be topicalized (**maar op zocht hij de boeken niet* ‘but look up the books, he did not’).¹⁰

Following, among others, Booij (2002a, b) and Toivonen (2003), I assume this property of particles to be related to their specific morphosyntactic structure: a particle is a non-projecting word (X) and does not project a phrase (XP). As only phrases can host a modifier and can be topicalized, this explains the impossibility of particles to participate in these constructions.¹¹ SCVs, then, are assumed to have the following structure: $[X-V^0]_{V^r}$.

The non-projecting status of particles is assumed to be related to another property typical of these elements: all particles may appear in the verb cluster along with the verb (9a), whereas projections (XPs), such as direct object NPs (9b) and resultative phrases (9c), may not do so in (standard) Dutch.

- (9) a. particle + V:
 dat Jan de boeken *wilde op-zoeken* / *op wilde zoeken*
 ‘that John wanted to look up the books’
- b. NP + V:
 dat Jan **wilde zijn fiets verven* / *zijn fiets wilde verven*
 ‘that John wanted to paint his bike’
- c. AP + V:
 dat Jan zijn fiets **wilde oranje verven* / *oranje wilde verven*
 ‘that John wanted to paint his bike orange’

A second difference between SCVs and ICEs is shown in the example in (8d) above (*de dokter oppiepen* ‘to beep up the physician’): SCV classes may be productively extended. Apart from showing conventionalization and compositionality, then, the SCV system is productive. ICEs, on the other hand, cannot be productively formed.¹²

As is the case with *oppiepen*, productive SCV formation generally appears to involve the combination of a specific particle with a specific meaning, present in various existing SCVs, with a new verb. Therefore, it is plausible to assume SCV formation to be based on templates such as $[op_X-V^0]_{V^r}$ ‘to cause NP to become accessible by V-ing’, which contains a fixed particle slot and an open slot for the verb. By inserting verbs into the verbal slot, new SCVs with *op* ‘accessible’ are formed. Such SCV templates, containing a fixed slot and an open slot, represent partly lexicalized phrases (Booij 2002a, b).¹³

In sum, SCVs and ICEs are similar in that they both represent phrases that are conventionalized as well as compositional. In addition, the SCV system shows productivity, which can be accounted for by assuming SCV patterns to form *partly* lexicalized phrases, containing both a fixed and an open slot. Furthermore, the morphosyntactic structure of SCVs appears to be different from that of most phrasal combinations (such as NP-V combinations) in that

the particle is a non-projecting word. Although this status of SCVs might seem exceptional from a synchronic perspective, I will show in the next section that it falls naturally into place in a diachronic approach.

4. The diachrony of SCVs

As said, SCV patterns form partly lexicalized phrases. Thus, they seem to be halfway in a lexicalization development, in between completely free phrasal combinations and completely lexicalized phrasal combinations, such as *pull strings*. This is illustrated in (10).

- (10) Lexicalization development of individual phrasal combinations:
 completely free > partly fixed, partly > completely fixed
 combinations free combinations combinations

Furthermore, SCVs seem to represent an intermediate stage in a structural development: on the one hand, SCVs are smaller than most phrasal verbal combinations, which consist of a verb and one or more projecting words (for instance, an NP, as in NP-V combinations like *de fiets verven* ‘to paint the bike’). On the other hand, SCVs, being phrases, are structurally bigger than (inseparable) morphologically complex verbs, which consist of a prefix and a verbal stem: [prefix-V⁰]_{V⁰}.¹⁴

There is evidence that this structurally intermediate status of SCVs results from their diachrony: SCVs are halfway in the development from phrasal combinations into morphologically complex words. The assumed development is illustrated in (11).

- (11) Grammaticalization of the pattern XP-V into prefix-V:
 structural pattern: [...XP V⁰]_{VP} > ...[X-V⁰]_{V⁰} > ...[prefix-V⁰]_{V⁰}
 preverbal element: projecting word > particle > prefix

The development in (11) is a grammaticalization development, involving the loss of structure in the preverbal element, the reanalysis of this element with the verb as a (separable) syntactic unit (SCV), and its subsequent development into an (inseparable) morphological unit (prefixed verb). In addition, various semantic changes are assumed to be involved.

As shown in Blom (2004) and Blom & Booij (2003), discussing data from older stages of Dutch, both steps in (11) are supported by historical data. That is, a comparison of data from older stages of Dutch and Modern Dutch supports the claim that different types of phrases immediately preceding the verb

have grammaticalized into particles, and that particles have developed further into prefixes.

Although most SCVs represent the second stage in both the development in (10) and that in (11), there are some SCVs that are in the second stage only in the grammaticalization development, but not in the lexicalization development. For instance, in an SCV such as *zich aanstellen* ‘lit. oneself at-put, to put on airs’ the particle *aan* performs a function that it does not perform in any other SCV, and, in addition, new SCVs with *aan* performing this function cannot be formed. Thus, *aanstellen* is not compositional, nor related to productive SCV formation. This suggests that it is not *partly* lexicalized, but *completely* lexicalized, representing the third instead of the second stage in (10). In addition, there are some particle–verb combinations that do not show any lexicalization, the SCV meaning following straightforwardly from combining the meanings of the particle and the verb. Such SCVs, then, represent the first stage in (10). An example of such an SCV is *opgooien* ‘lit. up throw, to throw up(wards)’.

Importantly, though, the morphosyntactic properties of these few SCVs showing either complete lexicalization or no lexicalization at all are exactly the same as those of the majority of SCVs, which are partly lexicalized. That is, the particles of these SCVs, as well, are separable, may appear in the verb cluster (cf. (9)), and can generally not be topicalized (see Blom 2004). This indicates that these SCVs are also phrases consisting of a non-projecting word and a verbal head. The assumed relationships between the different SCV types, XP-V combinations, and prefixed verbs are illustrated in (12), in which (a) gives the grammaticalization cline of the pattern XP-V into prefix-V (cf. (11)) and (b) gives the lexicalization cline for SCVs (cf. (10)).

- (12) The relationship between the grammaticalization of the pattern XP-V into prefix-V (a) and the lexicalization of SCVs (b):

a. [... XP V⁰]_{VP} > ... [X-V⁰]_{V'} > ... [prefix-V⁰]_{V⁰}

b. [X-V⁰]_{V'} > [op_X-V⁰]_{V'} > [aan_X-stellen_{V⁰}]_{V'}
opgooien *opzoeken* *zich aanstellen*
 ‘to throw up’ ‘to look up’ ‘to put on airs’

An investigation of Modern Dutch SCVs reveals that both completely free SCVs and completely lexicalized SCVs constitute only a small minority (see Blom 2004). The vast majority of SCVs, then, show the typical combination

of properties discussed above: they are conventionalized, compositional, and their patterns are productive.¹⁵

5. Conclusions

SCVs are partly lexicalized phrases, consisting of a fixed slot for a non-projecting word and an open slot for the verb. This status of SCVs falls naturally into place in a diachronic analysis according to which SCVs represent an intermediate stage in two separate developments: (1) a lexicalization development from completely free combinations into completely fixed combinations, and (2) a grammaticalization development from syntactic combinations into morphologically complex words.

As for the demarcation of morphology and syntax, the SCV data suggests that we should allow for a structural category in between words projecting phrases and bound morphemes, which is that of non-projecting words. In addition, the data show that phrasal combinations may exhibit conventionality, compositionality, and productivity, suggesting that this combination of properties is not exclusive to the products of morphological processes, such as derivation and compounding (cf. Jackendoff 1997: 164–166, 174).

Notes

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1. In addition, they are separated by the infinitival marker *te*, by the past participle marker *ge-*, and (optionally) by auxiliaries in the verb cluster (see, e.g., Booij 2002a: 206–207).
2. Word analyses of Dutch and German SCVs have been given by Neeleman & Weerman (1993) and Stiebels & Wunderlich (1994). Phrasal analyses have been given by Booij (2002a, 2002b), Lüdeling (2001), and Zeller (2001).
3. However, there are restrictions on these processes, especially on phrasal affixation (Booij 2005: 189).
4. The fact that many derivations of SCVs have idiosyncratic properties (e.g. *uitzetting* ‘lit. out-put-ing, expulsion’ (of refugees), *oplegger* ‘lit. on-put-er, semi-trailer’) is not relevant here, since this is a property of the output of word formation processes in general (cf. the nominalizations of prefixed verbs like *verwarming* ‘lit. *ver*-warm-ing, radiator’). Thus, the relevant point is not whether the derived word has idiosyncratic properties and needs to be listed as a word, but whether the input, i.e. the SCV, has word properties.

5. Booij (2002a:215, 2002b) adopts a constructional idiom analysis for SCVs according to which nouns and adjectives are converted into verbs when they are inserted into the proper slot in an SCV template (see Section 3). The conversion, then, is dependent on the occurrence of these nouns and adjectives in SCVs with specific particles (since conversion of adjectives into verbs is not productive in Dutch and not all particles are productively used in these constructions, this dependency seems plausible), and is assumed not to take place *before* the converted verb is combined with the particle, but at the same time as these two elements are combined.
6. An alternative morphological analysis treating these SCVs as compounds would also fail, because such an analysis would wrongly predict the right-hand constituents of these SCVs (e.g. the noun *hoop* 'pile') to function as their heads and to determine their syntactic category.
7. As NSW argue, the meaning of an idiomatic phrase such as *kick the bucket* is also motivated in the sense that *kick* in this idiom and *kick* 'strike with the foot' are not merely accidental homonyms (p. 493, Note 2). Nevertheless, the meaning of *kick the bucket* 'die' is not distributed among its parts *kick* and *the bucket*, this idiom not being compositional. For more on the relation between the two types of idiom and possible representational differences, see NSW and Jackendoff (1997:166–171).
8. Apart from passive, raising, modification, and topicalization constructions NSW discuss other constructions, and, in addition, acknowledge that various semantic and pragmatic factors may play a role in the availability of these constructions.
9. Many other classifications of idioms have been given (see Grant & Bauer (2004) for a recent overview). On the basis of a different definition of compositionality ("the meaning of a construction is compositional if it is derived transparently from the meanings of its elements", p. 44) Grant and Bauer classify expressions such as *pull strings* as non-compositional. They call these expressions figuratives instead of idioms, reserving the term (core) idiom for idiomatic phrases such as *kick the bucket*. Thus, they too distinguish between these two types of conventionalized phrases, although their terminology is different from that in NSW.
10. The modification example in the text is acceptable with *allemaal* instead of *helemaal*, which modifies the NP *de boeken* instead of the particle *op*: *de boeken allemaal opzoeken* 'to look up all the books'. In addition, some particles, such as *af* 'finished' in *afmaken* 'lit. off-make, to finish', may be modified and topicalized, but these are exceptional, constituting a very small minority of the Dutch particles (cf. Blom (2004), where it is argued that elements like *af* 'finished' are structurally ambiguous between representing the first stage and representing the second stage in the grammaticalization development discussed in Section 4 below (see (11)), thus reflecting *layering*).
11. This is discussed more extensively in Blom (2004).
12. Although, as noted above, their parts can be substituted to a limited extent, resulting in families/pairs of ICEs.
13. Booij (2002a, b) argues that such templates are derived paradigmatically, i.e. from the similarities between existing SCVs, and have acquired a life of their own, functioning as patterns to form new SCVs.

14. Prefixed verbs may also contain a non-verbal stem (e.g. *vergroten* 'lit. *ver*-big, to enlarge, to increase', containing an adjectival stem), but for the sake of convenience I represent their structure as [prefix- V^0] V^0 in this section.
15. As follows from Section 3, ICEs such as *pull strings* represent the third stage in the lexicalization development, as do SCVs like *zich aanstellen* 'to put on airs' (cf. (12)). As we have seen, though, such ICEs are structurally different from the SCV *aanstellen* (and from SCVs in general) in that they represent XP-V combinations instead of X-V combinations. Like X-V combinations, then, XP-V combinations may represent different stages in the lexicalization development.

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When clitics become affixes, where do they come to rest?

A case from Spanish

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1. Introduction

Commenting on the widely held view in morphological studies that inflections derive historically from free forms, Andrew Carstairs-McCarthy reflects:

It may perhaps be true that some types of inflection – person-number inflection in verbs, say – do always involve historically the phonological attrition and cliticisation of originally free forms. If so, then a new question arises: what factors determine the positions in which these erstwhile free forms come to rest (so to speak)?
(Carstairs-McCarthy 1992: 166)

This question is highly relevant because the assumption that the position of affixes with respect to their hosts reflects the order of the erstwhile free words from which they derive underlies a great deal of morphological work. A number of linguists (Lehmann 1969; Givón 1971; Vennemann 1973) have used this assumption in syntactic reconstruction (in their view, examining compounds and affixes in a given language provides information about sentence patterns in earlier stages of that language). Likewise, Bybee, Pagliuca & Perkins (1990), Dryer (1992), Hall (1992), and Siewierska & Bakker (1994) have used the same principle to explain correlations between the position of morphological markers and word order typology.

However, much of this research has led to generalizations that have never been checked against actual historical data. For instance, various studies on the position of verbal agreement inflections have confused the claim that these affixes reflect the position of the cliticized subject and object pronouns from

which they derive with a substantially different one. They tend to assume that the position of these inflections reflects the current syntactic position of full NPs with the same function (cf. for instance, Siewierska & Bakker 1994: 110; Bybee, Pagliuca & Perkins 1990: 9; Dryer 1992: 127). To substantiate this rather different claim it would be necessary to show that in morphologization processes cliticized subject and object pronouns have preserved the syntactic order of full NPs with the same function, since it is from cliticized pronouns that agreement inflections derive historically. But in the absence of a detailed historical analysis of morphologization for an extended language sample, there is no adequate way of testing the generalizations that have been proposed linking the position of affixes and syntactic order.

This study uses a well-documented phenomenon – the historical process of affixation of Old Spanish unstressed object pronouns – as a showcase for the varied factors that may determine the position of inflections with respect to stems in morphologization processes. Old Spanish unstressed pronouns, which originated from Latin object pronouns and demonstratives, attached to a variety of host words (verbs, complementizers, negation and NPs), and exhibited a variable position within the sentence governed by syntactic conditions. In contrast, in Modern Spanish these elements attach exclusively to verbs: they occur prefixed to finite verb forms and suffixed to non-finite forms and affirmative commands, as illustrated in (1) (all the ungrammatical combinations marked with an asterisk were possible in Old Spanish). Because their appearance in certain structures is triggered by the presence of lexical and pronominal object NP's, an increasing number of studies have proposed that the so-called clitic pronouns are in fact verbal inflections marking object agreement (Franco 1991; Rini 1991; Enrique-Arias 2003).

- (1) a. *Juan lo-hizo / *hízo-lo*
 John ACC3sg-did
 'John did it'
- b. *Juan vino para hacer-lo / *lo-hacer*
 John came to do-ACC3sg
 'John came to do it'
- c. *Haz-lo / *lo-haz*
 do-ACC3sg
 'Do it'

The Old Spanish corpus used in this study comprises 16 texts representing centuries 13th through 16th with 4 texts per century. I have selected all the

unstressed pronouns occurring in the first 5000 words of each text, totalling 3,117 pronouns (see Appendix for text information and sources).

2. Frequency effects

Previous studies on the position of Old Spanish unstressed pronouns agree in two points: first, pronoun position is conditioned by the syntactic contexts where the verb with which the pronoun is associated occurs, and second, pronouns behave differently depending on whether they are associated with finite or non-finite verbal forms. Here, I will deal mainly with unstressed pronouns accompanying finite forms.

I have coded all the unstressed pronouns in the corpus, distinguishing 13 different syntactic contexts that may influence their position with respect to the verb form with which they are associated. First, there are syntactic contexts in which Pro-Verb order is rare: (1) after a pause, when the verb is the first word in the sentence; (2) when the verb is the first word in juxtaposed sentences; (3) after coordinating conjunctions: *y, o, pero, mas*; and (4) after a vocative. In all of these contexts the verb occurs after a pause; because Old Spanish unstressed pronouns could not appear in sentence initial position, they appear after the verb. Next, there are syntactic contexts in which both Pro-Verb and Verb-Pro are equally possible: (5) verbs in main sentences after a subordinate clause or an absolute clause; (6) after subject NP; (7) after object NP (as long as the NP is not coreferential with the unstressed pronoun, in which case Verb-Pro order is the norm); (8) after an adverb or an adverbial NP; (9) after a PP; and (10) after a coordinating conjunction such as *además, otrosí, también, por ende*, etc. Finally there are a number of syntactic contexts in which the verb is always preceded by another word. In those cases Pro-Verb order is the norm: (11) negative sentences; (12) sentences introduced by an interrogative pronoun; and (13) subordinate clauses of any kind.

Table 1 exhibits percentages of Pro-Verb order in finite forms according to the syntactic context where they occur. The lower row in the table demonstrates that, with finite forms, the Pro-Verb order has been predominant in all the periods recorded in the corpus. The reason is that pronouns are not distributed evenly in the different syntactic contexts that condition their position. A relatively small number of pronouns (16% 430/2741) occur in contexts where Pro-Verb order is rare, while the majority (62% 1.699/2741) occur in contexts where Pro-Verb order is obligatory. That is, Old Spanish unstressed pronouns happened to occur in greater numbers in syntactic contexts where Pro-Verb or-

Table 1. Pro-Verb order (as opposed to Verb-Pro) in finite forms

13th	14th	15th	16th	TOTAL
Contexts in which Pro-Verb order is rare: (1–4)				
5% (7/130)	7% (10/149)	10% (9/92)	12% (7/59)	8% (33/430)
Contexts in which both Pro-Verb and Verb-Pro are equally possible (5–10)				
34% (35/102)	62% (131/210)	64% (89/140)	83% (133/160)	63% (388/612)
Contexts in which Pro-Verb order is the norm (11–13)				
100% (388/390)	100% (422/423)	100% (336/337)	100% (549/549)	100% (1695/1699)
TOTAL				
69% (430/622)	72% (563/782)	76% (434/569)	90% (689/768)	77% (2116/2741)

der was the norm. As for those contexts in which both Pro-Verb and Verb-Pro order were equally possible, earlier texts (13th century) exhibit a preference for the postverbal position, but by the next century this tendency has been reversed. At any rate, due to the numeric preponderance of pronouns in contexts (11–13), Pro-Verb order has been dominant in all the periods recorded in the corpus.

As for how this change has spread, the data in Table 1 shows that the shift towards Pro-Verb position has been more vigorous in those contexts in which both preverbal and postverbal pronouns were possible. At the same time, in contexts (1–4) the progress towards Pro-Verb order is rather modest (from 5% in the 13th century to 12% in the 16th century). Likewise, the contexts where Pro-Verb order was the norm have remained stable throughout the period recorded in the corpus.

The distribution of pronouns in affirmative commands also confirms the prediction that affixes will preserve the position of the free forms from which they derive. The distribution of these pronouns, which have evolved into verbal suffixes in modern Spanish, is precisely the opposite of what occurs in finite forms, as shown in Table 2.

Contrary to what happens with finite forms, in affirmative commands a majority of pronouns (77% 56/77) occur in contexts where Verb-Pro order is the norm. The reason is that affirmative commands usually start a sentence or follow a vocative, which are all contexts that trigger Verb-Pro order in Old Spanish. Verb-Pro order is also dominant in non-finite forms (66% 198/298), showing again a correspondence with the fixed position of Modern Spanish object markers, which in these forms are suffixes.

Table 2. Verb-Pro order in affirmative commands

13th	14th	15th	16th	TOTAL
Contexts where the Pro-Verb order is the norm: (1–4)				
100% (17)	100% (15)	100% (12)	100% (12)	100% (56)
Contexts in which both Pro-Verb and Verb-Pro are equally possible (5–10)				
67% (2/3)	67% (8/12)	100% (3)	67% (2/3)	71% (15/21)
TOTAL				
95% (19/20)	85% (23/27)	100% (15)	93% (14/15)	92% (71/77)

Bybee (1985:38–43) considers that the ultimate factor that determines the form of verbal affixes is the frequency with which the words which are candidates for morphologization occur contiguous to the verb stem. However, she emphasizes that this relation of contiguity is determined in turn by the semantic relationship between the two elements involved. One of the examples used to illustrate her point involves Old Spanish unstressed pronouns with future and conditional verb forms. With these forms, object pronouns could either occur between the verb stem and the auxiliary (*saber-lo-e* know-ACC3sg-FUT ‘I will know it’) or before the verb stem (*lo saber-é*); however, *saber-lo-e* type forms eventually disappeared. According to Bybee (1985:43), the unstressed pronoun gives up its position due to the greater cohesiveness of the semantic combination verb + tense than that of verb + person/object. Nevertheless, the data from the corpus suggests that the relative frequency of the two combinations, which was determined by the syntactic contexts where they occurred, was important in determining the outcome of this change (the same syntactic contexts that trigger Pro-Verb order are the ones that yield the form that has prevailed: *lo sabré*).

Table 3 exhibits the distribution of Pro-Verb order in the future and conditional forms in the corpus. We find again the same asymmetric distribution of syntactic contexts that led to the numeric preponderance of Pro-Verb order in finite forms as a whole: only 18% of pronouns (34/197) occur in contexts in which Pro-Verb is rare, while pronouns occurring in contexts where Pro-Verb is the norm account for 50% (99/197) of the total occurrences.

We may thus reach a first conclusion: the current fixed position of Spanish verbal object agreement markers does reflect the predominant position of the Old Spanish unstressed pronouns from which they derive historically. This position was determined by the syntactic contexts where pronouns happened to appear.

Table 3. Pro-Verb order (as opposed to Verb-Pro) in future and conditional

13th	14th	15th	16th	TOTAL
Contexts in which Pro-Verb order is rare: (1–4)				
0% (15)	0% (14)	–	20% (1/5)	0% (34)
Contexts in which both Pro-Verb and Verb-Pro are equally possible: (5–10)				
19% (4/21)	94% (17/18)	92% (11/12)	77% (10/13)	66% (42/64)
Contexts in which Pro-Verb order is the norm: (11–13)				
100% (37)	100% (32)	100% (11)	100% (19)	100% (99)
TOTAL				
56% (41/73)	77% (49/64)	96% (22/23)	81% (30/37)	72% (141/197)

3. Word order

Most crosslinguistic studies on the formal realization of verbal morphology have attempted to explain the position of grammatical markers relative to verb stems in terms of a correlation with word order typology. Hawkins & Gilligan (1988), following work pioneered by Greenberg (1966), consider that affixes are heads of their respective lexical categories and are aligned to the same side of stems as heads in the syntax. Therefore, suffixes would be expected in head-final languages (OV languages with postpositions) and prefixes in head-initial (VO languages with prepositions). However, their proposal faces serious objections. First, numerous morphological studies within the generative framework consider that inflectional affixes are not heads (cf. Zwicky 1985; Bauer 1990; Newmeyer 1990; Hall 1992). Second, agreement markers consistently contradict this explanation, since the position of these grammatical markers does not show strong correlations with word order typology (Siewierska & Bakker 1994: 115, Enrique-Arias 2002: 5). In addition, no satisfactory causal mechanism has been provided to explain the proposed correlations (Enrique Arias 2002: 6–7).

Concerning unstressed pronoun placement rules in Old Spanish, Elvira (1987: 71) has observed certain correlations between syntactic order and position of unstressed pronouns in 13th century texts: after subject and object NPs both Pro-Verb and Verb-Pro are equally possible (examples 2–3); however, when the object NP that precedes the verb is co-referential with the unstressed pronoun, Verb-Pro order is the norm (cf. example 4).

Table 4. Pro-Verb order (as opposed to Verb-Pro) in variable contexts after subject and object NP's

	13th	14th	15th–16th	TOTAL
Subject	30% (7/23)	81% (44/54)	77% (47/61)	71% (98/138)
Object	0% (5)	57% (4/7)	100% (11)	65% (15/23)

- (2) *mas los que vinieron después encortáron-le el*
 but the which came after shortened-DAT3sg the
nombre [EE1 3v]
 name
 'But the ones that came afterwards shortened its name'
- (3) *dos hijos que auía lo-fazían bien* [EOR 54v]
 two children that he-had ACC3sg-did well
 'Two children that he had did it well'
- (4) *a las tierras que poblavan, poníen-les nombres de*
 to the lands that settled put-DAT3sg names of
ssí mesmos [EE1 4r]
 themselves
 'The lands that they settled, they named after themselves'

Table 4 exhibits unstressed pronouns in main sentences preceded by subject and object NP's.

In the 13th century texts, pronoun position is sensitive to the function of the element preceding the verb, and thus we find more Verb-Pro order when an object precedes the verb. However, from the 14th century on, Pro-Verb order seems to be quite common regardless of the function of the preceding element. At any rate, the number of unstressed pronouns whose position is in some way conditioned by syntactic order is rather small – barely 6% (161/2741) considering all the pronouns with finite forms in the corpus.

4. Processing factors

Despite abundant research that indicates that the position of grammatical affixes relative to stems has important processing consequences (cf. Hawkins & Gilligan 1988; Hall 1992; Enrique-Arias 2002), accounts of the position of Old Spanish pronouns have for the most part centered on discourse and pragmatic factors while processing considerations have been overlooked. In a discussion

of the processing consequences of morphologization (i.e. the change from two independent words to word + affix), Hall (1992) has described this development as a “flirting process” in which speakers may reject the new word + affix combination if it causes a processing difficulty of some sort. In the affixation of Old Spanish unstressed pronouns, the combinations Verb + Pronoun and Pronoun + Verb are not the same regarding processing consequences: suffixed pronouns result in a longer prosodic foot that disrupts the stress patterns that are preferred in Spanish. As Lapesa (1981:84) points out, Old Spanish already exhibited a clear preference for stress falling on the next to the last syllable, while stress on the 3rd syllable from the end was only found in a few learned words. Similarly, in present day Spanish less than 3% of words exhibit stress on the 3rd syllable from the end, according to Quilis (1981:336).

Furthermore, the combination Verb-Pro results in different stress placement patterns in finite and non-finite forms. Should all the pronouns in the corpus occur in postverbal position, this would have resulted in 77% (1968/2544) of forms with the stress placed on the 3rd or 4th syllable from the end in finite verb forms. With non-finite forms, however, the majority of resulting forms (71% or 213/298) would have conformed to the preferred prosodic pattern (i.e. stress on the next-to-the-last syllable). Quite possibly this asymmetry has played a role in the resulting fixed position of object markers in Spanish: Verb-Pro order has prevailed in non-finite forms but is no longer found in non-finite forms. This idea is further supported by the distribution of unstressed pronouns in variable contexts displayed in Table 5.

I have taken the pronouns that occur with finite forms in contexts (2–10) and I have sorted them by the stress placement that would result if all pronouns appeared in postverbal position (in apocopated forms I have restored the final vowel). In all the periods represented in the corpus, there are higher percentages of Pro-Verb order when the preverbal position, (as opposed to Verb-Pro), avoids stress falling on the 3rd or 4th syllable from the end. This means that in

Table 5. Pro-Verb order sorted by stress placement of the combination Verb-Pro (variable contexts)

	Next to the last	3rd from the end	4th from the end
13th	10% (6/59)	31% (32/105)	0% (2)
14th	35% (39/112)	49% (78/160)	54% (7/13)
15th	36% (28/77)	50% (54/109)	100% (5)
16th	62% (37/60)	80% (86/108)	86% (6/7)
TOTAL	36% (110/308)	52% (250/482)	67% (18/27)

those contexts in which speakers had a choice regarding pronoun placement, there was a tendency to avoid unusual (i.e. more difficult) stress patterns.

Finally, there is another psycholinguistic factor not considered in previous accounts of the position of Old Spanish unstressed pronouns. In the texts studied, one can find many passages where the position of one unstressed pronoun seems to be “imitated” by other pronouns that follow it in the discourse (cf. examples 5–7).

- (5) *estando mi madre una noche en la aceña [...] tomó-le el*
 being my mother one night at the mill [...] took-ACC3sg the
parto y parió-me [LZ1]
 birth and bore-ACC1sg
 ‘My mother being one night at the mill, she went into labor and I was born’
- (6) *saqué-le debaxo de los portales y lleué-lo*
 pulled-ACC3sg from-underneath of the arcade and took-ACC3sg
derecho [LZ1]
 straight
 ‘I pulled him from under the arcade and took him straight’
- (7) *visto que era mujer, la-echó en tierra y movido a*
 seen that was woman, ACC3sg-laid on ground and moved to
piedad le-dio un su vestido [LOZ]
 pity DAT3sg-gave a her dress
 ‘As she saw that it was a female, she laid her on the ground, and feeling pity, gave her one of her dresses’

This preference for similar forms to co-occur in sections of discourse (variously referred to as “discourse level serial effect” or “parallel processing effect”) has been applied to explaining variation phenomena in Brazilian Portuguese, such as the presence of overt agreement marking (Scherre & Naro 1992) and *dequeísmo* (Mollica 1991). Similarly, the data from the corpus confirms that the position of Old Spanish unstressed pronouns in variable contexts is influenced by the position of other pronouns that precede them in the discourse. Table 6 exhibits occurrences of Pro-Verb position in contexts (2–10) sorted by position of the pronoun in the previous occurrence.

In all the periods represented in the corpus, there are higher percentages of Pro-Verb order when the latest occurring pronoun was also preverbal. This parallel processing effect, besides influencing the position of pronouns in variable contexts, would have been a factor in promoting the drift towards Pro-Verb order. Since, as it has been shown in Table 1, a majority of pronouns occurred in

Table 6. Pro-Verb order (as opposed to Verb-Pro) sorted by pronoun position in the previous occurrence (finite forms in variable contexts)

	After Verb-Pro	After Pro-Verb	Progression
13th	14% (11/78)	30% (26/86)	+16
14th	30% (29/95)	50% (95/189)	+20
15th	18% (13/74)	63% (74/117)	+45
16th	65% (31/48)	77% (98/127)	+12
TOTAL	28% (84/295)	56% (293/519)	+28

preverbal position, this effect would have resulted in even more occurrences of Pro-Verb order. Table 6 exhibits a progressive increase in the influence of this processing effect, which reaches its highest peak during the 15th century and then diminishes afterwards. The diminishing during the 16th century can be explained by the fact that by this time Pro-Verb order had spread, incorporating nearly all occurrences of unstressed pronouns (see Table 1) and the room for variation was rather small.

5. Summary and conclusions

The current prefixed position of Spanish object agreement markers in finite verb forms can be attributed mainly to two factors. In the first place, this position reflects the relatively higher frequency of the combination Pronoun + Finite Verb in Old Spanish. This higher frequency is related to the fact that throughout all the periods represented in the corpus a majority of unstressed pronouns appeared in syntactic contexts where Pro-Verb order was the norm. Probably, during the progressive simplification of clitic placement rules that accompanied the morphologization of these markers, the continued numerical preponderance of the preverbal order was a factor that favored the preverbal position in contexts where originally both Pro-Verb and Verb-Pro order were equally possible. The other main factor that may have favored the progressive preference for the combination Pronoun + Verb is the tendency to preserve the most natural prosodic pattern in Spanish, which is when the stress falls on the next-to-the-last syllable. This account is further supported by the fact that the resulting object agreement markers in Modern Spanish exhibit a complementary distribution of prefixes in finite verb forms, and suffixes in non-finite forms. Furthermore, the data from the corpus reveals the existence of a parallel processing effect: in all the periods represented in the corpus, the position of

the unstressed pronouns is influenced by the position of other pronouns that precede them in the discourse. This factor may have had an effect in promoting the diffusion of the Pro-Verb order.

On the other hand, the data does not support attempts to explain affix order in terms of a correlation with word order typology. This is consistent with the findings reported in typological studies on the position of agreement markers (Siewierska & Bakker 1994; Enrique-Arias 2002) where correlations with word order typology are rather weak. The Old Spanish data points in the direction of the view defended by Hall (1992) and Enrique-Arias (2002) that the position of morphological markers typically represents the reinforcement of frequent patterns (as long as they do not represent some processing difficulty) rather than being directly motivated by word order typology. As this study illustrates, morphologization is a complex process involving many aspects (historical, processing, semantic, discourse-pragmatic) that cannot be captured in a single generalization. Thus, a detailed historical analysis of individual languages using an approach that is open to a variety of explanatory factors is preferable in order to understand how affixes develop and evolve.

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APPENDIX: Texts used in the study

All texts are taken from O'Neill (1999) except when noted.

13th century

ACN: *Actas de Alcalá de Henares de las Cortes de 1252 convocadas por Alfonso X en Sevilla*, Archivo Municipal de Alcalá, carpeta 1 (Sánchez & Herrera 1999)

EE1: *Estoria de España I*, Escorial Y.I.2 (Kasten et al. 1997)

GE4: *General Estoria IV*, Vaticana Urb. Lat. 539 (Kasten et al. 1997)

POR: *Poridat de poridades*, Escorial L.III.2 (Kasten et al. 1997)

14th century

AND1: *Documentos Andaluces*, collection of the Hispanic Society (Kauffeld 1999)

EOR: *El emperador Otas de Roma*, Escorial h.I.13

HCP: *Historia del caballero Plácidas*, Escorial h.I.13

LEO: *Leomarte: Sumas de la historia troyana*, BNM MS. 9256

15th century

ABC: *Exemplario por ABC*, BNM MS. 1182

AND2: *Documentos Andaluces*, collection of the Hispanic Society (Kauffeld 1999)

CBO: *Arcipreste de Talavera: Corbacho*, Escorial h.III.10

CLV: *Claros varones de Castilla*, BNM I-1569

16th century

LOZ: *La Lozana Andaluza* (printed 1528). (Allaigre 1994).

LTORO: *Discursos o consyderaciones sobre la materia de enfriar la bebida* (printed 1569) (Sanz Hermida 1991).

LZ1: *Lazarillo de Tormes* (printed en Alcalá de Henares, 1554)

OCR: *Ordenanzas del Consejo Real* (printed en Valladolid 1556). (Dios 1986).

Grammatical hybrids

Between serialization, compounding and derivation in !Xun (North Khoisan)

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1. Introduction

In the course of the last decade remarkable progress has been made in the analysis of morphological structure, and a wide range of taxonomic parameters have been proposed to account for these structures. Based on field research on the !Xun language of southeastern Africa, it is argued in the present paper that the way grammatical functions are expressed in the languages of the world differs considerably from one language to another, and that these differences affect the extent to which conventional descriptive frameworks are relevant to account for grammatical categorization.

!Xun (or Jul'hoan) is a North Khoisan language spoken in southern Angola, northern and northeastern Namibia, and northwestern Botswana. !Xun can be described as an L-complex, that is, as a cluster of varieties, or lects, linked by a chain of mutual intelligibility, but speakers at the extreme ends of the chain do not understand one another. The present paper is confined to a variety of the language (the W2 lect) spoken along the border of Namibia and Angola, on which we carried out field research between 1999 and 2002 (König & Heine 2001, 2002, 2003).¹ Speakers of W2 call themselves *lākhòè !xòān* or *lāwē !xòān*, which literally means 'Kwanyama !Xun'; all W2-speaking communities do in fact live interspersed among the Bantu-speaking Kwanyama of northern Namibia near the Angolan border, roughly between Eenhana in the west and Ekoka in the east. What distinguishes the lect studied here (W2) from other !Xun lects is in particular the presence of a retroflex affricate click (marked {!!}) corresponding to the palatal click ({#}) of other lects, and the

Table 1. !Xun affixes having exclusively grammatical functions

Nominal	Verbal	Function
	-ā	Transitive suffix
	-ā-kòè	Reciprocal marker
-cí		De-verbal noun marker
-è		Relative clause marker
	-là	Andative derivation (unproductive)
	n!ú-	Causative derivation
-lō		Trial

presence of an obligatory topic–comment structure whereby clauses and larger discourse structures are divided into two information units, separated by the topic marker *má* (TOP).

!Xun is a fairly analytic-isolating language, characterized among others by the presence of a noun class system. The basic word order is SVO, although there is a minor pattern exhibiting SOV word order. Like other Khoisan languages it is phonologically complex; the number of segmental phonemes identified is 120, of which 21 are vowels and 99 consonants (including four click types and their combinations); in addition there are four distinct tone levels and four register tonemes.

There is a fairly clear categorial boundary between the lexicon and grammar in !Xun, which can be described roughly as follows:

- a. Most nouns and the majority of verbs are unambiguously lexical items.
- b. There is a small pool of items that are unambiguously functional categories, being affixes having exclusively a grammatical function. These items are listed in Table 1.

With these exceptions, all morphological units of !Xun are what we refer to in the title of this paper as categorial hybrids: They may have both lexical and grammatical functions, they exhibit combinatorial properties linking them with both lexical and grammatical categories, and they can be omitted without producing ungrammatical sentences. They include

- a. a catalogue of nearly fifty coverbs, that is, items having both verbal and grammatical uses,
- b. a few items having both nominal and postpositional uses,
- c. a range of particles serving exclusively grammatical functions, and
- d. some affixes also occurring as lexical items.

Our concern in this paper is with a. since coverbs constitute the most salient aspect of !Xun discourse structure.

2. The serial verb construction

Another typological property of !Xun – one that is of particular interest for the following discussion – is the presence of a serial verb construction, having the following characteristics:

- (1) The serial verb construction (SVC) of !Xun
 - a. Two verbs, V_1 and V_2 , follow one another within the same clause.
 - b. There is no formal device linking the two.
 - c. Other than tense-aspect markers, nothing may be inserted between the two verbs.
 - d. There is only one subject, which precedes the verb series, and one object, which follows the verbs.
 - e. The two verbs may not be separately negated.
 - f. The two verbs may not be separately marked for tense or aspect, nor may they take separate adverbial modifiers.
 - g. The two verbs may not be separately passivized, that is, there is only one passive marker,² which is added to V_2 .
 - h. The two verbs can be understood to express one single, even if complex, event.
 - i. The SVC contains a fairly large amount of lexicalized verb collocations, where two verbs behave like a single lexical item.
 - j. In a number of verbs in a series, one verb functions as a grammatical modifier of the other verb.

The following example illustrates the construction, showing that the object must follow V_2 , cf. (2a); accordingly, (2b) is not well-formed.

- (2) a. n!ùhmē má kē n!hō n!!hàò g!!hōē.
 Nluhme TOP PAST hit descend.sg dog
 ‘Nluhme hit the dog down.’
- b. *n!ùhmē má kē n!hō g!!hōē n!!hàò.
 Nluhme TOP PAST hit dog descend.sg
 ‘Nluhme hit the dog down.’

While most instances of the construction involve a collocation of two verbs, there is essentially no limit to the number of verbs that can be serialized; in the following example there are five verbs:

- (3) tà lāalè má n!òxà tà !àhà ú !ún kààm !ún [...]
 and jackal TOP already and run.away go stand.sg hide stand.sg
 ‘And the jackal ran away hiding [...]’. (6/37)³

3. Polyfunctionality

Irrespective of how one wishes to define collocations of two or more verbs in this language, there is a fairly uncommon kind of polyfunctionality or poly-categoriality: A number of verbal and nominal items exhibit properties that link them simultaneously with different morphological and semantic categories. I will present a couple of examples to illustrate this typological characteristic.

̀̀lhũnyā

The first case concerns the item *̀̀lhũnyā*. In the examples of (4) it has the appearance of a transitive accomplishment or result verb meaning ‘to leave’: It takes object complements, as in (4a), and it can be can be conjoined with other verbs, as in (4b).

- (4) a. hà má kē ̀̀lhũnyā hà kē n!āō.
 N1 TOP PAST leave N1 TR house
 ‘He left her at home.’
 b. bà á ú gllòè bà á ̀̀lhũnyā.
 2.SG Q go or 2.SG Q leave
 ‘Do you want to go or to leave?’

In example (5), *̀̀lhũnyā* occurs as the second verb in serial verb construction, where it can be understood alternatively as expressing either its lexical meaning in a series of events (5a) or the schematic grammatical function of an ablative marker ‘(away) from’ (5b). Note that this is the only morphological item in the language to present ablative participants. In other words, the item is ambiguous between a lexical and a functional interpretation. This is generally the case when the item occurs in serial construction where the first of two verbs is a result (or change-of-state) verb of motion, such as *ú* ‘go (away)’ or *glè* ‘come’.

- (5) gào hà- è kē má n!ākā cì) kũndò'à ú ̀̀lhũnyā hà [...].
 day N1- REL PAST TOP while 3.PL then go leave N1

- a. ‘One day while they left him [...].’
 b. ‘One day while they went away from him [...].’ (16/15)

In other uses as a second verb in serial construction, a lexical meaning of *ñlhũnyā* is ruled out: The item serves quite a different function, namely that of expressing the standard of comparison in a comparative construction. Such a function is evoked in contexts where an interpretation with reference to the lexical meaning ‘leave’ or the grammatical meaning ‘(away) from’ does not make sense – that is, when the item is immediately preceded by a manner (or activity) verb, as in the examples of (6).⁴

- (6) a. *hã má ín ñlhũnyā mí.*
 N1 TOP eat leave 1.SG
 ‘He eats more than I.’
 b. *tçhì mí má bà lōā !àhà ñlhũnyā.*
 turtle 1.SG TOP 2.SG NEG run leave
 ‘Turtle! You are not running faster than me!’ (15/19)

llx'āē

The case of ‘leave’ just presented is in no way unique; rather, it is part of a more general pattern: There are quite a number of other items in !Xun that exhibit largely the same structure. This may be illustrated with one more example, concerning the item *llx'āē*. In (7a), this item serves as a transitive result (change-of-state) verb meaning ‘meet, find’, hence it can be passivized (7b), and with plural subject referents it can be used intransitively, cf. (7c). In (8), the item occurs as the second verb in serial construction, where the first verb is a result verb of motion. In this context, *llx'āē* expresses roughly the same meaning as in (7).

- (7) a. *mí má llx'āē kã.*
 I TOP meet N4
 ‘I found it.’
 b. *xáú kã ñhãm- tcã ā llx'āē tí kē gkhúmbō kx'àò [...].*
 now if 1.PL.IN-DU PROG meet PASS TR goat owner
 ‘Now, if we are met by the owner of the goat [...].’ (10/15)
 c. *tà cã ñhãùn kũndò'à kē llx'āē ...*
 and DU rabbit then PAST meet
 ‘And he and the rabbit met ...’ (13/12)

- (8) \bar{o} llà llāmā \bar{o} glè \bar{o} llāè kūndò'ā glè ll'āē hà
 and again happen and come and monkey then come meet N1
 glui.
 hyena
 'At that point the monkey came and found the hyena.' (1/66)

A different situation is found in (9), where the first verb of the serial construction belongs to the large class of manner (activity) verbs: In this context, the lexical meaning is ruled out and ll'āē takes a grammatical meaning, expressing a cooperative function ('together'). In (9a), the manner concerns consumption and in (9b) location.

- (9) a. m̄h̄m- tcā má c̄j ll'āē djūi .
 1:PL:IN DU TOP drink meet beer
 'We two drink beer together.'
 b. djù tcā má glà ll'āē .
 1:PL:EX DU TOP stay meet
 'We two stay together.'

4. A typological profile

One may wonder what the different uses of ̀llhūnyā and ll'āē have in common, that is, whether they can be related meaningfully to one another. To be sure, they are instances of heterosemy, in that all are etymologically related (Lichtenberk 1991); but whether they can be described as cases of polysemy or homonymy is an issue that we will not pursue further – depending on the criteria one might draw on, there is evidence for both analyses.

The data presented can be summarized in the following way:

- a. There is no clear-cut boundary separating the lexicon from grammar. Items such as the ones discussed exhibit lexical meanings in some contexts but clearly serve as functional markers in other contexts.
- b. Linguistic items (or morphemes) denoting grammatical functions are not limited to one particular category, and vice versa: There is no one-to-one relationship between grammatical function and category status.
- c. Grammatical functions expressed in many other languages by means of inflectional or derivational affixes are expressed by categories that are lexical in many of their uses.

- d. Pragmatics is more important than distinctions such as between lexicon and syntax for determining the status of linguistic items: What the meaning or function of a given item is, depends on the context in which it is used.
- e. While pragmatics is the primary parameter for determining the semantic status of the items in question, there is nevertheless a statistical correlation of the following kind: The more a given context evokes a lexical meaning, the more the relevant item is likely to exhibit morphosyntactic properties characteristic of lexical items, and vice versa.

With reference to major morphological mechanisms, the two verbal !Xun items described can be said to have the following properties:

- f. Depending on the context in which they are used, they have characteristics of either independent lexemes, of verbal clitics, or of what look like constituent parts of verb-verb compounds.
- g. And they express either lexical concepts such as kinetic processes, or they are part of more complex semantic concepts (in serial verb construction), or else they have a schematic, derivational function.
- h. The items express grammatical functions that in many other languages are encoded by affixal morphologies.

5. Serialization, compounding, and derivation

Now, how does the use of these items relate to notions such as serialization, compounding, and derivation?

On the basis of the definitional properties listed in (1) there are criteria to argue that we are dealing not with a serial verb construction but rather with co-ordinate verb compounding, for the following reasons:

- a. The verbs in serial construction cannot – with one exception – be separated from one another (see below).
- b. Both parts of the construction are independently attested as verbs.
- c. A number of instances of it resemble what has been described in Mandarin as resultative verb compounds (Li 1990; Fabb 1998: 77).

We had an example in (2a), another example is the following:

- (10) hə m- é n!hō !hún g!!hōē.
 N1 TOP- PAST hit kill.SG dog
 'He beat the dog dead.'

The construction does not exhibit any clear head-modifier or endocentricity structure; but there is one parameter that determines the arrangement of and the relationship between verbs, namely conceptual iconicity: Whenever the two verbs express events that can be understood to follow one another in time then the verbs are presented in this order; there are no counterexamples to this iconicity principles in our text collection. Thus in (11), the arrangement of the verbs for ‘take’ and ‘eat’ reflects the temporal sequence of the events concerned.

- (11) *kā hà llúā nùhì ín llhām̀hè.*
 and N1 HAB take.PL⁵ eat animal.PL
 ‘And he [the lion] usually caught and ate the animals.’ (3/5)

But there is one possible argument against a compounding analysis: With a limited number of verbs used as V_1 , tense-aspect markers are placed between the two verbs. The verb *glè* ‘to come’ in example (12a) belongs to this class of verbs. Note further that the past tense marker can optionally be attached to the preceding verb, in which case it loses its consonant, cf. (12b).

- (12) a. *!xūú má glè kē gè'è.*
 !Xuu TOP come PAST sing
 ‘!Xuu moves while singing.’
 or
 b. *!xūú má glè- ē gè'è.*
 !Xuu TOP come PAST sing
 ‘!Xuu moves while singing.’

Assuming that these tense-aspect markers in their contracted form are suffixes on V_1 , a compounding analysis would entail that the language has infixes. However there is no evidence elsewhere in the language to suggest that there is anything that would in some way qualify as infixes. To be sure, the occurrence of affixes between two constituents is not reason enough to argue against a compounding analysis;⁶ problems with such an analysis arise mainly from the fact that, first, the past tense marker *kē* in many of its uses is not an affix but rather a free form, as in (12a), and, second, that it is not only *kē* that can occur between the two verbs but rather the whole paradigm of tense-aspect markers.

To conclude, there are arguments in favor of both verb serialization and compounding. However one may wish to decide on this issue, !Xun is not an isolated case: Similar structures of verb-verb collocation can be found in Papuan languages such as Kalam and Yimas and have been referred to as complex verb serialization.

The problem of derivation vs. serialization and compounding can be illustrated with examples (6) and (9), which are clearly suggestive of productive patterns of serialization:

- a. The items $\grave{n}lh\ddot{u}ny\bar{a}$ and $llx'\bar{a}\bar{e}$ in these examples serve exclusively as functional markers, more precisely as derivational elements on the preceding verb.
- b. In this capacity, their use is productive with activity (or manner) verbs.
- c. This productivity is determined by semantic categories; thus, in the two examples discussed, the derivational function is restricted to manner/activity verbs serving as V_1 .
- d. That the functional markers change the category of the stem can be shown most clearly in the case of $\grave{n}lh\ddot{u}ny\bar{a}$ as a comparative marker (6), which turns intransitive verbs, such as \acute{u} 'go', into transitive ones.
- e. In their functional use, they can be said to belong to a closed class of morphemes which altogether includes roughly fifty items.

Thus, on the basis of their functions and characteristics one could argue that there is a productive pattern of derivation. At the same time, these derivational patterns can equally be interpreted as representing special instances of verb-verb collocation that can be described alternatively as a serialization or a compounding construction.

To conclude, these observations suggest that one and the same item in this language can be defined on the basis of contextual distinctions simultaneously in terms of serialization, compounding, and of derivation.

6. The Southeast Asia sprachbund

The structural properties discussed above are not unheard of in other languages. Most prominently, Bisang (2003) postulates a catalogue of typological properties listed in (13)⁷ for what he calls the languages of East and mainland Southeast Asia; I refer to them in short as the Southeast Asia sprachbund⁸ (see Heine & Kuteva 2005).

- (13) Selected properties of the Southeast Asia sprachbund
 - a. There is no clear-cut boundary separating the lexicon from grammar.
 - b. Morphemes denoting grammatical functions are not limited to one particular category, and vice versa: There is no one-to-one relationship between grammatical function and category.

- c. Pragmatics (that is, context) is more important than the lexicon and morphosyntax for determining the grammatical status of morphemes.⁹
- d. Serialization, compounding, and derivation are not unambiguous descriptive notions.
- e. There are neither obligatory arguments nor obligatory grammatical categories. For example, once an argument is introduced it need not be expressed again in the next clause. Furthermore, lexemes are fairly free to occur in a number of different syntactic slots.
- f. There are no morphological paradigms. While in many other languages grammatical markers would be arranged in a system characterized by notions like affixes, aspect oppositions, etc., such markers are not integrated into such a system.

This description provides an outline of the overall morphosyntactic profile of the sprachbund. But not all properties characterizing the sprachbund are also found in !Xun: (13e) and (13f) are not really characteristic of this Khoisan language. But the remaining properties are, as can be illustrated with the following example: The Chinese item *zài* ‘live, be at’ functions as a full verb in (14a), as a preposition in (14b), and as a progressive aspect marker in (14c).

(14) Chinese (Bisang 2003:6–7)

- a. *tā zài túshūguǎn.*
s/he be.at library
‘S/he is at the library.’
- b. *tā zài yīyuàn sǐ le.*
s/he COV:be.at hospital die- TAM
‘S/he died at the hospital.’
- c. *tā zài ān íxié.*
s/he TAM:be.at put.on leather.shoe
‘S/he is putting on his/her leather shoes.’

As this example shows, the Chinese word *zài* ‘live, be at’ exhibits the same kind of polyfunctionality and polycategoriality that we encountered in !Xun: Depending on the context in which it is used, one and the same item can serve quite different lexical and grammatical functions, and which of these is intended is determined by context.

7. Grammaticalization chains

How to account for such typological characteristics? In particular, what can be held responsible for the fact that one and the same linguistic form has a clearly lexical status on the one hand and that of a functional marker on the other? With reference to the examples used in this paper, how to relate such contrasting meanings as ‘to leave’ and that of a comparative marker (‘more than’), or ‘to meet’ and that of a cooperative derivation (‘together’)?

Grammaticalization theory offers a coherent way of answering these questions. There is a general conceptual process whereby certain verbs lose much of their lexical content and assume a grammatical function when in construction with other verbs or nouns. Well-known examples are verbs developing into tense or aspect auxiliaries (cf. English *will, be going to, used to, keep*), adpositions (cf. English *suppose, except*), derivational markers (e.g., verbs for ‘make’ assuming the function of causative markers), or other grammatical functions. The two examples discussed earlier are instances of this general process.

Verbs meaning ‘leave’, ‘abandon’, or ‘come from’ provide a not uncommon source for ablative markers (‘from’), and the !Xun verb *̀̀hũnyā* is the only conventionalized means of expressing what in other languages is expressed by ablative inflections or adpositions. Ablative markers again are worldwide probably the most widespread source for the grammaticalization of markers denoting the standard of comparison (‘(more) than’; Heine & Kuteva 2002: 188ff.); examples can be found e.g. in most Asian languages from Turkish to Japanese; the following example is taken from the Australian language Aranda, where (15a) illustrates the locative meaning of the ablative suffix *-nge* and (15b) its grammaticalized use as a marker of standard of comparison.

(15) Aranda (Pama-Nyungan; Wilkins 1989: 185–86)

- a. Re pmere- nge lhe- ke lhere- werne.
 3:SG:SUBJ camp- ABL go- PAST:CPL creek:bed- ALL
 ‘He went from the camp to the creek.’
- b. Kwementyaye kele anteme atyenge- nge arlpenty- ulker.
 Kwementyaye O.K. now 1:SG:DAT- ABL tall- more
 ‘Kwementyaye is already taller than I am.’ [Lit. ‘K. is already more tall from me’]

Accordingly, examples such as (6) are suggestive of a grammaticalization process whereby a verb meaning ‘leave’ is used in specific contexts as an ablative marker (‘(away) from’) and eventually as a comparative marker. The use of the !Xun verb for ‘leave’ as both an ablative and a comparative marker re-

flects a crosslinguistically attested process of conceptual transfer, whereby the spatial notion [away from X] is used as a conceptual template to express the comparative notion [more than X].

A grammaticalization pathway from a verb ‘meet’ to a cooperative derivation is so far undocumented, but it is conceptually plausible, in that in certain contexts a propositional schema of the form [X meets Y and does Z] assumes the meaning [X and Y do Z together], where ‘meet’ assumes the function of a semantic modifier of the main verb.

What the structure of the two verbal items of !Xun shows is that their different uses are suggestive of a process of grammaticalization extending from a clearly lexical to a clearly functional pole, where the various uses constitute different manifestations or stages of the process. Such a situation is crosslinguistically nothing unusual; what makes !Xun and the languages of the Southeast Asia sprachbund special cases are the following interrelated observations: First, while such grammaticalization processes are crosslinguistically not unheard of, in these languages they constitute the primary strategy in which markers for grammatical functions arise. And second, while in other languages this process may proceed further, leading to the emergence of derivational and inflectional affixes, in these languages the process is arrested at an early stage of development: It does not proceed clearly beyond the boundary that separates major from minor grammatical categories, open from closed morpheme paradigms, or lexical from functional categories. Accordingly, what in other languages takes the form of highly grammaticalized morphologies retains an essentially lexical outfit in languages such as !Xun and Chinese, where lexical and functional meanings are distinguished exclusively on the basis of the context in which the relevant items occur.

8. Accounting for polyfunctionalism

In accordance with this typological distinction, languages differ remarkably with regard to how they treat lexical items that over time “mutate”, that is, that grammaticalize into functional categories. On the one hand, there are languages where this process gives rise to new morphosyntactic categories turning into clitics and affixes of other categories, that is, they develop from major to minor categories – the result being that there is a fairly straightforward distinction between lexical and functional categories, and between compounding and derivation. Probably the majority of the world’s languages belong to this type, let us call them type A.

On the other hand there are languages, let us say type B languages, that do not carry the grammaticalization process to completion, that is, where grammaticalization tends to be arrested at some incipient stage. Prototypical cases of type B languages are Chinese and other southeast Asian languages; !Xun and some other analytic-isolating languages represent clearly less rigid instances of type B. Type A languages have been well described, and most models of linguistics use them as a basis for generalizations. What distinguishes type B from type A are properties such as the ones listed in (16).

(16) Properties of type B languages

- a. Functional categories taking the form of inflectional or derivational affixes are rare.
- b. Grammatical functions are overwhelmingly encoded by means of lexical items and constructions.
- c. Accordingly, a number of “lexical” items in such languages are polysemous, polyfunctional, and polycategorical – in other words, there is no one-to-one relationship between grammatical function and morphosyntactic category: What clearly serves the expression of a grammatical function has properties characteristic of lexical categories.
- d. What this entails is that there is no clear-cut boundary between the lexicon and grammar, or between compounding and derivation.
- e. Rather than fixed morphological or syntactic rules it is pragmatic factors such as context-specific information and encyclopedic knowledge that determine the meaning and status of a given item or construction.
- f. Accordingly, there are limits on what needs to be obligatorily expressed in such languages: Which participants are presented is determined primarily by pragmatic needs rather than by morphosyntactic rules.

What such observations suggest is that the linguist confronted with type B languages is faced with the following problems that are of a more marginal nature in the analysis of type A languages:

Problems inherent in describing type B languages

- a. Descriptive templates in terms of conventional morphological parameters are hard to apply.
- b. Since the boundary between the lexicon and grammar is notoriously fuzzy, linguistic description suffers from problems of categorization: For example, what is described by one author as functional categories is analyzed by another author as special uses of lexical forms or constructions.

- c. An arrangement of grammatical forms and constructions in terms of morphological paradigms is frequently problematic since a given linguistic item can be described alternatively with reference to different functional and pragmatic parameters.
- d. Accordingly, it is hard to generalize on cooccurrence restrictions among grammatical forms.

This typological distinction correlates in one respect with that between what Huang (1984) calls “hot” vs. “cool languages”. Hot languages, like English or French, correspond to some extent to type A languages: They are shaped by morphosyntactic templates – in particular, they do not allow for omission of core participants like subjects in finite clauses. Cool languages, such as Chinese, Korean, or Japanese, correlate with type B languages: They are governed by discourse-pragmatic parameters such as topicality, givenness, etc.; they freely allow for omission of core participants, and context takes care of disambiguating meanings and discourse functions.

We have no way of explaining the nature of this typological distinction, other than observing that it appears to be affected by areal influence – that is, we can predict that a language that is spoken close to and/or is in contact with a type B language is more likely to exhibit type B properties than a language that is not. But this observation does not explain the presence of type B languages. Quite obviously, these languages represent a situation of incomplete grammaticalization, that is, where grammaticalization processes from lexical to functional categories have been arrested at some intermediate stage. However, it remains unclear what exactly accounts for this situation, that is, why in type B languages grammaticalization is not carried to completion.

9. Conclusions

It goes without saying that the distinction made in the preceding section between type A and type B languages is highly simplified and, hence, to some extent artificial. To be sure, there are languages that correspond to the prototypes proposed – English being overwhelmingly type A and Chinese is a fairly clear instance of a type B language, at least as far as the description by Bisang (2003) suggests; still, both kinds of structural organization are to some extent present in both language types.

Descriptive labels such as serialization, compounding, and derivation are not entirely satisfactory since they do not capture salient properties of the

“transient” nature of the linguistic forms in type B languages, which are determined primarily by pragmatic rather than by morphosyntactic strategies. The question that arises on account of such observations is whether type B languages require descriptive tools that in some way differ from the techniques that have been proposed to deal with type A languages such as English, Inuit, or Arabic. One such tool would be a model that accounts for grammatical structure in terms of continua rather in terms of discrete categorization. Within the framework of grammaticalization theory, such forms and constructions are described by means of chains (Heine 1992) or clines (Hopper & Traugott 1993) – but so far no adequate model is readily available to deal with all the facts characterizing type B languages.

Abbreviations

ABL = ablative; ALL = allative; COV = coverb; CPL = completive; DAT = dative, DU = dual; EX = exclusive (pronoun); HAB = habitual; IN = inclusive (pronoun); MIR = mirative; N1, N3, N4 = noun class 1, 3, 4; NEG = negation; PASS = passive; PAST = past tense; PL = plural; PROG = progressive; Q = question marker; RECI = reciprocal; SUBJ = subject; T = transitive suffix; TAM = tense, aspect, and modality; TOP = topic marker; TR = transitive preposition; 1, 2, 3 = first, second, third person; (1/66) = text and sentence number referring to our text collection.

Notes

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2. The passive marker *ti* is an enclitic; hence, it is not mentioned in the listing of Table 1.
3. The figures in parentheses refer to the numbering in our text collection.
4. Note that in this sentence, the object is topicalized, receiving the topic marker *má*.
5. Suppletive verbs of !Xun, such as *gù* PL *n/hiùhi* ‘take’, show agreement of number with the object of transitive sentences and with the subject of intransitive sentences.
6. We are grateful to an anonymous reviewer for having drawn attention to this observation.
7. Property f. is not mentioned by Bisang, we add it on the basis of his account.
8. Bisang mentions only Chinese, Thai, Khmer, Hmong, and Vietnamese in his paper, and his examples are restricted to Chinese, Khmer, and Hmong.

9. Thus, Bisang concludes: “The adequate interpretation of a marker depends on the context in which it is used and is thus governed by pragmatics [...]” (Bisang 2003:6).

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The borderline between derivation and compounding

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1. Introduction

The borderline between derivation and compounding is permeable in both directions: things which were once compounds can be seen as affixed forms, and things which were once affixes can take on a new life as words (although change in this direction is much rarer than change in the other direction). Examples will be given below. Where a borderline is permeable in this way, we might ask whether it is a real borderline at all: do we have two clear categories, or do we have prototypes at each end of a single dimension? To answer this question we need to look more widely at the types of phenomena we find at the border between the two. Some such phenomena will be discussed, and it will be concluded that the borderline between the two types is nevertheless as well established as the notion of word is.¹

2. The diachronic permeability of the borderline

First it will be established that individual morphs can cross the borderline between derivation and compounding, and the method by which this is achieved will be illustrated. First crossings from compound to derivation will be dealt with, then crossings from derivation to compound. None of this is particularly controversial.

2.1 Moving from compound to derivation

The histories of many of the familiar and well-studied European languages give us a number of cases of compounds at one period of history becoming derivatives at a later period. This is a standard scenario in grammaticalisation. The suffixes in the English words *childhood*, *kingdom*, *manly*, and in the French word *doucement* “gently” are all derived from elements which, at an earlier period of history, were independent words. In each of these cases the independent version of the word has disappeared or has become so phonologically and semantically distinct from the affix that speakers are no longer able to relate the two to each other without specific historical knowledge (in the case of *kingdom*, the *-dom* derives from the same source as modern English *doom*). The French example here is rather different from the others in that it is not clear that there was ever a compound involved rather than a lexicalised NP in the ablative case (Elcock 1960:145), a syntactic origin which can still be seen in modern Spanish where the adjectives alone can be coordinated: *clara y distintamente* “clearly and distinctly” (Elcock 1960: 146). Nevertheless, the two-word origin is obvious.

Although it may be difficult to follow a single such affix through its development and get a good idea of the way it appeared to speakers at various stages in the diachronic development, it is easy enough to find examples of constructions in modern languages which appear to be at different points along a potential diachronic development of the same kind. Although we cannot guarantee that the outcome in all of these cases will be an affix, we seem to have the relevant conditions for this to happen.

First we find a particular word being used more and more frequently as a compound-element, perhaps to the extent that its use as a compound element is more frequent than its use as an independent word. In some of these cases the meaning which is observed in the compound instances is also distinct from the meaning which pertains when the word is used independently. I have two sets of examples of this stage, one from French, one from English.

The French example set is the use of particular words in compounds, especially in journalistic styles. Specific instances are *idée* “idea” used as a head element and *choc* “shock” or *clef* “key” used as a modifying element (Giurescu 1970): *prix-choc* “shock price”, *idée culinaire* “cooking idea”, *mot clef* “key word”. Dubois (1962:71) talks in terms of pseudo-affixation in such cases although it may superficially seem that these are examples of straight compounding. In the case of *clef* we could alternatively argue that *clef* is simply used as an adjective, an analysis suggested by some recent French dictionaries (though

others seem to resist this analysis); this would lose any parallel with the similar frequent use of *idée*, though, and it is presumably this parallel which underlies Dubois' terminology. Similar facts in Danish are usually seen differently, but may be analysed in a parallel way, as when Dansk Sprognævn (1972) lists compounds as having productive first elements or productive second elements. Thus *forbrugerorienteret*, *fremtidsorienteret*, *markedsorienteret*, *projektorienteret*, *samfundsorienteret* ("user-friendly, future-friendly, market-friendly, project-friendly, society-friendly") are seen as instances of a productive element *orienteret* (lit. "oriented"), while *mediearbejder*, *mediebevidst*, *mediebevidsthed*, *medieforsker*, *medieforskning*, *medieimperialist*, *mediepamper*, *medietrip* ("media employee, media conscious, media consciousness, media researcher, media research, media imperialist, media trade union boss,² media trip") are seen as evidence for the productivity of the element *medie* "media". Only if there is some degree of formal or semantic isolation of the element would it seem justified to call this pseudo-affixation. Some examples where this occurs are given below. The point here, though, is that semantic isolation may be preceded by high frequency.

The English example is the use of *mock* in initial position before an adjective and *type* in final position forming adjectives, as discussed by Renouf & Baayen (1998). They cite examples such as *flights of mock-literary dialogue* and *a funky, regional blues-type version*. *Mock* is generally used as an adjective, but here looks adverbial, and *type* would normally be used in constructions like *a type of blues*, so there is formal isolation if not semantic isolation.

Next we can point to instances where a particular element, while usually analysed as an affix, is homophonous with or orthographically identical to an independent word, and where a semantic relationship can be perceived between the two although they are not synonymous. I am thinking of things like English *hopeful* and *readable*. Here *-ful* and *-able* are easily related to the independent words *full* and *able* (as noted in the *Oxford English Dictionary* specifically for *-able*, despite the distinct origins of *-able* and *able*) although the independent words could not be used in similar structural contexts. The rather different *-ful* found in *spoonful* has shown its transition from independent word to affix not only in its reduced spelling but in productively having the plural form *spoonfuls*, which establishes the affix *-ful* as having its own word-class, noun, and being the head of the word (according to the *Oxford English Dictionary*, the normative plural *spoonsful* is a relatively recent invocation of an older grammatical view — one which, to judge by the examples in the *Oxford English Dictionary*, has been surpassed since the 15th century, though see Dalton-Puffer & Plag 2000 for more recent commentary).

Where there is no semantic relationship between the independent word and the affix or where the independent word is no longer in use, there is rather less problem in seeing the elements concerned as affixes: the suffix *-wise* (used in words such as *resource-wise*) and the *-ric* in *bishopric* (cognate with modern German *Reich* “empire”) illustrate this step.

The diachronic shift from compound or phrase (German *Drittel* < *dritt Teil*) to derivative is not a special move; it is simply a step along the way from compound or phrase to complete demotivation, which is finally met in such celebrated examples as *husband* (< house dweller), *hussy* (< house wife), *lord* (< loaf ward), and so on.

Parenthetically, we should note the role played by headedness in all of this. If we believe that a derivational suffix is the head of a word in *hopeful* etc., then such a construction should be possible only from a right-headed compound, while left-headed compounds should be necessary to derive a form such as **fullhope*. We would thus expect to find that languages in which there are left-headed derivatives are a subset of those which have left-headed compounds. From the Maori derivatives illustrated below, we might conclude that *whaka*-prefixation in Maori is left-headed (since word-class seems to be determined by the prefix), which is consistent with the general pattern of left-headedness for compounds in Maori (Bauer 1993:515–6; Harlow 2001:123–5.)

(1)	whaka-koowhatu	cause-stone	“petrify”
	whaka-atu	cause-away.from.speaker	“point out”
	whaka-ae	cause-yes	“agree”
	whaka-rongo	cause-hear	“listen”
	whaka-moohio	cause-know	“inform”
	whaka-inu	cause-drink	“feed (a baby, etc.)”

Maori also seems to have right-headed derivatives, such as nominalisations ending in *-Canga* (Bauer 1993:512–3). Whether their presence is to be attributed to a general suffixing preference (Hall 1992) or whether it is independently motivated may be worthy of some consideration.

The existence of English left-headed derivatives like *encage*, *unhorse* are apparent counter-examples to the hypothesis presented here, since there are no left-headed compounds from which such forms can derive (and left-headed compounds are not only rare in English as a whole, but tend to occur in other types, such as *passer-by*). Interestingly, the prefixes here have no history as full words, but arise in English as prefixes.

2.2 Moving from derivation to compound

Examples which move from derivation to compound are much rarer and less homogeneous in type. In some cases, any change seems to be the incidental result of some other change in the language. Given that scholars of grammaticalisation often hypothesise that changes in this direction are impossible, even suggestive examples are important.

The clearest instances are those where a suffix becomes well enough established to stand as an independent word. Examples are rare, and the examples I have do not appear to go as far as we might expect. The English suffixes *-ism* and *-ish* are both strong enough to stand as words in certain circumstances. The noun *ism* (usually in the plural) is used as a summary of a lot of words which end in *-ism* or in conjunction with *-ology* to indicate patterns of belief. *The Oxford English Dictionary* rather unhelpfully refers to *ism* as a ‘quasi-noun’ in this use. The adjective *ish* is used only when the previous utterance has included an unmodified adjective, e.g. in a dialogue such as this constructed one: A. *Are you hungry?* B. *ish*. In principle both of these examples should in time lead to words such as *sexism* and *hungryish* being perceived as compounds. In practice, we are only at the stage where *ism* and *ish* are perceived as unusual uses of suffixes, perhaps citations, and *hungryish* is not yet perceived as a compound.

Prefixes are rather different. Some of these become independent via a process of clipping (*hyper* < *hyperactive*; *mini* < *mini-car*, *mini-skirt*; *photo* < *photograph*; *tele* < *television*), some simply become used in isolation (*mega*, *super*). While it may be the case that some words formed with these newly autonomous elements are perceived as compounds (*mega-cool*; *minibike*, *minicab*; *telecast*, *television*) it is difficult to see how this can be tested meaningfully, given that the meaning of the entire word will be the same under either interpretation. We might argue that the meaning of *mega-cool* depends on the meaning of independent *mega* rather than prefix *mega-* as in *mega-ton*, but even that is difficult to be entirely sure of, since *mega-ton* may not have a precise meaning “one million tons” for many speakers, but rather an imprecise meaning “huge”. In any case, it must be admitted that many of these examples are rather poor examples of a shift from affix to lexeme (and thus the perception of item + base as a compound rather than as an instance of prefixation) since the relevant items derive originally from lexemes in the source languages, and we could argue about how much they have ever been perceived as real affixes in English.

3. Synthetic compounds

Because of the productivity of synthetic compounds, it is possible for the head of the compound to be a word which is rare or specialised in isolation. This has been noted for Danish, for instance. Hansen (1938: 109), for example, says that

In distinguishing a compound from a complex word it is usual to say that the former is made up of two words which can occur independently in the language, while the latter is made up of one word and an element which cannot occur independently. But such a division is not completely sufficient. According to this distinction, *cigarmager* (“cigar-maker”) would be a derivative because *-mager* does not occur as an independent word. A comparison of *cigarmager* and, for example, *cigarfabrikant* (“cigar-manufacturer”) shows us the injustice in trying to distinguish the two cases. [My translation, LB]

Other examples from the literature include Danish *raadspørgsel* “counsel query = request for advice” (now rarely heard), *stenbider* “stone biter = lumpfish”, *voldtægt* “violence taking = rape”, Swedish *djurplågeri* “animal torment = cruelty to animals”, and English *householder* (Bauer 1978:50). The Danish examples are clearer than corresponding English ones, since English *cigarmaker* can be paraphrased as *a maker of cigars*, while that type of circumlocution is not available in Danish. In this respect, Danish *cigarmager* is equivalent to English *fishmonger*.

There is a structural difficulty here. Our grammars allow us to deal with words which have the structure of

(2) [[first-aid]er]

and with words which have the structure of

(3) [town][[cri]er].

Some of the examples above must, despite the uniqueness of the second element, take one of the structures (2) or (3). *Voldtægt* “violence-taking = rape” illustrates the point about the lack of (3) structure well, since the verb *tage* “take” has different nominalisations in different contexts (*modtage* “receive” *modtagelse*; *indtage* “take in” *indtagelse* “loading” *indtægt* “income”, *kalorieindtag* “calorie intake”), yet neither *tagelse* nor *tægt* occurs in isolation. That is *voldtægt* demands the structure in (2). However, *cigarmager* has neither the structure of (2) nor that of (3): the *-er* can be added only when there is a direct object present in the word, and must then be added phonologically to the verb, but *mager* is not an independent word and there is no constituent **cigarmag* to which the *-er* can be suffixed. The lack of a constituent **cigarmag* is shown

in part by the fact that there is no independent verb *mage* “make” in modern Danish. We cannot draw a correct tree for a word like *cigarmager* given normal assumptions.

Similar problems exist with the parasynthetic formations of a language like French. *Embarquer* “embark” is created directly from the noun *barque*, even though there is no verb *barquer* and no noun *embarque* (Darmesteter 1917:23). Here we might invoke a synaffix (Bauer 1988) which does not make sense in the Danish case where composition is involved. Of course, saying that there is a synaffix in *embarquer* labels the problem but does not explain it; under normal assumptions we cannot draw a tree for a circumfix any more than we can for *cigarmager*.

German constructions like *eisenhaltig* “rich in iron”, *reaktionsfreudig* “highly reactive”, *regelmäßig* “regular” seem to give rise to similar problems, though in rather more productive formations, and the solution is the same. Where these have no regular semantic correspondence with the apparent base of the second element, we can no longer speak of compounding, so that these words must be derivatives, as, indeed, is recognised in many German dictionaries and handbooks of word-formation (see Fleischer 1975:276 on *-mäßig*, for example).

4. Unique morphs

There are a number of words which appear to contain unique morphs and where it may not be clear *a priori* whether the entire word is to be interpreted as a compound or a derivative, so again we may seem to have words on the borderline.

First consider words like Danish *bomuld* “cotton”, *jomfru* “virgin”, *brombær* “blackberry” and English *bilberry*, *cranberry*, *raspberry*. *Bomuld* is a loan from Low German, cognate with High German *Baumwolle*, but while *uld* means “wool” *bom* has no meaning in isolation in Danish. In *jomfru* we can see *fru* “woman”, but *jom* is not meaningful. As in the last case, this is derived from Low German, compare High German *Jungfrau*. In *brombær*, *bær* means “berry” but these days *brom* serves merely to distinguish that kind of berry from other types. *Bilberry* functions the same way in English. English *cran* in *cranberry* is a variant of *crane* (the bird, compare the Danish *tranebær* “cranberry”), but is no longer recognisable as such. English *raspberry* is derived from *raspis* meaning “raspberry” with a redundant “berry” added (compare *oak tree*, *cod fish*). Its origin is no longer transparent. In all of these instances

we could opt to treat the word concerned as monomorphemic, but this would run counter to native-speaker intuition. We might ask why these words are perceived as deficient compounds rather than as deficient instances of prefixation. The answer seems to be twofold. The first point is that affixes tend not to be unique (we will find a counter-example below). A prefix which occurs only once might just as well be a very rare lexeme, since no obvious difference to structure results from this distinction, and rare lexemes are a relatively familiar phenomenon, while rare affixes tend to pass unrecognised (as the *-rel* in *mongrel*, *scoundrel*, see Marchand 1969). The second, and more important point is that parallel cases have lexemes in the relevant position. Parallel to *cranberry* we can find *blackberry*, *blueberry*, *cloudberry*, *dewberry*, *elderberry*, *gooseberry*, *snowberry*, *strawberry*, all of which (in speech or writing) appear to have first-element lexemes. If the first elements in *huckleberry* and *whortleberry* are rare or unknown as independent words, they nonetheless have the phonological structure of words. Even rare potential exceptions like *barberry* and *mulberry* have first elements which could be interpreted as full words. There are no berries with names such as **preberry* or **foreberry* to act as models for an analysis involving prefixation.

If *laughter* counts as containing a unique morph (the reason it may not be *slaughter*), then the parallels from other nominalisations are presumably enough to make *-ter* seem like a suffix. The case of *bishopric* (mentioned earlier) is rather less clear, but again appropriate parallels appear to be words like *county*, *duchy*, *earldom*, *kingdom*, *popedom*.

5. Splinters

By splinter I understand a fragment of a word used repetitively in the formation of new words. Splinters arise through the process of blending (my use here is a slight extension of the use found in Adams 1973: 142, who attributes the first use of the term to Berman 1961). Thus *-nomics* in *Thatchernomics* is a splinter, recurring in *Reaganomics*, *Rogernomics*, *Nixonomics*, etc.

Splinters may have any one of three possible fates. They may disappear. I suspect that this is what has happened to *-teria* (a splinter from *cafeteria* which had a brief flourishing in words like *washeteria* but now seems to have become unavailable). They may become productive affixes. This appears to be what has happened with *-nomics*, cited above, although it is of very low productivity. They may become independent words. This is what has happened to

burger, originally a reanalysis from *hamburger* which shows up in *beefburger* and *cheeseburger*.

Since splinters may turn into affixes or words, we appear to have a situation where it is not clear whether new forms using the splinter will be derivatives or compounds. The *-scape* which emerged from *landscape* might be a case in point, though the *Oxford English Dictionary* lists so many instances of its being used independently that there can be little doubt as to its status as a word now. On the other hand, if we believe the *Oxford English Dictionary*, *-cade* (from *cavalcade* into *motorcade*) has become an affix. One difference between the two is that *-cade* occurs with initial combining forms like *aero-*, while *scape* does not. This might make *-cade* appear to be a final combining form, but it is not clear why it would make it less of a word: words also occur with initial combining forms.

6. Neo-classical compounds

Neo-classical compounds are a problem in this context, but not a central one, even assuming that we wish to derive them by processes of additive word-formation just like native compounds. The question with a form like *psychology* or *philosophy* is that it is not really clear that it is a compound. If we define a compound as being a lexeme whose immediate constituents are representatives of lexemes (a fairly standard type of definition, even if the wording is perhaps unfamiliar), it is not clear that neo-classical compounds should be included at all: *logy* is not a lexeme of English. Nevertheless, items like *philo-* and *-sophy* do have word-like features, both in phonological and in semantic terms, and this is part of the reason for the nomenclature 'neo-classical compound'. While it may be true that it is not clear whether an item such as *sociolinguistics* should be treated as some special subset of neo-classical compound or a special subset of prefixed construction, we do not need to argue about the 'wordhood' of *socio*. For most purposes it is clear that it is not a word, and we can simply take that point of view here. The implication is that whatever the formation-type that lies behind *sociolinguistics*, it is not straightforwardly compounding, and the same must be true of *philology* etc. The label 'neo-classical compound' is then shown to be exocentric, since it is not the case that a neoclassical compound is a compound (under normal readings of the word), but that is a terminological problem rather than a problem of substance.

7. Prefixation

At least in French, there is a long history of treating prefixation as composition and limiting the term ‘derivation’ to suffixal derivation. It is not always clear precisely how this was viewed at the relevant period, since we find, for example, Darmesteter (1917:24) saying that *déborder* in the sense “untuck” “est formé du verbe simple *border* et du préfixe négatif *dé*”. This is despite the fact that prefixes do not appear to be discussed as such in the work. The reason for the treatment of prefixation as compounding is easy to see. Most of the prefixes are either formally identical to particles (adverbs or prepositions) in current French, or derive from Latin particles. Thus the verb *surestimer* “overestimate” looks parallel in structure to the noun *surenchère* “higher bid”, both being made up of two words which occur freely elsewhere in the language. *Sousmettre* “submit” with an element which occurs as a preposition looks entirely parallel to *permettre* “permit” with a first element which never occurs independently but is obligatorily bound.

Amiot, in this volume, argues that semantically there is nonetheless a distinction to be made between the particles and the prefixes. For example, *sur*, which in isolation means “on”, is regularly to be interpreted as “in excess” when it acts as a prefix, in words like *surcharge* “surcharge”, *surestimer* “overestimate”. The types that Amiot accepts as compounds are largely exocentric and perhaps better seen as lexicalisations of syntactic phrases than as compounds: examples include *après-midi* “afternoon”, *avant-guerre* “period before the war”, *entr’acte* “intermission”.

If Amiot’s results are fully generalisable, we see that again a distinction between derivation and compounding is not as problematic as the historical discussion might lead us to expect. A given form with one meaning is word-like, the same form with a different meaning is always bound. The traditional position arose by considering form without considering the co-occurrent meaning.

8. Conclusion

Given the difficulty there has been for many years in defining a word, it is not surprising that there should be difficulty with the borderline of compounding. Items which fit poorly into the category of word should also fit poorly into the category of possible compound element. Yet it is not items like *they’ll* which provide problems for the borderline between compounding and derivation, since they are so obviously syntactic rather than either compound or

derivational. Rather it is items to which it is difficult or impossible to attribute a word-class which seem to cause the problems, and instances where items are in the process of gaining or losing the independence that goes with having a word-class. The problem, to put it another way, is not the distinction between derivation and compounding – as defined in terms of words versus obligatorily bound affixes that is fine. It is the fact that items may fail to maintain an independent (or a lack of independent) status historically. Prefixes and second-elements of compounds that are becoming affixes as well as some unique morphs are in the process of losing independence (see also Dalton-Puffer & Plag 2000); splinters and affixes up-grading to words may be in the process of gaining independence. None of this threatens the distinction between derivation and compounding: it is the declaration of independence which is vital.

Notes

1. I should like to thank Wolfgang Dressler, Alex Klinge, Franz Rainer and an anonymous referee for their comments on earlier versions of this paper.
2. A *pamper* is a politician or trades union activist who, having risen to a position of power, neglects his or her erstwhile peers or supporters.

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Compounding and derivation

Evidence for Construction Morphology

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1. Introduction

The proper classification and demarcation of morphological phenomena is an important issue in handbooks and textbooks of morphology. This issue is not only a matter of terminological and didactic clarity. The primary purpose of a good classification is to enable the linguist to make the best generalizations possible about linguistic phenomena. By assigning a specific class of linguistic constructs to the realm of (one of the subdomains of) morphology on the basis of a specific property of those constructs, we endeavour to predict other aspects of their grammatical behaviour, on the basis of a well-articulated theory of the relevant subdomain.

Two kinds of demarcation play a prominent role in the morphological literature: the demarcation of compounds and syntactic constructs, and the demarcation of inflection and derivation. The demarcation issue in morphology that I will focus on in this paper is a third one, that between compounding and derivation. Although this demarcation issue may be less prominent in the morphological literature than the two other mentioned above, it has received some attention, for instance in Bauer (1983:36–38), Tuggy (1992), and ten Hacken (2000).

The traditional criterion of demarcation between compounding and derivation is the following: compounding consists of the combination of two or more lexemes, whereas derivation is characterized by the addition of an affix, that is, a bound morpheme, to a lexeme.

In Item-and-Arrangement Morphology, the difference between compounding and derivation reduces to one property of certain morphemes,

namely that they are bound. In this approach to morphology, affixes can be represented as lexical items, and will then be subcategorized as only appearing in combination with a stem. These bound morphemes are like lexical morphemes in that they may belong to a syntactic category such as N, V or A. The syntactic category label of these affixes can be percolated to the node that dominates the complex word which they form part of. In English and related languages, this percolation is executed in accordance with the Right-hand Head Rule. This is the line taken in Lieber (1980, 1992), Selkirk (1982), and Emonds (2002). This type of analysis stresses the similarities between compounding and derivation. Yet, this does not mean that the demarcation issue is solved by unifying these two types of word formation. We still have to establish criteria for determining if a particular morpheme is to be considered a bound or a free morpheme, as we will see below. Furthermore, we want to know whether the difference between being unbound or bound correlates with other differences, such as semantic and phonological ones, and how these differences are accounted for.

The Item-and-Arrangement approach can be contrasted with one in which the morphological mechanisms of compounding and derivation are considered as radically different in nature. This is the line taken in Anderson (1992), a study that defends an Item-and-Process view of both inflectional and derivational morphology (see Stump 2001: Chapter 1 for a more detailed and sophisticated classification of morphological theories). Derivation is seen as a set of operations on lexemes that derive other lexemes. Each of these operations is a Word Formation Rule with a phonological aspect (the addition of a phonological string or some other phonological operation), a semantic aspect (the change of meaning), and a syntactic aspect (the syntactic (sub)category of the new lexeme) (see Beard 1995 for a similar view). Compounding, on the other hand, is accounted for by a set of Word Structure Rules which form part of syntax, and combine lexical stems into compounds.

Anderson's view of the difference between compounding and derivation relates to his process view of morphology. In the realm of inflection, the relation between morpho-syntactic features and their phonological spell out can be so complex that this is taken to justify the view that the phonological changes are to be seen as the spell out of morpho-syntactic features. That is, Anderson defends a realizational view of inflection (see Stump 2001: Chapter 1 for extensive motivation of this view), and extends this view of morphological rules to derivational morphology (Anderson 1992: Chapter 7). The basic advantage of this approach is that it unifies derivation by means of affixation with other kinds of word formation, performed by formal operations such as conversion, vowel alternation, and reduplication, which are not straightforwardly concate-

native. However, it completely separates compounding from affixal derivation. Therefore, it is essential for the validity of this hypothesis that there is a sharp empirical distinction between compounding and affixal derivation.

In Anderson's view, this difference between compounding and derivation also implies that derived words do not have an internal morphological structure once they have been derived (the hypothesis of A-morphous Morphology). Compounds, which are created by different kinds of rules, do have an internal structure that is accessible to other rules of grammar. For instance, there are rules for introducing linking elements into German compounds that must have access to the internal structure of such complex words (Anderson 1992:297). The hypothesis of A-morphous morphology is logically independent from the analysis of derivation as a set of Word Formation Rules. In a realizational framework, one could also sustain a theory of derivational rules that do assign morphological structure to complex words. Anderson's radical claim, however, is that the assumption of morphological structure is superfluous. When a new word is formed by a derivational rule, its new phonological, syntactic, and semantic properties are specified by that rule, and the grammar need not have access to the morphological structure of a word once it has been derived.

In this paper I will argue that compounding and affixational derivation cannot be demarcated in the way proposed by Anderson. In Section 2, I will show that there is no sharp boundary between compounding and affixal derivation, since there are many borderline cases. Section 3 will show that morphological and phonological rules need to have access to the internal morphological structure of derived words. In that respect, they appear to be like compounds. In Section 4 I will argue that these commonalities of compounding and derivation can be accounted for in the theory of Construction Morphology that makes use of constructional schemas of varying degrees of abstractness for the description of word formation patterns.

2. Borderline cases

In this section I will present some observations that imply that there is no sharp boundary between compounding and derivation.

2.1 Prefixation or compounding?

The demarcation of prefixation and compounding is a notoriously difficult task in the morphological analysis of Romance languages. In French, for instance, some morphemes appear both as preposition, and as the first part of complex words. Are these complex words cases of compounding, or of prefixation (examples from Amiot 2005)?

- | | | | |
|--------|------------------|----|-------------------------------|
| (1) a. | avant 'before' | b. | avant-guerre 'prewar period' |
| | après 'after' | | après-ski 'id.' |
| | contre 'against' | | contre-coeur 'id.' |
| | en 'in' | | en-lever 'to raise' |
| | entre 'between' | | entre-preneur 'id.' |
| | sur 'on' | | sur-exposition 'overexposure' |

The first parts of the complex words in (1b) are sometimes considered prefixes, probably because they do not correspond to content words, but to grammatical words (prepositions), whereas prototypical compounds are combinations of content words. Yet, grammatical words are also lexemes, and therefore, the words in (1b) might be classified as compounds since they are combinations of two lexemes.

Similarly, Dutch features a number of words used as preposition, adjective, or adverb for which corresponding forms are found as parts of complex words. They are usually called prefixes (Booij 2002a: 116). They do not carry the main stress of the word, just like undisputed Dutch prefixes such as *be-* and *ver-* that do not form lexemes by themselves. If these complex words were compounds, we would expect main stress on the first constituent, as is the rule for Dutch compounds.

- | | | | |
|-----|--------------------|------------------|-------------------------------|
| (2) | <i>prefix/word</i> | <i>base word</i> | <i>prefixed verb</i> |
| | aan 'at' | bid 'to pray' | aan-bid 'to worship' |
| | achter 'after' | haal 'to fetch' | achter-haal 'to find out' |
| | door 'through' | snijd 'to cut' | door-snijdt 'to cut through' |
| | | spek 'pork' | door-spek 'to interlard with' |
| | mis 'wrong' | vorm 'to form' | mis-vorm 'to deform' |
| | om 'around' | sluit 'to close' | om-sluit 'to enclose' |
| | | cirkel 'circle' | om-cirkel 'to encircle' |
| | onder 'under' | breek 'to break' | onder-breek 'to interrupt' |
| | | titel 'title' | onder-titel 'to subtitle' |
| | over 'over' | win 'to win' | over-win 'to defeat' |
| | | brug 'bridge' | over-brug 'to bridge' |

vol 'full'	maak 'to make'	vol-maak 'to bring to perfection'
voor 'before'	kom 'to come'	voor-kom 'to prevent'
weer 'again'	schijn 'to shine'	weer-schijn 'to reflect'

This suggests that even when each constituent of a complex word corresponds to a lexeme, this is not sufficient for classifying that complex word as a compound.

The prefixal analysis of the words in (1) and (2) implies that a lexeme may have an affixal counterpart. Obviously, we must have good reasons for this kind of proliferation. Above, I mentioned phonological evidence in the case of Dutch: these prefixes pattern with undisputed prefixes in not carrying the main stress of the complex word. Other evidence is semantic in nature. Sometimes, there is a recurring semantic difference between the word and the corresponding affix: the affix has a different meaning, or a more restricted range of meanings than the corresponding lexeme. Consider the Dutch morpheme *weer*. As an independent lexeme, it has the meaning 'again, back', as part of a complex word it has the meanings 'in opposition' and 'in inverse direction':

- (3) opposition: *weer-spreken* 'to counter-argue', *weer-staan* 'to resist'
 inverse direction: *weer-kaatsen* 'to reflect', *weer-klinken* 'to resound'

A third property that such bound morphemes with a lexemic counterpart may share with undisputed prefixes is their ability to determine the category of the complex word they create. Most prefixes in Germanic languages tend not to affect the syntactic category of the complex word they are part of, in conformity with the Right-hand Head Rule. Thus, from that point of view it does not matter if such words are considered compounds or prefixed words. Some undisputed verbal prefixes of Dutch such as *be-* and *ver-* can be used to derive verbs from nouns. That is, they have category-changing power. The same seems to apply to some of the initial constituents of the verbs in (2) as shown in (4):

- (4) *noun* *verb*
 titel 'title' onder-titel 'to subtitle'
 brug 'bridge' over-brug 'to bridge'

The verbs *titel* and *brug* do not exist in Dutch, which means that the verbs in (4) seem to be derived from nominal bases. This then speaks in favour of classifying such morphemes as prefixes, with the implication that we distinguish between the lexeme *onder* and the prefix *onder-*, and between the lexeme *over* and the prefix *over-*.

Another borderline case from Dutch is formed by complex nouns that begin with the constituents *linker-* ‘left’ or *rechter-* ‘right’. These constituents are used productively in noun formation, as in:

- (5) linker-been ‘left leg’, linker-arm ‘left arm’, rechter-kant, ‘right side’, rechter-raam ‘right window’

These constituents are related to the adjectives *links* ‘left’ and *rechts* ‘right’, but do not occur as lexemes, and would therefore qualify as prefixes. Yet, due to their specific lexical meaning, and their relationship with these adjectives, an interpretation as bound stems seems to be more natural. They look similar to the affixoids to be discussed in the next subsection.

2.2 Affixoids

In Section 2.1 we noted that morphemes as parts of complex words may differ in meaning from the same morpheme when used as an independent lexeme. The terms ‘affixoid’ and ‘semi-affix’ have been introduced to denote morphemes which look like parts of compounds, and do occur as lexemes, but have a specific and more restricted meaning when used as part of a compound.

Marchand (1969: 326) used the term ‘semi-suffix’ to denote “such elements as stand midway between full words and suffixes. Some of them are used only as second words of compounds, though their word character is still recognizable” (the words in 6b):

- (6) a. -like (godlike), -way (someway), -wise (clockwise), -worthy (praiseworthy), -ware (hardware, software);
b. -monger (whoremonger, moneymonger, scandalmonger), -wright (playwright, shipwright)

In my opinion, *-monger* and *-wright* in (6b) should be classified as bound lexical stems, in line with Marchand’s observation, and because the set of words ending in *monger* etc. cannot be extended. The relevant morphemes in (6a), which also occur as independent words, function similar to suffixes, since the set of words ending in *like*, *worthy*, and *ware* can be extended. Therefore, we may indeed classify them as semi-suffixes or suffixoids (cf. Dalton-Puffer & Plag 2001) since they are morphemes that function as suffixes and have corresponding lexemes. The notion ‘suffixoid’, or more generally ‘affixoid’ should, however, not be seen as a theoretical notion, only as a provisional classificatory term, as we will see below.

The term ‘affixoid’ is sometimes also applied to suffixes like German *-schaft* ‘-ship’ and Dutch *-baar* ‘-able’, and *-heid* ‘-ity’. These suffixes derive historically from lexemes. This is reflected in their phonological behaviour: they are non-cohering suffixes that behave as prosodic words of their own. For instance, they carry secondary stress. Synchronically there are no corresponding lexemes, and therefore there is conclusive evidence for these morphemes being suffixes. Hence they should not be classified as suffixoids. Instead, we classify them as non-cohering suffixes (cf. Booij 2002c).

The following Dutch words may be considered to contain suffixoids:

(7) *corresponding to adjectives*

echt ‘real’	kleur-echt ‘lit. colour-real, colourfast’
vrij ‘free’	stof-vrij ‘lit. dust-free, without dust’
arm ‘poor’	zout-arm ‘lit. salt-poor, low on salt’
rijk ‘rich’	vezel-rijk ‘lit. fibre-rich, fibrous’

corresponding to nouns

boer ‘farmer’	groente-boer ‘lit. vegetables-farmer, greengrocer’
	kolen-boer ‘lit. coal-farmer, coal trader’
	les-boer ‘lit. lesson-farmer, teacher’
	melk-boer ‘lit. milk-farmer, milkman’
	patat-boer ‘lit. chips-farmer, chips seller’
	sigaren-boer ‘lit. cigar-farmer, cigar seller’
	vis-boer ‘fishmonger, fish dealer’
man ‘man’	bladen-man ‘lit. magazines-man, magazine seller’
	kranten-man ‘lit. newspapers-man, newspaper seller’
	ijscor-man ‘lit. ice cream-man, ice cream seller’
	melk-man ‘milk man, milk seller’

More examples from Dutch can be found in Meesters (2002). The reason why morphologists tend to consider the heads of these complex words as suffix-like is that they have a specific meaning when used in that context. For instance, whereas the lexeme *vrij* has a range of meanings, it only has the meaning ‘without’ when part of a complex word. Similarly, *arm* has the restricted meaning ‘with only a small amount of’ in complex words such as *zoutarm*. The morpheme *boer* ‘farmer’ (etymologically related to the English morpheme *bour* in *neighbour*), when part of a complex word, has the meaning ‘trader in’, and no longer means ‘farmer’. Crucially for a classification as semi-affix, the ‘bound’ use of these morphemes is productive (cf. Schmidt 1987; Becker 1994), as is illustrated here for *boer*. This morpheme is used in combination with nouns

that do not denote agricultural products, and words with this morpheme form a series of words with a shared meaning component. A similar observation can be used for the lexeme *man* ‘man’ when used in compounds.

The observation of morphemes having specific meanings and being used productively with that specific meaning also applies to the class of Dutch prefixoids:

(8) *nouns used as pejorative prefixoids:*

kanker ‘cancer’	kanker-school ‘bloody school’
kut ‘cunt’	kut-ding ‘worthless thing’
kloot ‘testicle’	klote-houding ‘bad attitude’

nouns used as prefixoids of positive evaluation:

meester ‘master’	meesterwerk ‘very good piece of work’
	meester-zet ‘masterly trick’
wereld ‘world’	wereld-vrouw ‘fantastic woman’
	wereld-vent ‘fantastic guy’

nouns used as prefixoids with intensifying meaning:

steen ‘stone’	steen-koud ‘very cold’, steen-goed ‘very good’, steen-rijk ‘very rich’
beer ‘bear’	bere-sterk ‘very strong’, bere-koud ‘very cold’, bere-leuk ‘very nice’

The prefix *bere-*, for instance, derives from the noun *beer* ‘bear’, followed by the linking phoneme *-e*. Hence, the phonological form of this prefixoid is [be:rə]. Attachment of *bere-* to an adjective has become a very productive means for the expression of intensification of meaning, of having the property to a very high degree. Some examples (data from a Google search) are:

- (9) bere-goed ‘very good’, bere-interessant ‘very interesting’, bere-moeilijk ‘very difficult’, bere-sterk ‘very strong’, bere-tof ‘very good’, bere-veel ‘very much’, bere-zalig ‘very pleasant’

Judging from the orthography of a number of examples from my Google search with a space between *bere* and the next word, some users of Dutch have even reinterpreted *bere* as an adverb with the meaning ‘very’. The same applies to the compound constituent *reuze-* (a combination of *reus* ‘giant’ and a linking element *-e*) which can also be used as the independent word *reuze* with the meaning ‘fantastic, great’: *een reuze vent* ‘a fantastic guy’, *Dit is reuze* ‘This is great’.

The rise of affixoids is a typical case of grammaticalization, content words becoming grammatical morphemes. As is well known from grammaticalization studies, semantic change precedes formal change. In the case of affixoids semantic change has already taken place, but there is no formal change yet: formally they are just like (real) compounds, there is usually no phonological weakening involved. We also observe the layering that is characteristic of grammaticalization: besides the bound use of these words, their use as independent lexemes, with a greater range of meanings, is still possible.

The theoretical problem that there is no sharp boundary between compounding and affixal derivation is not solved, however, by postulating a category of semi-affixes or affixoids; it is just a convenient description of the fact that the boundary between compounding and derivation is blurred, but does not in itself provide an explanation of why this is the case. What we need is a model of morphological knowledge that will enable us to explain these facts. In Section 4 this issue will be taken up again.

These grammaticalization facts show that compounding and derivation cannot be seen as two completely different morphological mechanisms, the position defended in Anderson (1992). For the same reason, Haspelmath (1992) concluded that it makes sense to define suffixes as heads of complex words, just like the right constituents of compounds.

The inverse development, bound constituents becoming words also takes place. This is an example of degrammaticalization. An example from both English and Dutch is the use of *ex* with the meaning ‘former partner’; German also has the noun *Ex* with the same meaning. In Dutch, bound stems or prefixes such as *makro* ‘macro-, at a higher level’ and *anti* ‘anti-, against’ have developed into independent lexemes (Booij 2002a). The possibility of degrammaticalization of, in particular non-cohering, affixes into lexemes once more blurs the boundary between compounding and affixal derivation.

3. Access to morphological structure

The strong similarity between compounding and derivation leads to the conclusion that derivational affixes do exist as constituents in the morphological structure of words, just like the constituents of compounds. Derivational morphemes function as building blocks in morphological structure. This goes against the theory of A-morphous Morphology. The following quotation from Anderson (1992) will serve to clarify this issue (cf. Bauer 1999 for relevant comments):

No one would contest the claim that [a constituent analysis] corresponds to something which is ‘true’ of the word *discontentedness*, but it does not follow from this that the decomposition of the word is an aspect of its structure, any more than its etymology is. To see that there is an issue here, we can contrast such views, based on morphemes, with a picture of morphology as based on a system of rules, which map words (or stems) onto other words [...]. On this picture, the structure of *discontentedness* is given by a derivation:

$$N[\text{content}] \xrightarrow{R_{\text{dis}}} N[\text{discontent}] \xrightarrow{R_{\text{ed}}} A[\text{discontented}] \xrightarrow{R_{\text{ness}}} N[\text{discontentedness}]$$

Each step of such a derivation maps the phonology, the semantics, and the syntax of its inputs onto the (corresponding) properties of its outputs. It expresses the same facts as the [constituent structure tree], such as the observation that some of the subparts of the word are themselves words, the relative scope of morphological operations, etc., but without imposing a distinct structure on derived words to represent their morphological analysis as an aspect of their form [...].

Anderson (1992: 260)

Let us therefore see if there is evidence for rules of grammar that need access to the morphological constituent structure of derived words. Recall that Anderson pointed out that we do need access to the constituent structure of compounds in order to specify the location of linking elements in German compounds. Dutch also has such linking elements (*-s* or *-e*) at the internal boundary of compounds. However, the linking element *-e-* not only appears within compounds, but also before a number of suffixes, in particular after stems ending in an obstruent (Booij 2002a):

- (10) -lijk heer-lijk ‘delicious’ drag-e-lijk ‘bearable’
 -ling twee-ling ‘twins’ vreemd-e-ling ‘stranger’
 -loos zin-loos ‘senseless’ nod-e-loos ‘without necessity’
 -nis vuil-nis ‘garbage’ begraf-e-nis ‘burial’

Therefore, if rules for the distribution of such linking elements need access to the internal structure of compounds, they need likewise access to the internal structure of derived words.

An important argument in favour of access to morphological structure is the phenomenon of base-driven restrictions discussed in detail in work by Plag (Plag 1999; Hay & Plag 2004). For example, English verbs ending in one of the suffixes *-ify*, *-ize*, or *-ate* require (one of the allomorphs of) the suffix *-ation* for being nominalized. Use of one of the other English nominalizing suffixes such as *-age*, *-al*, *-ance*, or *-ment* is thereby excluded:

- (11)
- | | |
|-------------|---|
| steer | steerage |
| betray | betrayal |
| annoy | annoyance |
| contain | containment |
| magnify | magnification, *magnify-age, *magnify-al,
*magnify-ance, *magnify-ment |
| verbalize | verbalization, *verbaliz-age, *verbaliz-al,
*verbaliz-ance, *verbalize-ment |
| concentrate | concentration, *concentrate-age, *concentrate-al,
*concentrate-ance, *concentrate-ment (Hay & Plag 2004) |

An example of a base-driven restriction from Dutch is that the choice of a specific female suffix is determined by the last suffix of the base word. For instance, the female suffix *-ster*, can only be added to nouns ending in *-er*, *-aar*, or *-ier*. The following table illustrates these base-driven restrictions:

- (12) The formation of female personal nouns (Booij 2002a: 102)
- | suffix | bases in | male noun | female noun |
|--------|----------|---------------------------|----------------|
| -e | – | fotograaf ‘photographer’ | fotograf-e |
| -es | – | voogd ‘guardian’ | voogd-es |
| | -aar | zond-aar ‘sinner’ | zondar-es |
| | -er | zang-er ‘singer’ | zanger-es |
| -esse | -aris | secret-aris ‘secretary’ | secretar-esse |
| -euse | -eur | mass-eur ‘massagist’ | mass-euse |
| -ica | -icus | historic-us ‘historian’ | historic-a |
| -ière | -ier | cabaret-ier ‘id.’ | cabaret-ière |
| -in | – | leeuw ‘lion’ | leeuw-in |
| -ix | -or | rect-or ‘id.’ | rect-rix |
| -rice | -eur | ambassad-eur ‘ambassador’ | ambassad-rice |
| -ster | -aar | wandel-aar ‘walker’ | wandelaar-ster |
| | -ier | winkel-ier ‘shopkeeper’ | winkelier-ster |
| | -er | VVD-er ‘member of VVD’ | VVD-ster |

As the last example of (12) already illustrates, the suffix *-er* of a base noun is replaced with *-ster*, a case of paradigmatic word formation (Booij 2002a: 6–7):

- | | |
|---|--|
| (13) betwet-er ‘lit. better knower, pedant’ | betweet-ster ‘female pedant’ |
| oproerkraai-er ‘lit. revolution crower,
ring leader’ | oproerkraai-ster ‘female ring
leader’ |
| padvind-er ‘lit. path finder, boy scout’ | padvind-ster ‘girl scout’ |
| strooplikk-er ‘lit. syrup licker, toady’ | strooplik-ster ‘female toady’ |
| rederijk-er ‘rhetorician’ | rederijk-ster ‘female rhetorician’ |
| reizig-er ‘traveler’ | reizig-ster ‘female traveler’ |
| aanvoer-der ‘captain’ | aanvoerd-ster ‘female captain’ |
| bestuur-der ‘driver’ | bestuurd-ster ‘female driver’ |
| woordvoer-der ‘spokesman’ | woordvoerd-ster ‘spokeswoman’ |

In the last three examples, the base nouns end in an allomorph of *-er*, the suffix *-der*. This allomorph has to be used after stems ending in [r]. The fact that this [d] also appears in female nouns such as *aanvoerdster* (where we would expect *aanvoerster* if the suffix *-ster* were attached to the verbal stem *aanvoer*) shows that this is a case of suffix replacement, with *-er* being replaced with *-ster*. Paradigmatic word formation is the case par excellence for the accessibility of the internal structure of derived words. A related phenomenon is that of truncation (Aronoff 1976): the deletion of the last suffix of the stem before the newly added suffix, as in *nomin-ee* derived from *nomin-ate*, a notion also used by Corbin (1987) in her analysis of French word formation. As Maiden (2001:42–43) points out, such truncation operations cannot be interpreted as phonological operations, unlike what Anderson (1992:280ff.) suggests. The pieces that are deleted or replaced are not just strings of segments, but morphological units. Hence, truncation (or suffix substitution) requires access to the internal morphological structure of derived words.

Affix substitution also occurs as a diachronic process. Maiden (2001) provides some cases from Romanian and Spanish in which the final suffix of derived words has been replaced with another one. For instance, Maiden observed the following pattern of suffix replacement for Romanian words with diminutive suffixes:

[...] “in all nouns and adjectives with suffixal *-el -ei -ea -ele* [...] the feminine adverbial singular *-ea* is subject to replacement by the etymologically unrelated diminutive suffix *-ică*.”
(Maiden 2001: 32)

Maiden’s explanation for this replacement is that the suffix *-ea* had become ambiguous, and was therefore replaced by another, unambiguous one. This process requires that the relevant words can be segmented into a stem followed by a derivational suffix (Maiden 2001: 36).

A by now classical case of the sensitivity of morphology to the morphological structure of words is the formation of the past participle in Dutch. For regular simplex verbs, a prefix *ge-* and a suffix *-t/-d* (regular verbs) or *-en* (irregular verbs) are added to the stem. If the stem begins with an unstressed prefix, however, the prefix *ge-* must be omitted:

- (14) loop 'to walk' *ge-lop-en*
 ver-lóop 'to pass' *ver-lop-en, *ge-ver-lop-en*
 verbaliséer 'to fine' *ge-verbaliseer-d, *verbaliseer-d*

In the last example, the first syllable *ver-* has no prefix status, and hence, the prefix *ge-* cannot be omitted. Therefore, the morphological structure of prefixed verbs must be accessible to morphology. This point is also made in Carstairs-McCarthy (1993), a general critical discussion of the claims of Amorphous Morphology.

The morphological structure of a word may also play a role in the computation of its prosodic structure. A specification of the phonological string of segments of an affix does not suffice for computing the prosodic structure of morphologically complex words, because word-internal morphological boundaries may play a role in the division of the phonological string into syllables, feet and prosodic words. For instance, the right edge of prefixes may have to coincide with a syllable boundary even when this violates the universal constraint of syllabification referred to as No Empty Onset. Suffixes may create a prosodic word of their own. Put generally, there are constraints on the alignment of prosodic boundaries with word-internal morphological boundaries (McCarthy & Prince 1994). Such effects on the prosodic structure of words cannot be specified as part of the phonological operation performed by a Word Formation Rule, because this would imply that the creation of the prosodic structure of a complex word is part of that phonological operation. That cannot be correct since the principles of prosodification are not affix-specific. They follow the general principles for assigning prosodic structure to words. For instance, Dutch derived words ending in the suffix *-achtig* 'ish' receive their prosodic structure just as other words. Thus, the suffix *-achtig* is syllabified as *ach.tig*. The only affix-specific property concerns the alignment of its left boundary with a prosodic word boundary. Hence, a word like *rood-achtig* 'reddish' will receive the following prosodic structure and phonetic representation (the dots indicate syllable boundaries, ω stands for 'prosodic word'):

- (15) [[*rood*]_A*achtig*]_A (*ro:t*) _{ω} (α x.təx) _{ω}

This example shows that morphological constituent structure must be accessible for the computation of the prosodic structure of a word. Similar observations can be made for prefixed words. As pointed out in Section 2, the right edge of some prefixes always coincides with a syllable boundary, even when this means that the first syllable of the stem will be onsetless. Again, morphological structure must be accessible. This is illustrated by the Dutch prefixed verb *ver-as* ‘to cremate’, with the syllable structure *ver.as*, with an onsetless second syllable (at the phonetic level the onset may be filled by a glottal stop).

In conclusion, the assignment of morphological constituent structure to words derived by means of affixal derivation appears to be well motivated, and make such derived words structurally similar to compounds. Morphological and phonological rules require information about the internal structure of derived words for their proper application.

4. Construction morphology

The structural similarity between compounding and affixal derivation can be expressed by means of word formation schemas that express generalizations about sets of existing words, and can also be used to make new words. For instance, Dutch has right-headed compounds, suffixed nouns, and prefixed nouns. These three morphological patterns can be represented as follows:

- (16) a. compounding: $[[x]_X][y]_Y]_Y$
 b. suffixation: $[[x]_X y]_Y$
 c. prefixation: $[x[y]_Y]_Y$

The variables x and y stand for phonological strings and the variables X and Y for lexical categories. The schema for compounds expresses the generalization that Dutch compounds are right-headed since the category variable for the right constituent is identical to that of the whole word. The schema for prefixation expresses that prefixation is category-neutral, and that the syntactic category of prefixed words is identical to that of its stem. Below I will discuss to what extent there are cases of Dutch prefixation that do not conform to this schema. The difference between compounding and derivation is that in derivation one of the constituents does not have a lexical label since it does not correspond to a lexeme.

In the case of the compound schema (16a), it is possible to add the following semantic specification to that schema:

- (17) $[[x]_X[y]_Y]_Y$ 'Y with some relation to X'

This schema is part of the lexicon, and represents the pairing of a formal structure to a semantic structure.

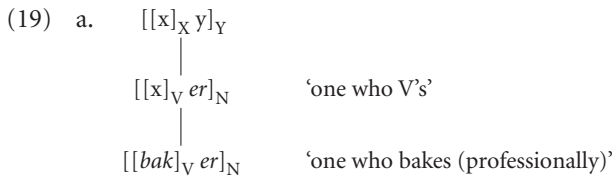
The schemas (16b, c) are general schemas for suffixation and prefixation respectively which do not mention specific affixes. In the traditional Word Formation Rule approach of Aronoff (1976), however, there is a rule for each individual affix, for instance, one for the English deverbal suffix *-er*. The bound nature of the morpheme *-er*, the category-determining role, and the semantic contribution of this suffix are expressed by its being specified in the relevant rule. Therefore, we may ask how these general schemas and Word Formation Rules relate.

In order to answer this question, let us apply the idea of Construction Grammar (Goldberg 1995; Kay 1997) to the domain of morphology, thus developing the theory of Construction Morphology. The basic insight of Construction Grammar is that specific instantiations of general syntactic patterns may have started to lead a life of their own, and thus deserve a specification of their own. A famous example is the English construction *V NP away*, as in *twisting the night away*. This is an example of a constructional idiom, a syntactic pattern in which one position is lexically specified (*away*), and that has a specific, not completely compositional meaning (Jackendoff 2002). Such idioms with partial lexical specification are called 'constructional idioms'.

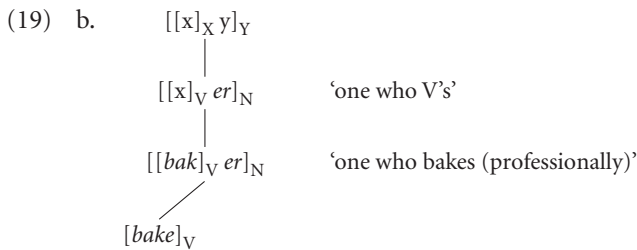
The morphological scheme for the Dutch and English deverbal suffix *-er* can now be interpreted as an example of a constructional idiom at the word level: deverbal nouns with *-er* have the meaning 'one who V-s'; this meaning is to be linked to this specific instantiation of suffixation schema (16b):

- (18) $[[x]_V er]_N$ 'one who V's'

The basic idea of constructional schemas is that they represent generalizations about sets of complex words with varying degrees of abstraction. The complex words themselves are specified individually in the lexicon to the extent that they are established, conventionalized lexemes. The relation between the abstract scheme and the individual instantiations of that scheme can be represented as a tree with the constructional schema as the dominating node. Individual words form the lowest nodes of the trees, and inherit the properties of the nodes by which they are dominated. For instance, the word *baker* might be represented as follows in the lexicon:



Each lower node inherits the properties of its dominating node. These inherited properties count as redundant information on the lower node. In the case of *baker*, this word also inherits properties from its base lexeme *bake*. Hence, it will also be linked to that lexeme:



Thus, complex words must be allowed to have multiple linkings in the lexicon.

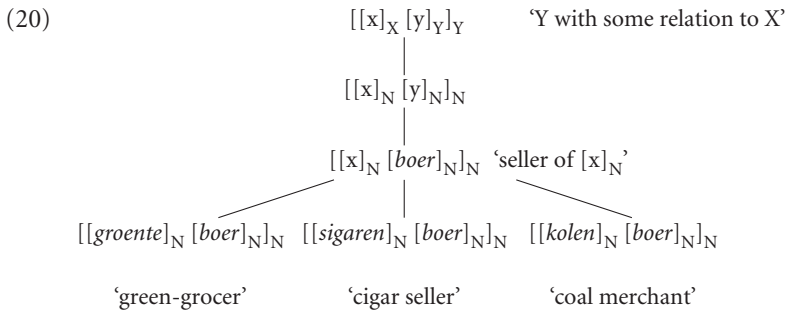
The second line in (19b) represents the schema for deverbal nouns in *-er*. New words can be formed according to this schema through the formal operation of unification. This schema can be unified with, for instance, the verb *to fax*, thus leading to the deverbal noun *faxer* 'one who faxes'. The relation between the hierarchical ordered lines of representation is that of instantiation. For instance, the word *baker* is an instantiation of the scheme for deverbal nouns in *-er*.

This use of inheritance trees can be found in a number of frameworks such as Construction Grammar, Network Morphology (cf. Corbett & Fraser 1993 and the literature mentioned there), and in Cognitive Grammar (Taylor 2002). A fine example in the domain of derivational morphology is Riehemann's analysis of German *bar*-adjectives (Riehemann 1998).

Language users acquire knowledge of these abstract morphological schemas on the basis of their knowledge of a set of words that instantiate this pattern. Once they have come across a sufficient number of words of a certain type, they can infer an abstract scheme, and will be able to extend that class of words. As Tomasello (2000:238) points out, the endpoint of language acquisition is to be defined "in terms of linguistic constructions of varying degrees of complexity, abstraction, and systematicity". This also applies to the level of morphological constructions.

The existence of abstract, productive schemes for complex words does not mean that these words are no longer stored in the lexicon. “Instances and schemes will generally co-exist and mutually support each other” (Taylor 2002: 307).

A crucial property of Construction Morphology is that it allows for intermediate representations, in between the concrete words and the abstract pattern. Consider the Dutch compound words ending in *boer* discussed above. We may represent the information concerning these words as follows in the lexicon:



This hierarchy expresses that there is an intermediate generalization for compounds with *boer* as their right constituent. This pattern has started a life of its own, although its instantiations still conform to the schema for Dutch nominal compounds, with a specific semantic contribution of *boer* that is no longer identical to that of the lexeme *boer* ‘farmer’. The schema at the intermediate level is a constructional idiom: a construction in which one of the two positions is occupied by a specific lexical item. In this respect this schema is completely identical to that for deverbal nouns. The only difference is that the phonological string *boer* may still be linked to the lexeme *boer* with the meaning ‘one who produces and sells food’. As long as this is the case, the formal structure of these words ending in *boer* will be represented as compounds. If the semantic relationship between *boer* ‘farmer’ and these complex words has become opaque for the language user, they will be disconnected, thus turning the morpheme *boer* within these complex words into a bound morpheme.

Similar constructional schemas intermediate between completely abstract patterns and the individual words that are instantiations of that pattern can be used to account for the behaviour of the other affixoids mentioned above: they are lexemes with a specific meaning when embedded in a compound structure. We may call them constructional idioms at the morphological level. Thus we get schemas for Dutch suffixoids such as:

- (21) $[[x]_N [vrij]_A]_A$ 'without N'
 $[[x]_N [arm]_A]_A$ 'low on N'
 $[[x]_N [rijk]_A]_A$ 'with a lot of N'

Again, these schemas are like those for affixal derivatives, except that the right constituents correspond to lexemes that are stored independently in the lexicon. Moreover, these schemas are dominated by a higher node with the more abstract schema $[[x]_N [y]_A]_A$. Intermediate abstract schemas such as those in (21) express that the specific meaning of a lexeme when embedded in a compound may recur. That is, there is a series of such words, and the set can be extended.

Another illustration of the importance of intermediate degrees of abstraction in lexical trees is the following. Dutch has N + N, V + N, and A + N compounds. Thus, in order to express this generalization, we might want to assume a general sub-schema for $[XN]_N$ compounds in the Dutch lexicon, in which X is a variable for the three classes of content words N, V, and A. However, these three patterns do not have the same status. For instance, the class of A + N compounds is marginally productive and the left A constituent cannot be a compound itself, whereas N + N compounding is extremely productive, and the left N can itself be a nominal compound. In other words, there must be a level of abstraction at which this difference between the different subsets of X + N compounds can be specified. That is, at least the following three levels of abstraction are required for A + N compounds in the lexicon of Dutch:

- (22)
- $$\begin{array}{c}
 [XN]_N \\
 | \\
 [AN]_N \quad \text{Condition: A is not a compound} \\
 / \quad \backslash \\
 \text{speciaalzaak 'specialist shop'} \quad \text{grootvader 'grandfather'}
 \end{array}$$

This approach to affixoids can also deal insightfully with Mithun's observation for Spokane (Mithun 1999:48–51) that suffixes with a lexemic counterpart, the so-called lexical suffixes, tend to be semantically vaguer than their lexemic counterparts. The lexical suffix is by nature part of an abstract schema, and hence is used in a more general fashion, just like the Dutch affixoids discussed above. The increasing semantic vagueness (bleaching) and, in the case of Spokane, the phonological reduction of the suffixes compared to the corresponding lexemes are characteristic effects of the grammaticalization of lexemes into affixes.

Lexical hierarchies of this sort, with individual lexemes at the bottom of the hierarchy, and abstract patterns at higher levels express the tight relationship between the paradigmatic axis and the syntagmatic axis of language structure. Words can be assigned internal morphological structure and linked to abstract construction schemas (the syntagmatic dimension) on the basis of systematic form-meaning correspondences between existing lexemes (the paradigmatic dimension).

The same account can be used for the Dutch complex verbs listed in (2) in which the first constituent has a lexematic correspondent. For each of these prefix-like lexemes there will be a construction schema. For instance, the prefix *door-* may be specified as follows as part of a constructional schema:

- (23) $[[\text{door}]_P [x]_V]_V$ 'to V through completely'

This scheme is a generalization about verbs like the following:

- (24) *door-boren* 'to drill through'
door-breken 'to break through'
door-denken 'to reflect upon'
door-lopen 'to pass through'

This pattern is an instantiation of the more general schema of right-headed Dutch compounds. The morpheme *door* as used in these verbs denotes the (sometimes metaphorical) path of an action, resulting in complete affectedness of the patient of that action. Hence, the presence of *door* induces telic aspect. In other words, the traditional classification of this use of *door* as a prefix means that this word has a specific meaning when used as part of complex verbs. However, we do not have to consider *door* a prefix. It can keep its status of being the first constituent of a compound, because the meaning of *door* in this context is one of the meanings of *door* when used as a lexeme.

In some cases these 'prefixes' seem to have category-changing power, however, which would be a problem for linking them to the compound schema of Dutch. This is, for instance, the case for the examples *ondertitelen* and *overbruggen* in (4). These verbs cannot be linked to existing base verbs *titelen* and *bruggen*, and hence they look like cases of category-changing prefixation applied to nominal bases. However, we can maintain a compound analysis by making use of the idea of 'conflation'. This term is used here to denote the unification of two schemas for complex words.

The basic idea is that a schema can not only be unified with individual lexemes resulting into complex words, but also with another schema. For in-

stance, the Dutch compound schema can be unified with that of conversion of nouns into verbs. Thus, we get the following output of unification:

$$(25) \quad [[x]_P [y]_V]_V + [[y]_N]_V \rightarrow [[x]_P [[y]_N]_V]_V$$

Through unification with $[onder]_P$ and $[over]_P$, we get the following subschemas for verbs like *ondertitelen* ‘to subtitle’ and *overbruggen* ‘to bridge’ respectively:

$$(26) \quad \begin{array}{l} [[onder]_P [[y]_N]_V]_V \text{ ‘to put N under’} \\ [[over]_P [[y]_N]_V]_V \text{ ‘to put N across’} \end{array}$$

These schemas express that the use of these prepositions in verbal compounds can trigger the use of the schema for conversion of nouns into verbs. Thus, such conflated schemas enable us to express the dependency of the use of one word formation pattern on that of another one.

The analysis in (26) implies that the category-changing power of these ‘prefixes’ is only apparent, and that they are in fact category-neutral. Thus, they are in conformity with scheme (16c). A similar analysis is possible for undisputed prefixes such as *be-* and *ver-*, but I will leave this issue out of discussion here.

Note that we observed in Section 1 that these complex words are special in that it is the right constituent that carries main stress, unlike what is the case for most Dutch compounds. This can be expressed by a specific compound stress rule for words of the type $[[x]_P [x]_V]_V$. Thus, their formal status of compounds can be maintained.

The idea of ‘conflation’ may also serve to account for the co-occurrence of compounding and derivation. The term ‘synthetic compound’ has been coined by morphologists to denote complex words that seem to be formed by the simultaneous application of compounding and derivation. A clear example is the Dutch complex adjective *blauwogig* ‘blue-eyed’. There is no existing compound *blauw-oog* from which this word could have been derived, nor an existing derived word *og-ig* that can function as the head of the compound *blauwogig*. Note, however, that although *ogig* does not exist, it is a well-formed, possible word of Dutch. Therefore, we might say that the head of *blauwogig* is the possible, but not existing adjective *ogig* ‘eyed’. Other examples of such synthetic compounds are given in (27):

$$(27) \quad \begin{array}{l} \text{kort-adem-ig ‘short of breath’} \\ \text{lang-ben-ig ‘long-legged’} \\ \text{twee-lettergrip-ig ‘disyllabic’} \end{array}$$

The systematic co-occurrence of these two word formation patterns can be expressed by conflating the two relevant word formation schemas into a more complex one that can be said to have started a life of its own. This is confirmed by a specific semantic property of this class of words, the restricted semantic scope of the adjectival modifier. For instance, the scope of *blauw* in *blauwogig* is not the whole word *ogig*, but only its nominal base *oog* since the word means ‘having blue eyes’:

(28) $[A [N-ig]_A]_A$ ‘having N with property A’

In this schema, two slots, one for an adjective and one for a noun are open. This template does not introduce a new formal type of complex words, but it expresses that it is the combination of two independently motivated word formation processes that systematically and productively co-occur. That is, the simultaneous use of the two schemas appears to enhance their productivity. The two schemas that are conflated here are:

(29) $[A A]_A$ $[N-ig]_A$

Each of these schemas is motivated independently by the existence of the relevant types of words (AA compounds and denominal adjectives in *-ig* respectively). Their combination into one scheme has gotten a life of its own, with a specific constructional meaning, in which the left A constituent has scope over the nominal base of the adjectival head. The relevant part of the lexicon will be structured as follows:

(30)

$[A A]_A$	$[N-ig]_A$	
\	/	[relation of unification]
$[A[N-ig]_A]_A$		‘having N with property A’
/		[relation of instantiation]
blauw-og-ig ‘blue-eyed’	lang-har-ig ‘long-haired’	

If this analysis is correct, it is another proof of the thesis that compounding and affixal derivation cannot be assigned to different modules of the grammar.

The Construction Morphology approach defended above has the additional advantage that the same representational format can be used as that for constructional idioms. Jackendoff (2002) introduced the notion of constructional idiom to denote multi-word units of which some positions are fixed, but other variable. Good examples of constructional idioms are the different types of particle verb in Dutch and German. They are phrasal units of which the particle position is lexically fixed, and the verbal position is variable (Booij

2002b). Another nice illustration of the importance of this notion is the class of Frisian genitive compounds such as *koken-s-doar* ‘kitchen-GEN-door, the door of the kitchen’, which have phrase-like properties (Hoekstra 2003). As will be clear now, the notion constructional idiom is also adequate for schemas with a specific derivational affix, and for the class of compounds ending in *-boer*. The difference between a derivational suffix and the compound constituent *boer* is that the latter is also linked to the independent lexeme *boer* ‘farmer’. The notion ‘affixoid’ thus receives a formal interpretation in terms of linking patterns in the lexicon, and is therefore not to be seen as a theoretical term that introduces a third class of morphemes besides lexical morphemes and bound morphemes. An affixoid is a lexeme that occurs in a subschema for compounds in which the other position is still a variable, that is, without a lexical specification. Such schemas are intermediate between concrete individual compounds and fully abstract schemes for compound structures. The specific and recurrent meaning of a lexeme in the compound structure is specified at this intermediate level.

5. Conclusions

The boundary between compounding and affixal derivation can be crossed in the course of history of a language. Therefore, we cannot give two completely different formal accounts of these two types of word formation. Derivational affixes are pieces of morphological structure, just like the constituents of compounds. This position leads us to expect that compounding and derivational affixation do not differ in accessibility for rules of grammar. This expectation appeared to be borne out by the facts.

The strong similarity between derivation and compounding can be insightfully accounted for in the theory of Construction Morphology. Derivational patterns and sub-patterns of compounding are constructional idioms, schemas that are intermediate between the individual complex words in the lexicon, and more abstract schemas of word formation. An additional advantage of this approach is that it can be easily extended to the analysis of productive multi-word combinations that function as lexical units such as particle verbs and phrase-like compounds.

Finally, we may ask if the relation between lower and higher nodes and that between complex words and their base words in the lexical inheritance trees is monotonous. Monotonicity means that information on lower nodes cannot overrule or erase information on higher nodes (cf. Riehemann 1998 for a discussion of this issue). If lexemes as parts of compounds have more restricted

meanings than when used as words by themselves, as illustrated above, this implies that we have to allow for non-monotonicity. That is, we need the notion ‘default inheritance’: a lower node inherits the properties of its dominating nodes unless these are overruled by specifications on that lower node.

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Selection in compounding and derivation*

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1. Introduction

The goal of this paper is to show that a demarcation between derivation and compounding can be traced not only on the basis of the well-known formal differences between the constituents of each type, but also on the selection mechanism by which the head constituent selects the non-head.

In the recent past, morphological theory has time and again been concerned with the issue of *affixal selection*, being generally agreed that derivational affixes select the words they can attach to, viz. the base.¹ In this paper we will argue that, also in compounding, the head constituent selects the non-head. Our proposal can be formulated as the following generalization: in compounding and in derivation there is *head-selection*.² Although the notion of selection is a widespread one, a clear definition of the concept is rather difficult to find in the literature; furthermore, the notion is used differently in different theoretical contexts. *Affixal selection* is accepted in morphological studies since Aronoff (1976). The term selection is also broadly used in theoretical linguistics to depict the fact that lexical heads (usually verbs) impose restrictions on the linguistic environment in which they occur. From this point of view, *selection* is, in fact, *argument selection* or *complement selection* (and, thus, the subject of syntactic and/or semantic research).³

Nevertheless, *selection* is not used in the description of compound formation, which has been normally studied from a related but non-equivalent point of view, that is, *compound interpretation* (i.e. whether a fixed set of semantic relations between the constituents can be established).⁴ We would like to shift the focus of the debate from *compound interpretation* to the issue of *head-*

selection in compounding, thus allowing a direct comparison of the two main word-formation processes, derivation and compounding.

We will use the term *selection* in an intuitive and theory-neutral way, that is, as a mechanism by which an array of information associated with the selecting element determines the set of words that can be suitable ‘complements’ of that element in order to form a morphologically complex word. What this implies is that, formally, it is plausible to think of selection in morphology as a single phenomenon, *head selection*, encompassing (at least) both *argument/complement* and *affixal selection*.⁵

However, the selection operated by an affixal head is different from that operated by the head of a compound: in the following pages, we will explore the extent and manners in which selection differs in these two processes in a unified representational framework. Moreover, as we will show, there exist differences even within a single process of word-formation: different types of compound words are characterized by a different pattern of head-selection. We will use data from Italian and English to illustrate our point, although we assume that our proposals are not language-specific.

The aim of this paper thus is twofold: (a) to demonstrate that selection in derivation is different from selection in compounding and (b), to propose that selection in compounding is not unique: there are three subtypes of compound words, each showing a different mechanism of selection.

2. Representation

In order to illustrate the mechanisms of selection in word formation, we will use a formal representation that is largely inspired by Lieber’s (2003) treatment of Jackendoff’s (1990) framework of Lexical Semantics. Lieber proposes that the Lexical Conceptual Structure (LCS) of a word consists in two distinct levels: a *skeleton* of syntactic-conceptual representation containing information strictly relevant to the grammar (cf. (1a) below) and a *body* of encyclopaedic features (cf. (1b) below):⁶

- a3'. psych-verbs of the *preoccupare* 'worry' class:
 *disgusta-tore 'disgust-er'
- a3''. psych-verbs of the *temere* 'fear' class:⁹ *colpi-tore 'hit-er'
- b. verbs such as *sembrare* 'seem': *accadi-tore 'happen-er'

In other words, *-tore* does not attach to:

- (3) a. verbs with a non-agentive subject
- b. raising verbs

The selection operated by *-tore* can be expressed in terms of LCS. Assuming that the formal part of the suffix can be represented as in (4a), and its selectional properties as in (4b),¹⁰ the complete structure of *-tore* derivatives will be that in (4c):

- (4) a. [Thing [+com,-abst,+an] *-tore* ([i],[. . .])]
- b. [Event CAUSE ([Thing/Agent- ±vol/habit/prof/signed] [. . .])]
- c. [[Thing [+com,-abst,+an] *-tore* ([i],[j]),
 [Event CAUSE ([Thing/Agent-±vol/habit/prof/signed -i],[j. . .])]]

In (4a) 'Thing' expresses the fact that the output of *-tore* is a noun; in (4b) only the relevant part of the LCS is represented¹¹ and the (dotted) second argument position signals that the verb can be either transitive or intransitive; in (4c) the *i* indexes indicate that the R argument, typical of nouns, is linked to the first argument of the verb, while the *j* indexes show that the (possible) second argument of the verb can be a complement of the derivative (e.g. *giocare a calcio* 'to play football', *giocatore di calcio* 'football player'). Summing up, the selectional properties of *-tore* can be described as in (5):

- (5) [Thing [+com,-abst,±an] ([X],[Event CAUSE ([X],[])])]
- * [Thing [+com,-abst,±an] ([X],[State BE ([X],[])])]
- * [Thing [+com,-abst,±an] ([X],[Event BECOME ([X],[])])]

Verbs described as States or Events with non-agentive subjects (those with the functions BECOME, INCH, etc.) do not qualify as possible bases of *-tore*. Instead, verbs characterized as Event CAUSE (followed by Event GO, Event MOVE, Event AFF, cf. Jackendoff 1990) can be readily selected by this affix. As it can be seen, thus, *-tore* makes a quite elaborated selection, based on the semantics of its base, attaching only to verbs whose subjects are characterized by specific properties (agentivity).

Notice that the pattern of selection showed by *-tore* operates on the sole skeleton of its base, not using any information from the encyclopaedic body.

3.2 *-aio*

The Italian suffix *-aio* forms agentive nouns¹² from nominal bases:

- (6) *vino-aio* ‘wine seller’, *giornale-aio* ‘newspaper seller’, *verdura-aio* ‘vegetable seller’

-aio attaches to nouns characterized by a specific set of features, as represented in (7):¹³

- (7) a.
$$\left[\begin{array}{l} \text{Thing [+com,-abst,+hum] -aio} ([x],[y]), \\ \text{[Event SELL [Thing [+com,-abst,-an] ([y])]} \\ \text{<can be sold frequently>} \end{array} \right]$$
- b.
$$[\text{Thing [+com,-abst,-an] vino} ([\])]$$

 <can be sold frequently>

This suffix selects its base by looking at information contained in both of its LCS levels (skeleton and body): well-formed *-aio* derivatives require a base having the skeleton features [+common, –abstract, –animate] and the encyclopaedic feature <can be sold frequently> in the body.¹⁴ The absence of this information in the input gives rise to ungrammatical words:

- (8) **bello+aio* ‘nice’ (Property)
 **donna+aio* ‘woman’ ([+com,-abst,+an])
 **Egitto+aio* ‘Egypt’ ([–com,-abst,-an])

Not all [+common, –abstract, –animate] nouns, however, can form an existing *-aio* word, there can be many possible but non actual words:

- (9) *patataio* ‘potato-aio’, *zuccheraio* ‘sugar-aio’, *chiodaio* ‘nail-aio’

Thus, the pattern of selection operated by *-aio* is based on information contained in the skeleton and in the body of its base.

Summing up: we conclude that derivational suffixes have in their representation two different sets of linguistic information: (a) Information (consisting of a skeleton and a body) that ‘belongs’ to the suffix itself and percolates to the upper node in the course of a derivation (this kind of information is not relevant for the mechanism of selection), and (b) Information that specifies the properties that a word must have in order to qualify as a base for a grammatical derivation (this information is relevant for the selection). All words matching the selectional properties of an affix are potential bases of that affix. These potential bases plus the affix will form two sets of derived words: actual words

of the language and possible but non-existent words (due to encyclopaedic restrictions or to lexical blocking).¹⁵

4. Selection in compounding

Before discussing the selection mechanisms that take place in compounding, we would like to outline the classification of compound words we are assuming, which is slightly different from those found in the current literature. We propose a tripartite classification among coordinate, subordinate and attributive/appositive¹⁶ compounds:

- (10) a. Coordinate
N+N *bar pasticceria* ‘bar-pastry shop’, *attore regista* ‘actor-director’
 N+N *actor manager*, *king emperor*
- b. Subordinate
N+N *treno merci* ‘goods train’, *capostazione* ‘station master’
 N+N *dog bed*, *apple cake*
V+N *portalettere* ‘mail man’, *spazzaneve* ‘snow plough’
 N+[V+er] *truck driver*, *novel writer*
- c. Appositive/attributive
N+N *discorso fiume* ‘lit. speech-river’, *pesce spada* ‘sword fish’
 N+N *spider man*, *snail mail*

Coordinate compounds are often viewed as having two heads. This view is supported by the fact that, in some languages, both constituents take inflectional markings (e.g. plural in Italian, *attore regista* → *attor-i regist-i*). However, it can be assumed (following a long tradition dating back to Bloomfield 1933) that the head of a coordinate compound is the constituent in the *canonical head-position* (i.e. left for Italian and right for English, in the examples above – and below – the head is underlined): generally, the constituent in canonical head-position determines the morphosyntactic properties of the whole compound (e.g. It. *un bar* ‘a bar [+masc]’, *una pasticceria* ‘a pastry shop [–masc]’ → *un/*una bar-pasticceria* ‘a bar-pastry shop [+masc]’).

Subordinate compounds are formations in which the grammatical relation between the head and the non-head is a type of complement relation¹⁷ (e.g. *dog bed* → *bed of a dog*). Among subordinate compounds we include the Italian V+N type, for which we assume an endocentric interpretation as proposed by Bisetto (1999): the underlying structure of these compounds is supposed

to have the form $[[V+ \text{Suf } -\emptyset]_N+N]_N$, which mirrors the so-called secondary compounds in the Germanic languages (e.g. $[N+ [V+ \text{Suf } -er]_N]_N$, cf. 4.2.2).

Finally, appositive/attributive compounds are characterized by a relation of modification between their constituents: the non-head modifies the head, but it is not one of its complements.¹⁸

These three different classes of compound words are justified – as will be shown below – each by a different pattern of head selection.

4.1 Coordinate compounds

Head-selection in coordinate N+N compounds involves selecting a second constituent such that the LCS of both head and non-head are very similar, on both levels: skeleton and body. Consider the compounds in (11) and (12):¹⁹

- | | | | |
|------|------------------------------------|---|------------------------------------|
| (11) | <i>actor</i> | | <i>director</i> |
| | [Thing [+com,-abst,+an] ([x])] | | [Thing [+com,-abst,+an] ([x])] |
| | <human, professional> | ↔ | <human, professional> |
| | <show business> | ↔ | <show business> |
| | <works in theatres, etc.> | ↔ | <works in theatres, etc.> |
| | <receives directions> | ↔ | <gives directions> |
| (12) | <i>attore</i> ‘actor’ | | <i>architetto</i> ‘architect’ |
| | [Thing [+com,-abst,+an] ([x],[])] | | [Thing [+com,-abst,+an] ([x],[])] |
| | <human, professional> | ↔ | <human, professional> |
| | <show business> | | <building industry> |
| | <works in theatres, etc.> | | <works in design-studios, etc.> |

In these compounds there must be a virtual identity on both levels of representation: complete matching of the skeletons (where the features $[\pm\text{com}, \pm\text{abst}, \pm\text{an}]$ must be totally matched by the non-head) and a high level of matching features in the encyclopaedic body.

4.2 Subordinate compounds

Subordinate compounds can be classified into *secondary compounds* (or Verbalnexus, synthetic compounds), which contain a deverbal noun in the canonical head position selecting an argumental non-head, and *primary compounds* (N+N root compounds), whose heads are not deverbal or whose non-heads do not have the function of argument of the verb from which the head is derived.

4.2.1 Primary compounds

Consider a primary compound such as *apple cake*, with the following representation:

(13) <i>apple</i> [Thing [+com,-abst,-an] ([])] <physical> <shape> <edible> <can be an ingredient> <....>	<u><i>cake</i></u> [Thing [+com,-abst,-an] ([])] <physical> <shape> <edible> <made with ingredients> <baked> <made for parties>
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In the selection mechanism of subordinate primary compounds, the skeleton plays no significant role: what really matters in this type of compound is the set of encyclopaedic features of the body (such as <edible> and <made with ingredients> in the example above) which are present in the LCS in the context where the formation takes place. At least one of these must be matched by the encyclopaedic features characterizing the non-head constituent.

To better understand the mechanism at issue, consider other possible compounds headed by *cake*, such as *birthday cake* (where the matching features are at least <party> and <made for parties>) or *pancake* (matching at least <used for cooking> and <baked>). The lexical head *cake* cannot select a complement such as *velocity* (**velocity cake*) with which no features can be matched unless a plausible context justifies a redefinition of the encyclopaedic information available at the time of creation.²⁰

4.2.2 Secondary compounds

Consider secondary compounds such as It. *portalettere*²¹ (lit. ‘carry letters’, ‘mailman’) and En. *taxi-driver*:

(14) <u><i>portalettere</i></u> [Thing [+com,-abst,+an] -∅ ([x],[y]), [Event <i>portare</i> ([x],[Thing [+com,-abst,±an] y])]] [Thing [+com,-abst,-an] <i>lettere</i>]	
(15) <u><i>taxi driver</i></u> [Thing [+com,-abst,+an] -er ([x],[y]), [Event <i>drive</i> ([x],[Thing [+com,-abst,-an] y])]] [Thing [+com,-abst,-an] <i>taxi</i>]	

The head of a secondary compound (*driver* in (15)) selects the non-head straightforwardly: the non-head must satisfy the internal argument of the head's underlying verb. Selection is accomplished primarily on the basis of the head's skeleton. Probably, the selection mechanism involved takes also in consideration the level of encyclopaedic information, although it is not clear to us whether this is better explained as pertinent to the process of compound formation or to the selecting properties of the underlying verb (consider for instance, **felicity driver* vs. **to drive felicity*²²). Also in this kind of formations, we can have possible but non-existent words such as the examples in (16):

- (16) ?*asciuganasi* 'lit. dry noses'
 ?*asciugaunghie* 'lit. dry finger-nails'
 (cf. *asciugamani* 'lit. dry hands, hand-towel').

Thus, the pattern of selection in secondary compounds can be safely described as *argument selection*; however, it is well known that *argument selection* in compounding is not obligatory. This point is made clear by words such as *window shopping* or *mass production*, which are best described as a subordinate primary compound and as an appositive/attributive compound, respectively. We cannot say much concerning this issue, other than acknowledging the observation: given a deverbal nominal head, any pattern of selection may take place in order to form a compound. The same is true for every nominal head, except that argument selection is only available to deverbal heads.

4.3 Appositive/Attributive compounds

Consider appositive/attributive compounds such as It. *discorso fiume* (lit. 'speech river, interminable speech'), and En. *snail mail*:

- | | | |
|------|-----------------------------------|-----------------------------------|
| (17) | <u><i>discorso</i></u> | <i>fiume</i> |
| | [[Thing [+com, +abst, -an] ([)]] | [[Thing [+com, -abst, -an] ([)]] |
| | <sound> | <sound> |
| | <important occasions> | <water> |
| | <flows – in time> | <flows – in space> |
| | <lasts some time> | ↔ <long> |
| (18) | <i>snail</i> | <u><i>mail</i></u> |
| | [Thing [+com, -abst, +an] ([)]] | [Thing [+com, -abst, -an] ([)]] |
| | <gastropod> | <institution> |
| | <secretes slime> | <means of communication> |
| | <very slow> | ↔ <takes time> |

Selection in appositive/attributive compounds²³ is realized on the basis of information contained in the head's body: the non-head must match at least one of its encyclopaedic features. The skeleton plays no significant role, as in subordinate primary compounds.

Furthermore, the only information pertaining to the non-head that is present in the output is the matched feature: the rest of the information is, so to speak, ignored or blurred (for instance, the feature <gastropod> is not present at all in *snail mail*). The non-head has the sole function of specifying one attribute of the head's body. In other words, the non-head is almost 'adjectival': in LCS terms, it is interpreted as a Property and not any longer as a Thing (two lexical-conceptual categories, related to but not to be confused with the syntactic categories Noun and Adjective, cf. Jackendoff 1990: 43–58).

5. Concluding remarks

We have outlined a possible representation of morphological selection in terms of LCS that is able to account for *affixal selection*, *argument selection* and other types of selecting mechanisms that we have identified in compounding. The minimal representation we propose, consisting of the two LCS levels skeleton and body, as suggested by Lieber (2003) has the advantage of making a comparison between derivation and compounding possible. We will now briefly discuss some provisional conclusions and thematical extensions to the issues presented in the preceding sections. The processes of derivation and compounding differ in various aspects:

(a) *The selection operated by a derivational suffix is fixed and constant.* Only those words having the properties required by the suffix can be possible bases for derivation; this is the case independently of the nature of the semantic properties that the suffix may select, whether they can be expressed by a system of binary features (as we saw for *-aio*) or as a particular kind of semantic argument (as we saw for *-tore*). On the contrary, selection by the head of a compound is less strict. The non-head is required to match some information contained in the head's LCS: the precise "level" of this matching depends on the class of compound word under consideration. For instance, in subordinate primary N+N compounds, selection can regard alternatively different features of the encyclopaedic body; in coordinate compounds the non-head must have a very similar skeleton, if not identical, to that of the head (cf. It. *attore cantante* 'singer

actor' vs. **attore pizzeria* 'pizzeria actor') and a high level of matching features in the encyclopaedic body (cf. *bar-cafeteria* vs. **bar-hospital*).

(b) *Selection in derivation is less syntax-like than selection in compounding.* The non-head in a suffixed word does not satisfy any of the head's arguments, leaving them unaltered. This can be verified even when the suffix has a clear argument structure. The suffix *-ize*, for instance, creates generally biargumental verbs from nouns and adjectives (cf. *crystallize*, *generalize*): the base in *-ize* derivatives does not play any role in the verb's argument structure (e.g. *Mary crystallized some mangos yesterday*).²⁴ Under this light, derivational processes appear very different from syntactic operations on argument structure. While in derivation we can find addition, deletion or absorption of arguments (Williams 1981), in compounding there is argument satisfaction, especially with secondary compounds: the non-head saturates the internal direct argument of the verb that underlies the head noun. This can be seen by comparing secondary compounds such as *taxi driver* or It. *spazzaneve* (lit. 'sweep snow, snow-plough') with the corresponding phrasal structures *John drives the taxi* and *Gianni spazza la neve* ('J. sweeps the snow'). We may say, thus, that compounding is more syntax-like than derivation with respect to the satisfaction of argument structure. Derivational suffixes often show the property of absorbing one of the base's arguments. This is the case with It. *-tore* and *-ato* (and also with the corresponding English suffixes *-er* and *-ee*), which take up respectively the subject and the object of the verbs they attach to, blocking their syntactic realization (e.g. *Luigi amministra la ditta* 'L. manages the company', *l'amministratore della ditta* **da parte di Luigi* 'the manager of the company *by L.').

(c) *Derived words are quantitatively more predictable than compound words.* The kind of selection operated by a derivational suffix allows, at least in theory, the possibility of identifying all the elements that can be selected at any given time. If the suffix *-aio* selects nouns with the LCS properties described above, the quantity of suitable candidates for derivation is, in principle, computable. The same cannot be said of compounding, where the number of possible candidates is not rigidly restricted by the selection. Consider, for example, some possible subordinate compounds created in Italian with the head-noun *angolo* (lit. 'angle', 'place, location, spot'): *angolo cottura* 'cooking place', *angolo libri* 'book spot', *angolo giochi* 'toy spot', etc. Every Italian noun sharing at least one encyclopaedic feature with *angolo* could be a suitable non-head, thus making the number of possible compounds headed by *angolo* extremely difficult to calculate. These differences between derivation and compounding with respect to

the mechanism of selection go along with, and to a certain extent determine, differences regarding the interpretation of complex words.

(d) *Semantic interpretation is 'unique' in derivation but not in compounding.* Derivational suffixes are the semantically constant part in derived words, remaining consistent even when the base varies. Furthermore, regular derived words such as *allenatore* 'trainer', *giornalaio* 'newspaper seller' always convey the same meaning, no matter in what context they are used. On the contrary, the relation between the constituents of a compound, being less fixed, has to be reformulated in the course of interpretation on the basis of contextual information; this fact gives rise to a plurality of contextually motivated possible readings for each compound. This fact can be explained in a simple way: the head of a compound is a *word* that carries a set of features associated with it (especially, encyclopaedic information). All the information carried by the head can be involved in the process of selection; consequently, head selection in compounding is not unique. However, the availability of multiple interpretations seems to be a language-specific phenomenon. In Italian, for instance, compounds characteristically have a "privileged" reading: a typical subordinate compound such as *capostazione* (lit. 'head-station', 'station master') "must" be interpreted as 'the master of the station', all other plausible readings being excluded in principle (e.g. 'the master who lives in the station', 'the master who walks by the station', etc.). This, however, is not always true. There are some formations in Italian that allow multiple readings: *nave ospedale* (lit. 'ship hospital') could be paraphrased, for example, as 'a ship that is equipped to function as a hospital' or, more simply, as 'a ship used as a hospital (temporarily)'. English is a language with a greater liberty of contextual interpretation than Italian; a clear example of this liberty is extensively used by Marchand (1969), who argues that the compound *steam boat* can be interpreted as 'a boat powered by steam', 'a boat that produces steam', etc.

Extra-linguistic contextual information plays an important role in the disambiguation of the possible interpretations of a compound. This phenomenon receives, in the framework proposed in this paper, a straightforward explanation: the interpreter formulates a series of hypotheses on the kind of selection involved in the generation of the compound she/he is dealing with (i.e. which encyclopaedic features were matched by the non-head) and favours those that are coherent with the extra-linguistic context. For example, *dog bed* (although it has a privileged reading 'bed of/for a dog') could be interpreted as 'bed for human beings with a drawing of a dog', given the appropriate context.

(e) *The base in derived words is not usually “metaphorical”²⁵ while the non-head in compounds may be.* The class of appositive/attributive N+N compounds is characterized by the non-literal interpretation of the non-head. We proposed that, in terms of LCS, the non-head can be considered as ‘adjectival’ (it functions as a Property and not any longer as a Thing). Reconsidering the example in (18), *snail mail*, we can verify that the non-head *snail* retains only one feature of its meaning in isolation, namely, slowness. All the remaining encyclopaedic features associated with *snail* (e.g. the fact that snails are slime-secreting gastropods, or that they live in humid places, etc.) are not present in the compound *snail mail*. This “metaphorical” reading of the non-head is, as well, subject to contextual determination (*snail mail* could receive, for example, the reading ‘slimy letter’ in an imaginable context). The same phenomenon does not exist in derivation. Suffixes may choose among the different acceptations of a base, including figurative uses. However, this is not the sort of indeterminacy that can be observed in compounding: figurative acceptations are not determined contextually, rather, they are alternative full LCSs associated with a certain word. Consider the selection operated by the adverb-forming Italian suffix *-mente*: it attaches to adjectival bases selected on the basis of their figurative acceptations. When attaching to *dolce* (‘1-sweet’, ‘2-fig. gentle, affectionate’), *-mente* prefers the figurative sense: *dolcemente* ‘lovingly, gently’. Probably, the different figurative meanings of a word are represented in the lexicon as separate LCS entries, and suffixes select among them as they would with completely unrelated words. On the contrary, the “metaphoric” interpretation that we have attested for appositive/attributive compounds is a sort of impoverishment of the LCS of the word, which is contextually determined and has no representation whatsoever in the lexicon.

So far we have underlined the characteristics that, from the point of view taken in this paper, clearly demarcate derivation and compounding. Naturally, we do not want to maintain that derivation and compounding are two completely different phenomena. On the contrary, they show some important similarities, which justifies their collocation in the same module of the grammar. Both processes can give rise to possible but non-existent words and form complex units that are semantically compositional. Suffixes supply a constant meaning to derivatives, while compounding (at least endocentric compounding) creates hyponyms of the word in the canonical head-position.

As we pointed out in the introduction, it is generally assumed that in derivation the head selects the non-head. We first explored the various ways in which a derivational suffix selects its base. We then showed that, if a sufficiently elaborate lexical-semantic representation is adopted (one in which the

encyclopaedic information associated with a word is represented), it is possible to say that also in compounding the head selects the non-head. Thus, the mechanism of selection, commonly accepted for derivation can be extended to compounding, together with an important generalization on its nature: selection in morphology can be generally considered to be *head-selection*. Furthermore, various subtypes of selecting mechanisms were identified and described; especially, in compounding, selection is not unique since different types of compound words exhibit different patterns of selection. A framework of lexical semantics such as the one to which we ascribe is able to demonstrate that, besides derivational morphology, also productive compounding processes are fully compositional: this explicit extension of the principle of compositionality to the whole of compounding is a very desirable effect for morphological theory.

Many issues stemming from our exposition require further development. For instance, we have not really put the body of encyclopaedic features under discussion; we assumed Lieber's (2003) representation (which she uses to discuss the interpretation of compounds) and adapted it to account for word formation. Nevertheless, we think that if we are to accept that encyclopaedic information may be available to word-formation processes, proposals such as the one put forward in this paper deserve attention. The nature of the encyclopaedic body is still only hypothetical; it may be part of a different component – not necessarily part of the basic lexical entries – but it must somehow be seen by those word-formation processes, such as the It. suffix *-aio* or compounding in general, which operate selection on the basis of encyclopaedic features. Encyclopaedic knowledge is of course open-ended (we can add new features constantly) but only those features present at the time of derivation can be accessed (whatever they may be). Notice that, if correct, our framework contradicts the view that encyclopaedic information has no or little linguistic value (e.g. as in Distributed Morphology, cf. Harley & Noyer 1999).

Other questions remain open: how does selection operate in derivational prefixation? What is the role of head-selection in other types of compounding (e.g. A+N, N+A, P+N, exocentric compounds, etc.)? We hope that these issues will be answered by future research in the framework of lexical semantics.

Finally, we would like to underline that selection in derivation is different from selection in compounding, as the modalities in which it takes place in both word formation processes clearly show. This can be considered as a further argument for the demarcation between these two word formation phenomena.

Notes

* This paper is based on a broader research which has been made possible also thanks to funds of the University of Bologna (ex 60%). We would like to thank the attendants to the 11th International Morphology Meeting, the organizing committee and three anonymous reviewers for their helpful comments on an earlier draft. Although this work results from the collaboration of all the authors, S. Scalise is responsible for Sections 1, 3.2 and 5e, A. Bisetto for Sections 2, 3.1, 4, 5a and 5b, and E. Guevara for Sections 4.1, 4.2, 4.3, 5c and 5d.

1. This point of view is widely accepted, with few exceptions, cf., for example, Plag (1999).
2. In this paper we will leave aside prefixation, the status of which is still under discussion (cf. Di Sciullo 1994; Ralli 2003; Martín García 1998).
3. The standard representation of *selection* in syntactic theory involves a system of selectional restrictions (cf. Chomsky 1965: 113–120). The very same term is also used for other phenomena that are not relevant to the topic of our paper, e.g. auxiliary selection in languages such as Dutch and Italian.
4. Cf. Allen (1978).
5. We will only deal with the semantic and/or syntactic aspects of selection in morphology, leaving other aspects aside for the time being (e.g. phonological selection). We will not draw a distinction between *selection* and *restriction* (which appear to us to be two ways of defining the same phenomenon: positively, the former and negatively, the latter).
6. In the skeleton representation in (1a') and in the rest of this paper, we include the binary syntactic/semantic features [\pm common, \pm abstract, \pm animate, \pm human]. For lack of space we will not discuss this proposal here. Notice that Lieber's format (1a) includes only one of these features in the skeleton (if, as we suppose, \pm substance can be equated with \pm abstract).
7. In the examples used in this paper, only a minimum number of encyclopaedic features is represented in order to depict the essential mechanisms of selection.
8. Other representation frameworks could be used, such as the one proposed by Pustejovsky (1995), without affecting our proposals. We prefer the LCS model because it has been frequently used in morphological studies (cf. Lieber & Baayen 1993, 1999; Plag 1998, 1999; Martín García 1998; Lieber 2003, etc.). Whatever semantic representation one may choose, what is really needed (in order to account for compounding, as it will be made clear below) is the inclusion of encyclopaedic/pragmatic information in lexical entries (i.e. Qualia Structure, body of LCS, etc.).
9. See Belletti & Rizzi (1988) for this classification of psych-verbs.
10. According to Jackendoff (1990), agentive verbs have always an "Event cause" as external argument.
11. Cf. Bisetto (to appear).
12. We will take into consideration here only *-aio1* (agentive) excluding *-aio2* (locative) (cf. Scalise 1997).
13. We have included in the LCS of *-aio* an underlying event (*sell*) to represent the meaning of this suffix for the examples under consideration. Actually, the event conveyed by *-aio* should be expressed in more general terms (cf. Scalise 1999).

14. As a reviewer points out, this encyclopaedic feature could be expressed in other (maybe more general) ways: e.g. <good> or <merchandise>. However the “frequently” specification is necessary: for example *castello* ‘castle’ can be described as <good> or <merchandise>, but the derivative **castellaio* seems quite odd to us, if not ungrammatical (castles are not sold frequently or usually).

15. As a reviewer points out, a problem for the framework we are proposing could be the fact that many derivational affixes show a degree of either polysemy or semantic indeterminacy. The class of polysemous affixes are not really problematic: they can be very plausibly explained as small variations on an ‘abstract’ LCS, as work on lexical semantics has shown, reducing every instance of polysemy in derivational morphology to a single, regular pattern (cf. Lieber & Baayen 1993; Plag 1998, 1999; among others). On the other hand, we acknowledge that semantically indeterminate affixes could be a problem for our framework: they simply do not seem to have a fixed pattern of selection (or, maybe, no pattern at all, as in e.g. N→V conversion). Probably there is a distinction to be drawn between semantically strong affixes (imposing restrictions on their bases) and semantically weak affixes (not showing clear patterns of selection).

16. This classification is argued for in Bisetto & Scalise (forthcoming). At present we will not draw a distinction between attributive and appositive compounds (in the former the non-head is an Adjective and in the latter the non-head is a Noun). In this paper we will consider only appositive compounds (N+N).

17. We use *complement relation* as a general term encompassing the two relations *argument of* and *complement of*.

18. We understand *modification* as the relation that holds between a noun and a modifying adjective. Thus, modification is in some sense a type of subordination. However, *modification* and *complementation* are not equivalent grammatical relations. We keep the distinction between subordinate and appositive/attributive compounds for the purposes of this paper; this distinction will be stated more clearly with respect to their selectional properties.

19. Both the words in (11) *actor* and *director* contain a verbal EVENT that could be written in their LCS representation (*act* and *direct*, respectively, or maybe a more general predicate such as *act* or *do*, as a reviewer observes). Notice in comparison that the Italian examples in (12), *attore/architetto*, do not have synchronic morphological structure and lack a corresponding EVENT.

20. The reason why we assign the star to *velocity cake* is that, according to us, there is nothing in the encyclopaedic body of *cake* that could justify the creation of such a compound. However, in a plausible context such as the one suggested by one of the reviewers (“I was once at a bike race where prizes were given to the winners in various categories, and I won the velocity cake, and my friend won the distance cake”), the process of selection can take place. Now, this does not contradict our analysis: what is at stake here is that in such a context, *cake* is assigned the hypothetical feature <prize for bicycle race>, which is in turn able to match some encyclopaedic feature of the non-head *velocity* (possibly something like <class of bicycle race>). If this very particular context is not present, *velocity cake* cannot be formed (all the hypothetical features are missing from the LCS entries). The operations involved in the justification of *velocity cake* require a contextually determined redefinition of the encyclopaedic information of the lexical items under scrutiny.

21. As we pointed out above, we will assume that Italian V+N is a type of secondary left headed compound, with the underlying structure $[[V + \text{Suf } -\emptyset]_N + N]_N$ (cf. Bisetto 1999).
22. Here there are two possible explanations for the ungrammaticality: either the compound cannot be created unless a plausible context is given or, simply, the verb *drive* does not select such an argument, thus not allowing such a secondary compound.
23. A reviewer objects that the examples we use for the appositive/attributive type may be lexicalized. We do not agree with this observation; in any case, even if they were lexicalized, our examples still represent a totally productive pattern of English and Italian. Consider other English examples of this type that are, we believe, transparent to any speaker of the language: *star photographer* (in the sense ‘famous photographer’), *chain smoking* (in the sense ‘continuous smoking’), *iron man* (in the sense ‘very strong man’), etc. The following are invented examples in Italian: *discorso Coca Cola Light* lit. ‘speech Diet-Coke, a fake speech’, *politico fantasma* lit. ‘politician ghost, a ghost politician’.
24. Regarding the argumental properties of *-ize*, a reviewer observes that, for example, *hospital* in “x hospitalized y” could be said to satisfy an eventual Goal argument contained in the derived verb. This is indeed plausible, but it would be necessary to specify where this argument comes from. Hale & Keyser (1993) have put forward a syntactic-conceptual decomposition proposal in which lexical entries consist of entire phrases with an embedded complement structure (e.g. *hospitalize* = ‘put somebody in the hospital’). Their theory of lexical structure (l-syntax) accounts for the idea that *hospital* expresses a Goal argument: in any case, *hospital* would be an argument of the “internal verb” *put*, not of the suffix *-ize*. For a thorough account of the semantics of *-ize* in terms of LCS, cf. Plag (1998, 2000).
25. We use double quotes around *metaphorical* to signal the non-technical usage of the term. We do not want to bring the problematic notions *metaphor* or *metaphorical extension* into the discussion.

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Compounding and affixation

Any difference?

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Prešovská univerzita

1. General

It goes without saying that a number of notions used in our everyday lives are deeply-rooted in our traditions. The same is true of linguistics. Many a term was introduced with a specific meaning in mind, and has been used ever since even if the perception of its referent may have changed. This is nothing strange, and is captured in word-formation by the term lexicalization. In this paper, I would like to point out a couple of such terms, each deeply-rooted in the linguistic tradition, and show that they do not reflect the situation in the respective area quite adequately. The purpose is not to break down the traditions; rather, I would like to offer an alternative view of the phenomena of compounding and affixation, and outline a perspective which has long been left unnoticed.

Traditionally, compounding and affixation have been considered as different and unrelated WF processes, sometimes assigned to two different components of grammar, derivational morphology and syntax, respectively. It is for this reason that, for example, Aronoff's classical work of generative word-formation (1976) only discusses affixation, and a similarly classical work by Lees (1960), written within the transformationalist framework, concentrates on the generation of nominal compounds from kernel sentences. Moreover, compounding and derivation assume different levels in various stratal models. For example, Allen (1978) assigns compounds a special level, Level III within her Extended Ordering Hypothesis, Mohanan (1986) places class 2 derivation at stratum 2 and compounding at stratum 3. These variants of level-ordering hypothesis, hand in hand with the binary method of analysis of complex words,

engender the well-known cases of bracketing paradoxes, such as *transformational grammarian*.

Yet, significantly, Siegel points out that “stress subordination in Class II prefix-derived words is handled exactly like stress subordination in compounds” (1979: 147). An equal status of Class II prefixation and compounding is illustrated by the fact that both Class II prefixes (in contrast with Class I prefixes) and the head of compounds can be ‘factored out’: *mono- and tri- syllabic, pro- and en- clitics, socio- and politico- economic; chocolate and vanilla pie, stock and commodity exchange*.

An important feature of Kiparsky’s stratal model (1982) is that affixation and compounding are interspersed: word-boundary derivation and compounding assume the same level 2 in Kiparsky’s 3-level model.

Inside the field of affixation, the original view of similarity between prefixation and suffixation is called into question by, for example, Marchand (1967), who treats compounding and prefixation as cases of ‘expansion’, while suffixation is a special case of ‘transposition’. The separation of suffixation and prefixation is supported further by various positionally based theories of headedness (e.g., Williams 1981; Selkirk 1982; Di Sciullo & Williams 1987) which usually do not permit prefixes to function as heads. In any case, these views do not seem to have had any effect on the widespread separation-based treatment of affixation and compounding, on the one hand, and unified treatment of prefixation and suffixation, on the other.

This general ‘atmosphere’ is also reflected in unequal treatment of the status of affixes and lexical morphemes. While Lieber (1981) uniquely views affixal and non-affixal morphemes more or less on a par, Beard (1995) argues that major class items (N, V, A) differ from affixes in principle, and therefore the two should not be included in the same component of grammar.

When discussing the role of tradition in our perception of world in general, and linguistic issues in particular, it may be assumed in view of the present topic that the compounding-affixation relation, on the one hand, and the prefixation-suffixation relation, on the other, have been treated, in the vast majority of cases, from a purely formal point of view. The semantic aspects have been neglected more or less, and this is no surprise given the prevailing bias towards semantically oriented research in the twentieth century.

2. Proposal

2.1 Framework

The present paper offers an alternative, cognitive-onomasiological approach to the assessment of word-formation processes. It analyses the relevant problems in terms of three crucial factors determining the relation between compounding and affixation, on the one hand, and prefixation and suffixation, on the other:

1. the nature of compounding and affixation as WF processes, that is to say, the nature of the act of naming;
2. the status of affixal and non-affixal morphemes in terms of their 'right' to be placed in the Lexicon;
3. the influence of the notion of headedness upon the separation/identity issue.

In particular, it is claimed that:

- a) there are no principled differences between the processes traditionally labeled as compounding and affixation;
- b) there are no principled differences between prefixation and suffixation.

The arguments in favour of these postulates are based on:

1. an onomasiological model of word-formation and the application of the Morpheme-to-Seme-Assignment Principle;
2. the identification of head with onomasiological base.

2.2 The nature of compounding and affixation as word-formation processes

My argumentation is based on the cognitive-onomasiological model (Štekauer 1998, 2001a) which employs the triad *extra-linguistic reality* (ELR) (object to be named) – *speech community* (SC) – *linguistic sign* (LS). It is proposed that any and each name of acting takes the following path: ELR ↔ SC → LS (Figure 1).

In particular, the object to be named is conceptually processed. Some of the categories identified at the conceptual level by means of logical predicates and incorporated into the semantic facet of linguistic signs as semantic components (semes), are taken as the conceptual basis for the act of naming (onomasiological structure) and are assigned morphemes at the onomatological level.

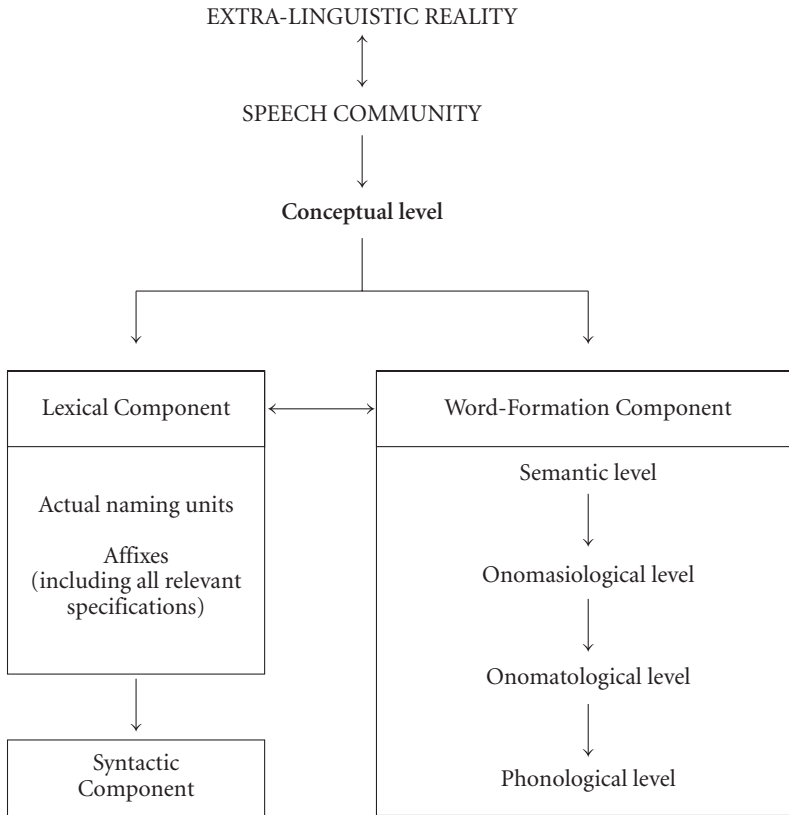


Figure 1.

For illustration, if a name is needed for a ‘device designed to feed (machines with components)’, it is first captured by the particular ‘coiner’ by means of logical predicates, such as ‘It is SUBSTANCE’, ‘The SUBSTANCE is an Instrument’, ‘The Instrument is designed to perform an ACTION’, ‘The Instrument is Powered by an Engine’, ‘The ACTION concerns another Object’, ‘The Object is a Machine’, ‘The ACTION consists in Supplying the Machines with Components’, and possibly some other logical predicates. Since these logical predicates are a part of the conceptual level, i.e., a supralinguistic level (and therefore are not a part of a linguistic sign) they are represented by semes (semantic components) at the level of the meaning of linguistic sign. In our present case, the following semes constitute the meaning of a new word [Instrument], [Supply], [Component], [Powered], etc. Some of these semes are taken as a basis for the naming act proper at the onomasiological level, for example those given in (1):

(1) Action – Instrument

(1) represents an onomasiological structure which is linguistically expressed by means of the units (lexical morphemes and affixes) stored in the Lexicon; in particular, a scanning operation makes it possible to identify those morphemes the meaning facet of which corresponds with the meaning expressed by the semantic categories ‘Action’ and ‘Instrument’, respectively. This procedure, called *Morpheme-to-Seme-Assignment Principle* (MSAP), may yield, *inter alia*, *feeder* and *feed unit*:

- (2) a. Action – Instrument
 feed -*er*
 b. Action – Instrument
 feed *unit*

These complex words would be traditionally assigned to affixation and compounding, respectively. On the other hand, the proposed model treats them as the outcomes of one and the same onomasiological type (Type 2 in this particular case),¹ a common, universal word-formation process, which is reflected in the identical, conceptually based, onomasiological structure given above in (1).

This approach makes it possible to avoid the problems connected with bracketing paradoxes that are apparently bound to the formal approach to word-formation.

Thus, to take the *transformational grammarian* example, an abridged analysis at the conceptual level identifies the object to be named as ‘a person [Agent] dealing (professionally) [Action] with transformational grammar [Object]’. The onomasiological structure and the MSAP are represented in (3):

- (3) Object – (Action) – Agent
 |
 └───┬───┘
 transformational *grammar* -*ian*

where *transformational grammar* is the determining constituent of Onomasiological Mark.²

2.3 The status of affixal and non-affixal morphemes

The claim that compounding and affixation represent, in principle, identical word-formation processes is further supported by the fact that, in the model proposed, both lexical units and affixal morphemes are equally stored in the Lexicon, and fulfil the same function, that is to say, they are available, when-

ever needed by the MSAP Principle, for the assignment to the individual semes of the onomasiological structure. They are provided with the same sort of data determining their semantic and formal combinability. The data are taken into consideration by the MSAP Principle that operates both horizontally and vertically.

Vertically, it scans the Lexicon with regard to the lexical and affixal morphemes that can be retrieved to represent the semes of the onomasiological structure.

Horizontally, it reflects the semantic compatibility and formal combinability / restrictions specifying the individual lexical and affixal morphemes.

This principle of operation is based on close ‘co-operation’ between the Word-formation Component and the Lexical Component, which is represented by bidirectional arrows connecting the two components in Figure 1. The Lexical Component feeds the WF Component with both types of morphemes required for the MSAP procedure, while the WF Component supplies any and all coined words to the Lexicon where they are stored and from where they can be retrieved for both syntactic purposes (sentence generation) and ‘future applications’ in WF processes.

2.4 Headedness and its influence upon the separation/identity issue

It is assumed (Štekauer 2001b) that the head in English complex words is determined neither positionally nor morphologically (no particular kind of morpheme). Rather, it is identified with an onomasiological base defined as that constituent of the onomasiological structure which stands for the whole group or class of objects. By implication, the onomasiological base is the most general constituent of the onomasiological structure. The criterion of headedness is thus shifted to the *conceptual level* of the WF process. As a result – and in connection with Point 2.3 above – the form of head plays no role. It may be a suffix, a prefix, or a lexical morpheme. Given this principle, the word *behead*, for example, is analyzed as ‘An Action aimed at an Object’:

- (4) Action → Object
be *head*

where Action is the onomasiological base, and therefore the head of this complex word. It refers to a general class of Factitive Actions directed at Objects. The Action is more general than the specific Object, in this case *head*. Importantly, this way of head identification is borne out by the role played by *be-* in determining the word-class (*behead* is a Verb despite the nominal sta-

tus of *head*) and the related morphosyntactic features of a new naming unit as a whole.

Similarly, the meaning of *re-* (Repetition of an Action) in *restart* is more general than the Action specified. In other words, any particular Action can be repeated or returned to the original state.

Another example, which is treated differently in the literature, concerns words like *greenish* (cf. Bauer 1990). In my approach, *-ish* is the onomasiological base because its meaning is much more general (Approximation) than that of *green*. Similar considerations apply to diminutives, such as *duckling*, *-ling* (Diminutive) being more general than *duck*.³

The fact that prefixes, suffixes, as well as lexical morphemes can function as heads is another strong argument in favour of treating the processes – traditionally labelled as compounding and suffixation – in the same way.

3. Conclusions

The purpose of this article has been to demonstrate that unlike the traditional form-based approach to word-formation processes, which is so deeply anchored in the generative tradition and which employs terms like compounding, prefixation, and suffixation, an alternative view of the process of word-formation is available. This view is based on a *cognitive onomasiological approach* reflecting important factors of any *act of naming*, that is to say, extralinguistic reality, speech community, or better, an individual coiner, and the process of naming itself.

This alternative approach obliterates the formal differences, and puts emphasis on the analysis at the conceptual level which underlies the identification of onomasiological structure as a basis for the naming act. At the onomatological level, the onomasiological structure is then assigned (lexical and affixal) morphemes, stored in the lexicon. As a result, *the individual acts* of naming differ in the relation between the onomasiological and the onomatological levels; in particular, which constituents of the fundamental onomasiological structure are present (the determining and the determined constituents of mark plus base) and which of them are expressed morphematically. This gives rise to five different onomasiological types which range over the individual traditional, formally defined, processes.

This assumption is borne out first, by the fact that both lexical and affixal morphemes play the same role in the operation of the Morpheme-to-Seme-

Assignment Principle, and second, by their ability to function as heads of naming units.

Notes

1. This model distinguishes 5 onomasiological types based on the nature of the onomasiological structure, which can distinguish the determining and the determined constituents of Onomasiological Mark plus the Onomasiological Base. The Base represents a general class of an object to be named, the Mark distinguishes the named object from all the other members of the class. Onomasiological Type 2 is characterized by the following onomasiological structure: [determined constituent of the Mark + Base]. In this type, the determining constituent of Mark is not expressed. Onomasiological Type 1 would specify the Object of Feeding, for example, *machine feeder*, *magazine feeder*, *workplace feeder*, etc. For further details of onomasiological theory see Štekauer (1998) and (2001a).
2. Cf. Štekauer (1998) for a discussion of bracketing paradoxes.
3. Cf. Štekauer (2001b) for detailed discussion of headedness.

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On a semantically grounded difference between derivation and compounding*

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1. Object

The aim of this paper is to show, first, that Compounding and Derivation Rules are not sensitive to the semantic roles of their base in the same manner, even when these bases are identical; and second, that this behaviour follows in a principled way from the very nature of the semantic operation involved in these rules.

2. Derived agent nouns in *-eur*

2.1 Description

I assume that the morphological rule forming prototypical French derived nouns in *-eur* is schematically expressed by the pattern given in (1) (cat = category, Arg-str = argument structure; see appendix for the semantic notation):

(1)	BASE	DERIVED NOMINAL
a.	(...)	(...œr)
b.	cat:v	cat:n
c.	Arg-str <NP0, ... >	
d.	NP0 = Agent	
e.	$(\lambda e. \lambda x. V' \bullet e \bullet x \dots)$	$(\lambda V'. \lambda x. \lambda e. \text{salient-participant}' \bullet x \bullet \lambda e. V' \bullet e \bullet x)$

This rule captures the well-known fact that deverbal nouns in *-eur* require their base verb to have an Agent subject argument. An argument is an Agent if the

lexical semantic relation in which it is included entails at least one of the proto-agent properties proposed by Foley & Van Valin (1984) and Dowty (1991), among others. These properties are identified in Table 1 by the labels SA (strong agent) or WA (weak agent). They constitute a subset of the properties commonly associated to the Actor semantic role (Ackerman & Moore 2001; Davis & Koenig 2000).

The Actor and Undergoer semantic roles have been proposed mainly to account for the linking properties of verbs. As Van Valin & LaPolla (1997: 143) put it “Actor and Undergoer are generalized semantic roles whose prototypes are the thematic relations AGENT and PATIENT”. Capitalising on Croft (1991: Ch. 5, 1998), I would say that it makes sense to speak of Agent and Patient roles only when the event described by the verb involves a Causal structure. The basic insight behind this notion is that “verbs reflect segments of causal structure, not any other kind of structure” (Croft 1991: 161), to quote Croft’s own terms. I will assume that this view captures a part of what we need to say of the semantics of many verbs.

In Table 1, the three Agentive semantic roles are defined on the basis of the causal structure. The two Strong Agents characterise individuals acting (physically or mentally) on other individuals in a causal relation. The Weak Agent corresponds to individuals who only perform the event, that is individuals to whom the occurrence of the event can be attributed. If we come back to the *-eur* suffixation, we see that it does not require the base verb to have a strong Agent argument in its lexical semantic relation, as shown by the existence of derived nouns (2), the referent of which is only the effector of the event. However, most derived nouns in *-eur* do denote a strong Agent, as examples (3) remind us.

Table 1. Characteristic semantic entailments of semantic roles

ROLE	ENTAILMENTS	VERBS CONCERNED
Actor	Causally affects other participants – SA	<i>tuer</i> ‘kill’
	Volitionally involved in event – SA	<i>nager</i> ‘swim’
	Has a notion or perception of other participants in event or state	<i>croire</i> ‘believe’
	Possesses another participant	<i>hériter</i> ‘inherit’
	Effectuates or performs the event – WA	<i>loucher</i> ‘squint’
Undergoer	Causally affected by another participant	
	Undergoes a change of state	
	Is an incremental theme	
	Is possessed by another participant	

- (2) *loucheur* ‘squinter’, *zozoteur* ‘lisper’, *ronfleur* ‘snorer’, *bailleur* ‘yawner’
 (3) *tueur* ‘killer’, *nageur* ‘swimmer’, *travailleur* ‘worker’

This link between *-eur* derivation and agentivity explains why no derived agent nominals in *-eur* can be formed on verbs which do not have a Causal structure. This happens with verbs of inclusion and symmetric verbs, as shown in (4) and (5) respectively:

- (4) a. **comporteur* ‘compriser’, **conteneur* ‘container’
 b. **Son appartement comporte deux chambres, mais elle cherche un **comporteur** plus grand.*
 ‘Her flat comprises two bedrooms, but she is looking for a larger compriser’
 (5) a. **ressembleur* ‘resembler’, **bordeur* ‘borderer’, **joueur* ‘adjoinder’
 b. **Au sud, la France a l’Espagne comme **joueur** (**jouxeuse**).*
 ‘In the South, Spain is France’s adjoinder’

This also happens with “sentience” verbs, as shown in (6), since these verbs involve an Actor but not an Agent.

- (6) a. **croyeur* ‘believer’, **ressenteur* ‘feeler’, **senteur* ‘smeller’
 b. **Pour croire ça, il faut être un **croyeur** naïf.*
 ‘To believe that, you must be a naive believer’
 c. **Ceux qui pressentent que la situation va changer sont les **pressenteurs** les plus appréciés.*
 ‘Those who sense that the situation is about to change are the most appraised sensers’

The ungrammaticality of derived agent nominals in (6) also indicates that the base verb has to describe a perceptible event, not a purely psychological or mind-internal event. This restriction is not challenged by the acceptability of examples (7a), because these nouns are derived from verbal constructions in which the verb behaves as a verb of creation: a thinker is not only one who thinks but one who produces new ideas. When this is not the case, the result is ungrammatical as in example (7b).

- (7) a. *penseur* ‘thinker’, *concepteur* ‘conceive’
 b. **Pierre concevait la vie comme un voyage et son frère la concevait comme un naufrage. On ne pouvait imaginer des **concepteurs** plus différents.*
 ‘Peter thought that life was a journey whereas his brother thought it was wreck. No one could imagine more different thinkers’

2.2 Applying the rule

Since the lexical semantic structure of the verb *chanter* ‘sing’ involves a volitional argument, Lexeme Formation Rule (1) can apply to it and derive the noun *chanteur*, the semantic representation of which roughly corresponds to (8):

- (8) $(\lambda x. \lambda e. \text{salient-participant}' \bullet x \bullet (\lambda e. \text{sing}' \bullet e \bullet x))$
 \cong ‘the X who is a salient participant in an event of singing’

The specification “salient participant” means that the eventuality expressed by the base verb must denote an activity which allows us to socially discriminate the referent of the derived noun, either in terms of what he does habitually as in (8, 9a–b), or in a specific situation, which can be totally unusual as shown in (9c) (Kaufmann 1995: 399).

- (9) a. *C'est un râleur.* (*râler* ‘moan’)
 ‘He is a moaner’ (= ‘he never stops moaning’)
 b. **Paul est un joueur.* (*jouer* ‘gamble’)
 ‘Paul is a gambler’
 c. *Le tireur n'avait jamais touché un fusil de sa vie.* (*tirer* ‘shoot’)
 ‘The gunman had never handled a gun of his life’

When the deverbal nouns in *-eur* denote objects, the activity these objects are involved in must exhibit some social saliency too. This requirement is obviously satisfied whenever the object in question denotes an artefact, as in (10), since such objects are supposed to have been made to perform a well-defined function.

- (10) *broyeur* ‘grinder’, *fixateur* ‘fixative’, *lanceur* ‘launcher’

In this case, the derived noun is semantically interpreted as an instrument, which is one of the roles subsumed under Actor and which clearly participate in the Causal structure (Croft 1991: 185; Van Valin & LaPolla 1997: 144).

I must mention that certain derived nominals with *-eur* have a base noun instead of a base verb cf. (11a). For the majority of them, the base verb is lacking or exists with another meaning, as shown in (11b). Nevertheless, these nouns denote an Agent, as the correlated paraphrases (12) make clear. I refer to (Fradin & Kerleroux 2003a) for a detailed discussion.

- (11) a. *golfeur* ‘golfer’, *volleyeur* ‘volley-ball player’, *scrabbleur*
 ‘scrabblor’, *noceur* ‘reveller’, *receleur* ‘receiver of stolen goods’
 b. **golfer*; **volleyeur*; **scrabblor*; **nocer*; *#receler* ‘to conceal’

- (12) a. *faire (du golf + du volley)* ‘to play (golf + volley-ball)’
 b. *jouer au (scrabble + bridge)* ‘to play (scrabble + bridge)’
 c. *faire du recel* ‘to receive stolen goods’, *faire la noce* ‘to live it up’

Rule schema (1) accounts for the impossibility of deriving agent nouns from verbs lacking an Agent subject. Besides the aforementioned cases of transitive verbs (cf. (4)–(5)), such a situation occurs when the verb appears in an unaccusative construction as illustrated in (13).¹ Hence the ungrammaticality of (14).

- (13) a. *Le sentier monte plus raide que la route.*
 ‘The footpath rises more steeply than the road’
 b. *Avec ce temps, le lait tourne facilement.*
 ‘In such weather, milk goes off easily’
 c. *Ces navets ont pourri en deux jours.*
 ‘These turnips (went rotten + spoiled) in two days’
- (14) a. **Le sentier est un **monteur** plus raide que la route.*
 ‘The footpath is a steeper riser than the road’
 b. **Méfiez-vous, le vin aussi est un **tourneur**.*
 ‘Beware! Wine too is a goer off’
 c. **Ces navets ont été des **pourrisseurs** rapides.*
 ‘These turnips proved rapid spoilers’

2.3 The problem

Sentence (15) is an instance of construction (16), where NP0 is an Agent and NP1 a Patient according to all criteria defining agenthood and patienthood in the literature.

- (15) *Pierre a monté la vaisselle au grenier.*
 ‘Peter brought the chinaware up to the attic’
- (16) NP0[Agent] V NP[Patient] (PP[final / initial Location])

As it stands, rule (1) does not prevent us from forming the lexeme *monteur* with the meaning (17). However, such a lexeme is impossible as shown in (18).

- (17) ‘X who brings Y up (to W)’
- (18) **Pierre a monté la vaisselle au grenier. C’est un **monteur** infatigable.*
 ‘Peter brought the chinaware up to the attic. He is an indefatigable bringer’

This impossibility seems to be tied to the fact that *monter* ‘go / take up’ is above all a verb of inherently directed motion (Levin 1993): it expresses the oriented movement of a figure against a background. The same impossibility occurs with other verbs of inherently directed motion as well, as examples (19) indicate.

- (19) **A cette époque des centaines de savants fuirent la tyrannie. La plupart de ces fuyeurs (de tyrannie) transitèrent par la Syldavie.*
 ‘At this time, hundreds of scientists fled from (home to escape) tyranny. Most of these fleers passed through Syldavia’
 **Luc descend les bouteilles par 10 à la cave. On ne trouve plus de descendeurs aussi costauds.*
 ‘Luc brings down the bottles to the cellar by ten. Nowadays, it is impossible to find such a strong down-bringer as him’

As expected, this impossibility also occurs when the verb appears in a non-strictly transitive construction, whether it has an Agentive subject or not, as illustrated in (20) and (21) respectively:

- (20) **Pierre est monté dix fois au grenier ce matin. Quel monteur infatigable!*
 ‘Peter went up to the attic ten times this morning. What an indefatigable riser!’
 **Hier matin, un enfant est tombé du 3ème étage. Heureusement, le tombeur s’en est tiré sans blessure.*
 ‘Yesterday morning, a child fell down from the 3th floor. Luckily, the faller went off with no wound’
- (21) **Si on ne ferme pas la porte, l’odeur monte à l’étage. Après, on ne peut plus se débarrasser de cette monteuse.*
 ‘If you do not shut the door, the smell goes upstairs. After, it is impossible to dispel this goer up’
 **Les galaxies fuient à une vitesse croissante. La plupart de ces fuyeuses sont plus vastes que le système solaire.*
 ‘Galaxies are flying by at a growing speed. Most of these flyers are larger than the solar system’
 **Les trains sont des arriveurs plus ponctuels que les diligences.*
 ‘Trains are more punctual arrivers than stagecoaches’

The fact that examples (19) pattern exactly as examples (20) proves that the nature of the subject NP regarding agentivity has no effect on the possibility to form a denominal in *-eur* upon a verb of inherently directed motion. In any case, this possibility is barred, even though “the actual situation provide[s] the

Table 2. Verbs of inherently directed motion

ENGLISH	FRENCH	AGENT NOMINAL
advance	avancer (ST)	*avanceur
<i>approach</i>	approcher (ST)	*approcheur
arrive	arriver	*arriveur
ascend	gravir (ST), s'élever	*gravisseur
climb	grimper (ST)	grimpeur
come	venir	*veneur
cross	traverser (ST)	*traverseur
depart	partir	*parteur
descend	descendre (ST)	*descendeur
enter	entrer	*entreur
escape	s'échapper	*échappeur
exit	sortir (ST)	*sorteur
fall	tomber	*tombeur
flee	fuir (ST)	*fuyeur
go	aller	*alleur
leave	quitter (ST)	*quitteur
plunge	chuter	*chuteur
recede	s'éloigner	*éloigneur
return	retourner, revenir	*retourneur, *revenueur
rise	monter (ST)	*monteur
<i>sink</i>	somber	*sombreur
tumble	dégringoler	*dégringoleur

Glosses: ST = (which can be) strict transitive. The English examples are taken from Levin (1993), except those in italics; verbs in bold print are arguably not true verbs of oriented motion.

relevant context" to appropriately characterise the referent of the noun (Kaufmann 1995: 399). As Table 2 shows, the only exception to this conclusion is *grimpeur* 'climber'; but the verb *grimper* / *climb* is possibly a verb of manner of motion, as Levin herself suggested (see also the discussion in Jackendoff 1990).²

As is well known (Levin & Rappaport Hovav 1995), the behaviour of the inherently directed motion verbs sharply contrasts with the behaviour of manner of motion verbs (cf. (22)) and of ballistic verbs (cf. (23)), which both allow derived nominals ending in *-eur*.

(22) *courir* / *coureur* 'run, runner', *sauter* / *sauteur* 'jump, jumper'

(23) *lancer* / *lanceur* 'launch, launcher', *lâcher* / *lâcheur* 'drop, dropper'

Table 3. Figure and Ground entailments

ROLE	ENTAILMENTS
Figure	Entity located with respect to another participant Moves with respect to another participant Is contained by another participant
Ground	Entity with respect to which another participant is located Trajectory along which another participant moves Contains another participant

This latter fact strongly supports the idea that the semantic role Figure plays a crucial part in the impossibility of deriving agent denominals ending in *-eur* from verbs of inherently directed motion. My account of this phenomenon will articulate three claims:

A. The NP subject of verbs of inherently directed motion is semantically a Figure.

B. The semantic roles Figure and Ground do not pertain to Causal Structure, inasmuch as their mutual existence is not established through a causal relation. This is in keeping with Dowty's claim that they must be eliminated from the inventory of thematic roles (Dowty 1991: 563–64). However, they can be coerced into the Causal structure as argued by Croft (1991: 198–207), which means that they can be verbal arguments. These roles entail the properties listed in Table 3.³

C. Derivational rule (1) requires that the subject NP of the base verb be characterised only by the semantic role Agent (Condition of Unmixed Agentivity). This condition can be technically implemented in several ways. Since this is not the place to discuss what its best implementation could be, I will provisionally assume that it is directly stated in the rule itself in the form (24).⁴

(24) Unmixed Agentivity Condition: NP0 = Agent & ¬Figure

I will now illustrate how the treatment works with a few examples. For the sake of discussion, the representations will be couched in a feature structure formalism of the HPSG style.

Let us start with ballistic verbs already mentioned in (23), which denote a caused motion. Following Davis (2001: 83–84), I assume that the content of these verbs could be depicted as (25), in which “the causer initiating the motion is denoted by the value of ACT, the object caused to move by the value of UND,

and a third attribute [...], called SOA (state of affairs) has the value denoting the caused event”:

$$(25) \left[\begin{array}{l} \textit{cause - mot - rel} \\ \text{ACT \#1 (causer)} \\ \text{UND \#2 (causee)} \\ \text{SOA} \left[\begin{array}{l} \textit{mot - rel (motion event)} \\ \text{UND \#2} \end{array} \right] \end{array} \right]$$

Since these verbs have a subject argument that is a true Agent, rule (1) can derive deverbal nouns such as *lanceur* ‘thrower’, *lâcheur* ‘dropper’ without any problem.

Davis claims that the semantic content of verbs denoting an inherently directed motion contains a GRND (ground) attribute along with an UND (undergoer) attribute. According to this view, the semantics of prepositional intransitive *monter* (20) would be (26) (Davis 2001:105, 109; Davis & Koenig 2000), the values of the *path* type being “places at the start, end or intermediate points in the path of a moving object” (Davis 2001:104).

$$(26) \left[\begin{array}{l} \textit{monter - rel} \\ \text{UND \#1} \\ \text{GRND} \left[\begin{array}{l} \textit{path} \\ \text{ENDPT} \left[\begin{array}{l} \textit{place} \\ \text{IN \#2} \end{array} \right] \end{array} \right] \end{array} \right]$$

There are two problems with this analysis. First, it predicts that it might be possible to derive deverbal *-able* adjectives from verbs of inherently directed motion, in a way parallel to what we observe with plain unaccusative verbs such as (27). This prediction follows from the fact that the deverbal adjectives in *-able* require their base verb to have a Patient argument, as (28) reminds us. However, derived adjectives (29) are out.

(27) *périr / périssable* ‘perish, perishable’, *pourrir / pourrissable* ‘rotten, which can rotten’

(28) *laver / lavable* ‘wash, washable’, *tacher / tachable* ‘smear, smearable’

(29) *arriver / *arrivable* ‘who can arrive’, *monter / *montable* ‘who can rise’

Second, it commits us to saying that the transitive construction of these verbs, exemplified in (18) and (19), has a semantic representation similar to (25) for

what concerns agentivity: a causer (given by the value of *ACT*) makes an object (denoted by the value of *UND*) move and occupy a position given by the relation *path*. But this analysis predicts examples (18), (19) to be good, contrary to fact.

For these reasons, I will suggest instead that verbs of inherently directed motion have a semantic representation of type (30) for intransitives and (31) for transitives. In both representations the argument that is realised as the syntactic subject corresponds to a Figure role.⁵

$$(30) \left[\begin{array}{l} \text{monter1 - rel} \\ \text{FIG \#1} \\ \text{GRND} \left[\begin{array}{l} \text{path} \\ \text{ENDPT} \left[\begin{array}{l} \text{place} \\ \text{IN \#2} \end{array} \right] \end{array} \right] \\ \text{SOA} \left[\begin{array}{l} \text{directed - mot} \\ \text{DOWN - UP \#1} \end{array} \right] \end{array} \right]$$

$$(31) \left[\begin{array}{l} \text{monter2 - rel} \\ \text{ACT \#1} \\ \text{FIG \#1} \\ \text{UND \#2} \\ \text{SOA} \left[\begin{array}{l} \text{monter1 - rel} \\ \text{FIG \#2} \\ \text{GRND} \left[\begin{array}{l} \text{path} \\ \text{ENDPT} \left[\begin{array}{l} \text{place} \\ \text{IN \#3} \end{array} \right] \end{array} \right] \\ \text{SOA} \left[\begin{array}{l} \text{directed - mot} \\ \text{DOWN - UP \#2} \end{array} \right] \end{array} \right] \end{array} \right]$$

The relation *directed-motion* tentatively aims at capturing the fact that the verbs in question express an oriented motion. The attributes this relation involves indicate the direction of the movement, and some of them are listed under (32). It must be stressed that the empirical description remains to be done and that a more accurate treatment should integrate the insights of previous works on movement verbs (Asher & Sablayrolles 1995).

$$(32) \text{ DOWN-UP, UP-DOWN; IN-OUT, OUT-IN; TO } X, \text{ FROM } X; \text{ NEAR-TO-SPEAKER, FAR-FROM-SPEAKER.}$$

The hypothesis underlying the above representations is that the *directed-motion* relation is correlated to a FIGURE argument. This is why the verbs of Table 2 have a FIGURE subject NP; and this situation arises because the event these verbs denote does not belong to the Causal structure. The derivational rule forming agentive nouns in *-eur* cannot apply to representation (30) because there is no Agent argument. This accounts for the ungrammaticality of (20) and (21). It could apply to (31), but this application is excluded by the Condition of Unmixed Agentivity (24). This accounts for the impossibility of (18) and (19).

The Condition of Unmixed Agentivity seems to be language dependent. Dutch, for instance, has some equivalents of derived nouns in *-eur* formed on verbs of inherently directed motion, as (33) shows.

- (33) *komer* ‘comer’, *uitbreker* ‘escaper’, *daler* ‘dropper’, *stijger* ‘riser’, *zinker* ‘sinker’ (Booij 1986, 2002: 196)

It should also be noted that this condition has no parallel for the Patient role. Indeed, English does have a few patient derived nominals formed on representations such as (30), as illustrated in (34).

- (34) *advancee*, *arrivee*, *ascendee*, *escapee*, *returnee* (Barker 1998)

Besides the nouns listed in Table 2, in French neither (33) nor (34) is possible, which indicates that the Condition of Unmixed Agentivity is quite robust in this language.

Let’s sum up the main points that have been established so far:

- in French, derived nouns in *-eur* have to be correlated to an agentive argument of their base.
- Although the transitive verb *monter* in the construction NP0 **monter** NP1 (to NP2) does have an agentive argument, no corresponding derived noun in *-eur* exists.
- This impossibility has been correlated to the fact that *monter* is a verb of inherently directed motion, which entails that the Agent controlling the motion is also a Figure. I suppose that a special condition (the Condition of Unmixed Agentivity) forbids the formation of derived nouns in *-eur* whenever the base verb exhibits such a dual characterisation of its Agent argument.⁶

3. Compounding

3.1 Unexpected finding

Several nominal VN compounds can be formed with the verb *monter* as (35) shows. Their semantics conforms to schema (36a), far the most common among VN compounds in French as argued in Villoing (2002), the major source of my data.

- (35) *monte-charge* ‘goods lift’; *monte-plats* ‘dumbwaiter’; *monte-sacs* ‘baggage lift’
- (36) a. $(\lambda x. \exists e. \exists y. V' \bullet e \bullet x \bullet y \wedge N' \bullet y)$
 b. $(\lambda x. \exists e. \exists y. \text{monter}' \bullet e \bullet x \bullet y \wedge \text{sacs}' \bullet y)$ cf. *monte-sacs*
 c. \cong ‘X such that X lifts bags’

The crucial point is that their interpretation involves the Agent-relation mentioned in (16), since the compound as a whole denotes a device that “lifts something”, as representation (36b) shows. Such compounds contrast with the ungrammatical *monteuse* in (21). New contrasts of this type can be created at will, as example (37) shows (the ‘ \circ ’ indicates that the word is well-formed but unattested):

- (37) *L'engin prend les gerbes dans le char et les monte dans la grange. L'ennui est que ces (\circ monte-gerbes + *?monteurs (de gerbes)) coûtent cher.*
 ‘The machine takes the sheaves in the wagon and lifts them into the barn.
 The problem is that these sheaf-lifters are expensive’

The existence of compounds (35) is at odds with what we said before. It means that the Condition of Unmixed Agentivity plays no role in compounding. The question is: why is it so? The remainder of this paper will try to offer an answer to this question.

3.2 Hypotheses on compounding

The derivation of nominals in *-eur* imposes strong constraints both on input and output. On one hand, it requires the base verb to have an Agent subject. On the other hand, the derived nominal has to describe a way of acting which is considered socially salient. Such a situation is the norm with derivational morphology in general. Similar constraints have been highlighted for a wide range of derivational phenomena.⁷ I claim that no such constraints

exist for compounding. VN compounds have only to fulfill the requirements stated in (38):

- (38) Conditions on VN compounds:
- I. The N must be interpreted as an argument of the verbal predicate.
 - II. The VN nominal compound has to denote an entity which is semantically correlated to the event described by the verbal predicate.

Condition (I) means that the noun's referent has to be a participant in the causal chain associated to the event described by the verb. Condition (II) is vacuous, unless we make explicit what constitutes a semantic correlation. I propose that an entity is correlated to an event if one of the possibilities listed in (39) holds:

- (39) The entity A is correlated to the event Ev if
- a. The linguistic expression denoting A is an argument of the verbal predicate which denotes Ev (equivalently: A is a participant in the causal structure the verb reflects).
 - b. A constitutes the place where Ev takes place.
 - c. A is a causer of Ev.

Condition (II) is an interpretive condition, not a formal condition, which means that linguistic or pragmatical reasons may lead the hearer to choose the correlation that best fits the situation. It should be noted that in (39a) the correlation is immediate, since all the information we need to establish it is already provided by the verbal predicate. In (39b, c), on the contrary, it has to be supplemented by introducing a cause or a spatial location. In general, the more immediate the correlation is, the more easily interpretable the compound.

Condition (38)–(39) prevents the compounding rule from combining parts of the semantics of V with (parts of) the semantics of N (or vice versa): the combination must involve the whole V and the whole N, a situation in contradistinction to what we observe for derivation or N1N2 compounds.⁸

If the analysis of VN compounding proposed here is sound, it should predict that the inventory of VN compounds is larger than what is usually assumed, because conditions (38) can be satisfied in several ways, that give rise to as many semantic patterns. As we will see now, this prediction seems to be borne out.

3.3 Diversity in compounding

The two simplest, most widespread and productive patterns are given in Table 4 and 5. They correspond respectively to compounds that denote an Agent (40) and an Instrument (41). The verb is always a transitive verb, which describes an Actor-Undergoer relation. In the Actor reading, the variable that serves to link the compound in syntax corresponds to the subject of the verb. In the instrument reading, it corresponds to an instrumental adjunct. With these compounds, both conditions (38) are straightforwardly satisfied.

- (40) *garde-malade* ‘home nurse’, *porte-revues* ‘magazine rack’
 (41) *ouvre-boite* ‘tin opener’, *tire-bouchon* ‘corkscrew’

Table 4. The Actor reading

<i>garde-malade</i>	<i>garder</i> ‘watch’, <i>malade</i> ‘ill person’	$(\lambda x. \text{watch}' \bullet e \bullet x \bullet y \wedge \text{ill-person}' \bullet y)$
<i>porte-revues</i>	<i>porter</i> ‘carry’, <i>revue</i> ‘magazine’	$(\lambda x. \text{carry}' \bullet e \bullet x \bullet Y \wedge \text{magazine}' \bullet Y)$

Table 5. The Instrument reading

<i>ouvre-boite</i>	<i>ouvre</i> ‘open’, <i>boite</i> ‘tin’	$(\lambda z. \text{open}' \bullet e \bullet x \bullet y \bullet (\text{with}' \bullet z) \wedge \text{tin}' \bullet y)$
<i>tire-bouchon</i>	<i>tirer</i> ‘pull’, <i>bouchon</i> ‘cork’	$(\lambda z. \text{screw}' \bullet e \bullet x \bullet y \bullet (\text{with}' \bullet z) \wedge \text{cork}' \bullet y)$

Compounds (35) can be formed on both patterns. Their existence is totally normal in as much as *monter* possesses construction (31), in which the subject is an Actor. As expected, the Condition of Unmixed Agentivity is not taken into account.

Examples (42) illustrate a slightly productive pattern, which denotes what we might call a functional place. The verb always entails a Path, which is noted by a preposition in the representations below. This entailment allows us to consider the verb more a prepositional intransitive than a pure intransitive verb. Hence *passer* = *passer*-(*sur* + *à-travers*) ‘walk-(on + through)’, *marcher* = *marcher-sur* ‘step on’. The important thing here is that the N corresponds to the verb first argument. Most of these compounds are very common and can be readily parsed.

- (42) *passe-pied* ‘very narrow passage on the top of dams or along railways’ (lit. ‘a place where feet can pass’ i.e. where one can walk)
passe-boulet ‘device formerly used to gauge cannonballs’
marche-pied ‘step’ (on trains), ‘running board’ (on cars)
appui-tête ‘headrest’
repose-(*bras* + *tête* + *pied*) ‘armrest, headrest, footrest’

Table 6. The locative reading

<i>passee-pied</i>	<i>passer</i> 'pass', <i>ped</i> 'foot'	$(\lambda y. \text{pass}' \bullet e \bullet x \bullet (\text{on}' \bullet y) \wedge \text{foot}' \bullet x)$
<i>marche-pied</i>	<i>marcher</i> 'step', <i>ped</i> 'foot'	$(\lambda y. \text{step}' \bullet e \bullet x \bullet (\text{on}' \bullet y) \wedge \text{foot}' \bullet x)$
<i>passee-boulet</i>	<i>passer</i> 'go through', <i>boulet</i> 'cannonball'	$(\lambda y. \text{go}' \bullet e \bullet x \bullet (\text{through}' \bullet y) \wedge \text{cannonball}' \bullet x)$

In this case too, conditions (38) are immediately satisfied, since the external linking variable corresponds to the integrated locative argument.

This is not the case for the next pattern, in which the external linking variable binds the place where the event denoted by the verb takes place. This pattern is used almost exclusively to form place names.⁹

- (43) *Chante-alouette* 'place where lark sings', *Chanteloup* '~ wolf sings', *Chanteperdrix* '~ partridge sings', *Chantepie* '~ magpie sings', *Chanteraine* '~ frog sings', etc.
Hurloup 'place where wolf howls', *Jappeloup* '~ wolf yelps', *Gratteloup* '~ wolf scratches'
Hurlevent 'place where wind howls', *Piquebise* '~ North wind bites'
- (44) *Pisseboeuf* lit. 'pee ox' (name of a brook)
Pissecoq lit. 'pee roaster' (name of a fountain)
Pissevache lit. 'pee cow' (name of a waterfall)
Chantelivre lit. 'sing book' (name of a bookshop in Paris)

Table 7. The place name reading

<i>chante-duc</i>	<i>chanter</i> 'sing', <i>duc</i> 'owl'	$(\lambda y. \text{sing}' \bullet e \bullet x \wedge \text{owl}' \bullet x \wedge \text{LOC} \bullet e \bullet (\text{in}' \bullet y))$
<i>hurlevent</i>	<i>hurler</i> 'howl', <i>vent</i> 'wind'	$(\lambda y. \text{howl}' \bullet e \bullet x \wedge \text{wind}' \bullet x \wedge \text{LOC} \bullet e \bullet (\text{in}' \bullet y))$

In these compounds, condition (38)(I) is satisfied by definition since the verb is intransitive. But this prevents the external linking variable to be an argument of the verb too. If we want this variable to be correlated to the verb, we must introduce an additional relation which should include it and the event the verb denotes. In the present case, the relation in question is a spatial one (case (39b)), insofar as the compound denotes a place. This interpretation is the only one possible.

In the next pattern the correlation with the verbal predicate is established through an agentive relation (case (39c)). This pattern, which seems to be somewhat productive, is illustrated by examples (45).

- (45) *pousse-plante* 'lamp used to make plants grow'
trotte-bébé 'baby-walker' (seat which helps babies to toddle)

saute-bouchon ‘champagne’ (= ‘what makes the corks pop out’)
anti-monte-lait ‘round piece of glass formerly used to prevent milk from boiling over’ cf. *le lait a monté* ‘milk has boiled over’

Table 8. The Agentive reading

<i>pousse-plante</i>	<i>pousser</i> ‘grow’, <i>plante</i> ‘plant’	$(\lambda x. \text{make}' \bullet x \bullet (\text{grow}' \bullet e \bullet y) \wedge \text{plant}' \bullet y)$
<i>trotte-bébé</i>	<i>trotter</i> , ‘toddle’, <i>bébé</i> ‘baby’	$(\lambda x. \text{help}' \bullet x \bullet (\text{toddle}' \bullet e \bullet y) \wedge \text{baby}' \bullet y)$
<i>saute-bouchon</i>	<i>sauter</i> ‘pop out’, <i>bouchon</i> ‘cork’	$(\lambda x. \text{make}' \bullet x \bullet (\text{pop-out}' \bullet e \bullet y) \wedge \text{cork}' \bullet y)$
<i>anti-monte-lait</i>	<i>anti</i> ‘anti’, <i>monter</i> ‘rise’, <i>lait</i> ‘milk’	$(\lambda x. \text{make}' \bullet x \bullet \neg(\text{rise}' \bullet e \bullet y) \wedge \text{milk}' \bullet y)$

What compels us to introduce the additional agentive relation is the fact that the compound denotes a functional artefact. Symmetrically, what prevents us to introduce the same relation in the case of examples (43), (44) is the fact that we usually do not have control over wild animals or natural phenomena. Hence *chanteloup* cannot mean an artefact that makes wolves sing.

Note that with *pousse-plante*, *saute-bouchon* and *anti-monte-lait*, the verb has the same unaccusative reading as in (46), a situation which contrasts with what we saw with *-eur* suffixation, cf. (14).

- (46) *Les bambous poussent vite.* ‘bamboos grow fast’
Le bouchon a sauté. ‘The cork popped out’
La mer monte lentement. ‘The sea rises slowly’

For *anti-monte-lait*, such a reading is tied to the prefixation of *anti-* as shown by the fact that (47) lacks this reading. In (47), the verb necessarily denotes an Actor-Undergoer relation – as in (31) – and the compound can only get the type of interpretation suggested.

- (47) *monte-lait* ‘device used to lift milk’; ‘X that furthers the inflow of milk’

The last pattern we observe involves a causal relationship between two events and corresponds to case (39c). The only clear example of this type I came across is (48).¹⁰

Table 9. The causal reading

<i>gobe-mouton</i>	<i>gober</i> ‘swallow’, <i>mouton</i> ‘sheep’	$(\lambda y. \text{swallow}' \bullet e_1 \bullet x \bullet y \wedge \text{sheep}' \bullet x \wedge \text{cause} \bullet e_1 \bullet (\text{die}' \bullet e_2 \bullet x))$
		$*(\lambda z. \text{swallow}' \bullet e \bullet x \bullet y \bullet (\text{with}' \bullet z) \wedge \text{sheep}' \bullet y)$

- (48) *gobe-mouton* ‘poisoned plant or food intended to make sheep die’

Although *gober* is a transitive verb (e.g. *gober un œuf* ‘swallow an egg’) involving a straightforward Agent and Undergoer relationship, the fact that a sheep cannot easily be swallowed forbids the starred interpretation given in Table 9, in which the N referent is the Patient. Consequently, by (38a) it has to be the Actor. Moreover, the fact that the compound denotes a poisoned food forces us to add a new relation in the Causal chain in order to have a coherent scenario behind *gobe-mouton*. In this way, we get the correct interpretation given in Table 9.

From the examination of VN compounding, it emerges that no strict restriction is placed on the way the elements semantically combine. What we see instead is an adjustment of the interpretation, which yields a coherent meaning from the point of view of Causal structure, a strategy that seems unknown in derivation. Nevertheless, not all combinations are equally possible. In particular, when the noun is interpreted as the subject of the verb, one of the conditions in (49) has to hold:

- (49) a. The N cannot denote a volitional Agent (cf. (42), (43), (44), (48)).
- b. The event in which the N’s referent is an Agent is a subevent in a Causal structure (cf. *trotte-bébé* in (45), (48)).

Assuming (49), I contend that in compounds involving animals, as (43), the animal performing the action denoted by the verb is no more a volitional Agent than the referent of stream in a sentence such as *The stream gurgles*. In all such cases, the animal is seen as behaving in accordance with its nature, as compulsively realizing an action typical of its species.

Conditions (49a) is in keeping with Kiefer’s remark about Hungarian compounds denoting an event, such as (50). He noticed that their nonhead constituent, that is their noun, cannot be an Agent who acts intentionally (Kiefer 1992:66).

(50)

Compound	N	V	SFX	Translation
<i>hóesés</i>	<i>hó</i> ‘snow’	<i>esik</i> ‘fall’	<i>és</i>	‘snowfall’
<i>libagágogás</i>	<i>liba</i> ‘goose’	<i>gágog</i> ‘cackle’	<i>ás</i>	‘cackling of goose’

Conditions (49) are violated by the well-known compounds *croque-madame* and *croque-monsieur* (lit. *croquer* ‘crunch’, *monsieur* ‘sir’), which both denote a ‘toasted ham and cheese sandwich (with or without a fried egg)’. This could explain why the meaning of these compounds sounds so bizarre when one tries to reconstruct it analytically and why they are commonly considered as mere denominations: their meaning does not help to grasp their referent.¹¹

4. Conclusion

The following points can be drawn from the data examined in this article:

1. The *-eur* derivation puts strong and precise constraints both on its input and output as all derivational rules usually do. VN compounds, on the contrary, do not do so and only require their parts to combine in a way that best fits a scenario involving Causal structure. This difference between derivation and compounding could be summed up saying that the first uses strict conditioning while the latter prefers floating adjustment.
2. It has been argued that this differentiated behaviour suffices to explain why compounding proves blind to the conditions that are crucial for derivation as, for instance, the Condition of Unmixed Agentivity. It also explains why VN compounds formed on an unaccusative verb are possible while the corresponding deverbal nouns in *-eur* are illicit.
3. Although the mechanism of compounding involves the combining of lexemes, this combining does not result in a syntactic structure, insofar as VN compounds are not VP structures (contrary to the claims made in Di Sciullo & Williams 1987). In effect, as data discussed in Section 3.3 make abundantly clear, in several VN compounds the N corresponds to the verb's first semantic argument, the one which is linked to the subject NP in syntax when the verb occurs in a sentence. If we need dispense with syntactic structure for these compounds, we also need dispense with it when the N of the VN compound is interpreted as the second argument of the verb (the one which corresponds to the direct object NP in syntax). All we are entitled to say is that VN compounding rules form one lexeme out of two lexemes and that the N must be interpreted as an argument of the V (condition (38 I)). No structure has to be assigned to the compound, because its interpretation does not require any structure. This conclusion runs afoul of what Anderson (1992:293) assumes about compounding. From this point of view, the so-called floating adjustment not only appropriately characterised the distinction between VN compounding and derivation, but it also shows us how compounding differs from syntax. Perhaps interpretation is freer in compounding than in syntax because it takes place within the boundaries of the lexeme, where, by definition, very few elements are involved.

The set of data taken into account in the discussion is very tiny. On the one hand, the verb *monter* is the only one which shows the relevant contrasts between *-eur* derivation and compounding, because it is the only verb of in-

herently directed motion which both has a strict transitive construction and belongs to the first conjugation group (the group which productively forms VN compounds). On the other hand, most of the compounds mentioned in (42)–(48) are very infrequent in French. However, I do not think that this situation undermines the conclusions we have drawn from the data. In particular, it should be noticed that the compounds which are felt uncommon are those which denote an unusual object. Linguistically, none of the aforementioned compounds is idiosyncratic, and what makes each one particular follows from the properties associated to the base verb (intransitivity, etc.). Consequently they should not be treated as exceptions but put back in the global account of compounding. This means that our descriptive posture is very similar to that of a paleontologist who cannot discard any fossilised splinter, however small.

Appendix

The application is noted $(M \bullet N)$. The following equivalences hold: $(M \bullet N) \equiv M(N)$ in logical notation, $\equiv (MN)$ or $(M)N$ in mathematical notation, $\equiv \text{appl}(M, N)$ in computer science. The big point indicates that the function M applies to the argument N . Brackets are right associative for abstraction and left associative for application. However, a simplified version has been used throughout: $M \bullet N \bullet U \equiv ((M \bullet N) \bullet U)$, and $(\lambda x. (\lambda y. (N \bullet x \bullet y)))$ becomes $(\lambda xy. N \bullet x \bullet y)$. In the representations given in the text, e stands for ‘event’, and x, y are variables of individual. For typographical convenience, integers are indicated by ‘# number’ in HPSG notations.

Notes

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1. One approach to unaccusativity claims that there are verbs which are lexically characterised as unaccusative (cf. Legendre 1989; Legendre & Sorace 2003; Levin & Rappaport Hovav 1995; Sorace 2000, just to mention a few). Another one denies such a view and claims that unaccusative properties result from the syntactic configurations in which the verbs appear (cf. Marandin 2001; Zaenen 1993, among others). Although these approaches lead to classifications of untransitive verbs which are not equivalent, I will not discuss them because what actually matters to us is the fact that verbs of “inherently directed motion” (*arriver, monter, descendre...*) pattern with unaccusative and not with unergative verbs.

2. Legendre & Sorace (2003) draws a distinction between Change of location verbs (*arriver, venir, tomber...*) and Change of state verbs, a subset of which includes verbs of direction (*monter, descendre...*). This distinction does not challenge the fact that both types can be characterised as inherently oriented motion verbs.

3. The last property of the Figure role in Table 3 corresponds to the last property of the Ground in Davis & Koenig (2000) and vice versa. This change is motivated by the fact that the way the properties are stated in Table 3 seems more in keeping with what is said about Figure and Ground in the tradition of Cognitive semantics (Talmy 2000:315–316; Vandeloise 1986). The alternative view was essentially motivated by the desire to confine subject linking in syntax to the Figure role as much as possible (an effect of the “Figure-first coercion”: “the ground always follows the figure in causal directionality” (Croft 1991:199)). Croft’s discussion and analysis of (a), in comparison with the standard (b), is typical of this move (Croft 1998).

- (a) The table [GRND] supports the vase [FIG].
- (b) The vase [FIG] stands on the table [GRND].

He argues that “the Location [= Ground] is force-dynamically acting on the Theme [= Figure] by resisting the Theme’s inherent tendency to move. For this reason, in verbs of support (...) the Location is consistently and naturally linked to subject position” (loc. cit.:33). But it is difficult to put forward such an explanation with examples (d) or (e), where no force dynamics can be invoked.

- (d) The walls absorbed humidity.
- (e) *Le musée rassemble les meilleurs Rembrandt.*
‘The museum gathers together the best Rembrandt.’

For this reason, it seems legitimate to allow spatial verbs of support or containing to link their subject with the Ground role.

4. This condition is only a statement aiming at describing the data in a way that can be easily falsified. It has no further motivation and certainly belongs to the type of condition we would be happy to get rid of or to derive from more general principles.

5. There are transitive constructions where the direct object NP corresponds to a Ground role, as *fuir* ‘flee’ in (19), where “la tyrannie” is interpreted as a Source. In this case, (30) is the appropriate analysis.

6. Fr. *monteur* also designates the technician who assembles the parts of complex devices (Eng. *fitter*). But this lexeme is formed upon a completely different construction of *monter*, in which the verb is transitive, has true Agent and Patient arguments and behaves like a verb of creation. A similar situation occurs with other verbs of inherently directed motion e.g. *tombreur* ‘thrower’, *descendeur* ‘racer, downhill’, etc. I refer to Fradin & Kerleroux (2003b) for a discussion of this issue.

7. Cf. *-ier, -ure, -able, anti-, pré-* for French; *-ize, -ship, -able, -ee* for English; *-bar* for German; *-zione, -za* for Italian; *-ado* and conversion for Portuguese, etc. Due to lack of space, I cannot refer to the works where these phenomena have been dealt with.

8. The adjectives *boutonnier* ‘related to button’ vs *boutonneux* ‘pimpily, spotty’, both formed upon *bouton* ‘button’ / ‘pimple, spot’ show that the derivational rule for *-eux* does not select the same information in the base noun’s semantics as the *-ier* rule does (Corbin & Corbin 1991). Similarly, in *vis-papillon* ‘wing nut’ N2 specifies the shape of what N1 denotes, while in *canne-épée* ‘swordstick’ the relevant information N2 provides regards the function of N1’s referent.
9. I owe Marc Plénat for most of the examples in (43) and (44).
10. Some attested examples are difficult to interpret without context. For instance *tire-suisse* denotes a mechanical or electrical device which makes a Swiss (*Suisse*) pull (*tirer*) the entrance door of a building, where the *Suisse* is an automatic mechanism which is called so by analogy with the fact that in the XVIIIth and early XIXth centuries Swiss people were employed as porters in mansions. (A recent attestation of *tire-suisse* is given in the *Trésor de la Langue Française*). As its interpretation makes it clear, this compound illustrates case (39c): (a) $(\lambda y. \text{pull}' \bullet e_1 \bullet x \bullet y \wedge \text{Swiss}' \bullet x \wedge \text{cause} \bullet e_1 \bullet (\text{open}' \bullet e_2 \bullet w) \wedge \text{door}' \bullet w)$.
11. Another explanation would be to say that these terms have nothing to do with compounding and that *monsieur* and *madame* are just here to differentiate two kinds of hot sandwiches by means of the most striking and accessible differentiators, namely gender markers (Marianne Kilani-Schoch, personal communication).

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Between compounding and derivation

Elements of word-formation corresponding to prepositions

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1. Introduction

In French, eight formatives (*après* “after”, *avant* “before”, *contre* “against”, *en* “in”, *entre* “between”, *sans* “without”, *sous* “under” and *sur* “over”) can be used both as prepositions and as elements of word formation.¹ In the examples under (1), they are used as prepositions:

- (1) a. *Il a commencé à travailler après la guerre*
‘He began to work after the war’
- b. *Il a commencé à travailler avant la guerre*
‘He began to work before the war’
- c. *Il a voté contre le projet de loi*
‘He voted against the bill’
- d. *Ils habitent en France*
‘They live in France’
- e. *Arras est situé entre Lille et Paris*
‘Arras is situated between Lille and Paris’
- f. *Il est sorti sans parapluie*
‘He went out without (his) umbrella’
- g. *Le ballon a roulé sous le fauteuil*
‘The ball rolled under the armchair’
- h. *Le ballon a rebondi sur le fauteuil*
‘The ball bounced on the armchair’

and in the examples under (2), they are used as elements of word formation:

- (2) a. *après-dîner* lit. after-dinner ‘evening’
b. *avant-guerre* ‘pre-war period’
c. *contre-révolution* ‘counter-revolution’
d. *enrichir* ‘to enrich’
e. *sans-abri* ‘homeless person’
g. *sous-préfet* ‘sub-prefect’
h. *surexposition* ‘overexposure’

These two types of elements are often considered to be identical, that is, the formatives which figure in the examples under (2) are prepositions and the words in which they appear are compounds, whose structure is P+N.² Some scholars have called into question this analysis, and have wondered whether these elements are really prepositions or whether they are prefixes.³

Still another way to analyze these words would be to say that they originate from syntactic phrases and have been lexicalized as words later on. For the time being, I just mention this possibility; I will come back to it later on.

In order to analyze these elements of word formation, I will first list the main criteria often used to distinguish between elements of derivation (prefixes in this case) and elements of composition. This will lead me to conclude that all formatives that originate from prepositions do not have to be analyzed in the same way: There is a continuum between elements which have to be considered real prefixes and others that are still prepositions.

2. The criteria

In addition to the autonomy of the constituents, the following criteria have been proposed to distinguish between derivation and composition: (1) the assignment of gender, (2) the ability to combine with different categories of lexemes, (3) the notion of head, bound to the endo- or exocentricity of the complex word, (4) the meanings displayed by the element of word formation with respect to (a) the prefixes which do not correspond to a preposition (such as *sous-* / *hypo-*, *sur-* / *hyper-*, etc.) or (b) with its homomorphic preposition (e.g. *sur-* / *sur*, *avant-* / *avant*, etc.).⁴ In the following, I will comment briefly on these criteria:

1. The gender of prefixed lexemes is inherited from their lexeme-base, e.g. *hypertension* is feminine, as is *tension*; *hypermarché* “hypermarket” is masculine, as is *marché*; the compounds, however, take default masculine gender for inanimates: both *perce-neige* “snow-drop” and *grille-pain* (lit. grill-bread) “toaster”

are masculine whatever the gender of the noun may be, feminine for *neige* and masculine for *pain*.⁵

2. A preposition preferentially introduces a NP or a noun; if an element of word formation can combine with other categories than nouns to build up lexemes of different categories, it has gained some autonomy with respect to the preposition it originates from; and it is closer to a prefix than to a preposition.⁶

3. The meanings displayed by the formatives:

a. If an element expresses the same meaning(s) as a real prefix in the same context, with the same distribution, it is probably a prefix: for example, both the words formed by *sur-* and by *hyper-* can express ‘excess with respect to a norm’, such as in *surcharge* ‘overload’ and *hypertension*, so *sur-* is probably a prefix.

b. If an element of word formation expresses at least one meaning different from its corresponding preposition, it seems safe to conclude that it has gained its autonomy with respect to this preposition, and that it can be considered to be (close to) a prefix: for example, *sur-* as an element of word formation can express excess (*cf. supra*), whereas the homomorphic preposition cannot.

4. It is often claimed that derived lexemes and compounds are right-headed and endocentric, the exocentric and/or the left-headed lexemes being formed in syntax; this is for example the assumption of Zwanenburg (1992) for French. But another analysis was proposed first by Scalise (1992), then by Iacobini (among others, 1998, 2004): the endocentric *vs* exocentric nature of the complex word allows us to distinguish between derived words, which would be endocentric,⁷ and compounds, which would be exocentric; this distinction allows him to distinguish between ital. *sottocommissione* ‘subcommittee’, which is derived by prefixation (*sottocommissione* is endocentric: a *sottocommissione* is a *commissione*) and *sottotetto* ‘attic’, which is a compound, composed of a preposition, *sotto* ‘under’, and a noun, *tetto* ‘roof’ (*sottotetto* is exocentric: a *sottotetto* is not a *tetto*).

The conjunction of all these criteria permits us to evaluate the degree of ‘prefixization’ of a preposition when it is used as a formative. In the following, I will present the results of our investigations concerning the eight elements mentioned at the beginning of this text.

3. The data and the results

The data on which I will base on my analysis are synthesized in the table under (3):^{8,9}

(3)

	après-	avant-	contre-	en-	entre-	sans-	sous-	sur-
N → N	après-	avant-	contre-	–	entre-	sans-	sous-	sur-
	midi	guerre	exemple		côte	abri	préfet	charge
N → A _{den} *	–	–	contre-	–	–	–	sous-	sur-
			factuel				marin	rénal
N → V	–	–	–	enterrer	–	–	–	–
A → A	–	–	–	–	–	–	sous-	surfin
							doué	
A → V	–	–	–	enrichir	–	–	–	–
V → V	–	–	contr-	–	entre-	–	sous-	sur-
			attaquer		voir		payer	évaluer
endo	–	+/-	+		+/-	–	+	+
mean.	=	=	≠	≠	≠	=	≠	≠

* A_{den} = denominal adjective.

Among these formatives, I will distinguish two groups, those that are real prefixes, and the others.

3.1 Real prefixes: *sur-*, *sous-*, *en-*, *entre-*, *contre-*

Sur-, *sous-*, *en-*, *entre-* and *contre-* (in bold type in the table) can be considered real prefixes because:

1. The nouns they build up always take the gender of their lexeme-base: *contre-exemple* “counter-example”, *sous-préfet* “sub-prefect”, *surentraînement* “overtraining” are masculine as, respectively, *exemple*, *préfet*, *entraînement*; *contrerévolution* “counterrevolution”; *sous-alimentation* “undernourishment”, *surcharge* “overload” are feminine as are *révolution*, *alimentation* and *charge*.¹⁰

2. Each of them can combine with different categories (N, V, Adj.) to form words of various categories (N, V, Adj.), even if *contre-* forms few adjectives and verbs. In any case, they do not only attach to nouns to form nouns.

3. The nouns they build are endocentric: a *contrerévolution* is a *révolution*, a *surcharge* is a *charge*, etc.¹¹

4. They all have at least one meaning that is different from the corresponding preposition. The case of *sur* is very clear: the most frequent meaning expressed by *sur-* when it is a part of a lexeme, is ‘excess’, such as in *surexposition* “over-exposure”, *surcharge* “overload”, *surentraînement* “overtraining” or *surmenage* “overwork”, etc.; the preposition, however, can never express this meaning. If the two elements were really identical, that would not be the case.

3.2 Formatives but not real prefixes: *sans-*, *avant-*, *après-*

As will be seen, these three elements do not behave identically; I will first present the results concerning *sans-*, and afterwards those concerning *avant-* and *après-*.

3.2.1 *Sans-*

Sans- is the element of word formation which is the closest to the preposition it originates from:

1. The gender of the inanimate nouns is always masculine (e.g. *sans-faute* lit. without-fault “faultless performance” is masc. whereas *faute* is fem.) and that of the animate nouns is masculine or feminine, depending on the sex nature of the referent.

2. It only attaches to nouns to form nouns.

3. It only forms purely exocentric nouns, that is, the complex words have a predicative meaning, they denote an entity by means of one of its characteristics;¹² that entity is either a human person (*sans-abri* “homeless person”, *sans-cœur* “heartless person”, *sans-culotte* lit. without-knee breeches “sans culotte”, *sans-domicile fixe* (SDF) “person without fixed address”, *sans-gêne* lit. without-constraint “inconsiderate person”), or an inanimate entity (*sans-faute* lit. without-fault “clear round”, *sans-dos* lit. without-back “stool”).

4. The *sans-N* words display the same meaning as the homomorphic preposition, that is ‘privation’ (cf. the examples (1f) and (2f)).

That the formative *sans-* is very close to its corresponding preposition is confirmed by the fact that the preposition is generally used without a determiner, as can be seen in the examples under (4):

- (4) a. *Il pleut et il est parti sans parapluie*
 ‘It is raining and he left without umbrella’
 b. *Ces gens sont sans abri*
 ‘These people are without home’

So, it is very easy to obtain, for example, the noun *sans-abri* from the PP *sans abri* in (4b). In view of these observations, *sans*-N words seem to be built up by a process of lexicalization of an expression previously formed in syntax.¹³ If this analysis is correct, *sans* is a syntactic marker, i.e. a preposition, in *sans*-N words.¹⁴

3.2.2 Avant- and après-

The case of *avant-* and *après-* is more difficult to solve. *Après-* has an homogeneous behavior, as opposed to *avant-*. I will first present the data with respect to the criteria, then I will present the analysis.

1. It is difficult to assign a gender to the complex words formed by *après-* and sometimes to those built up by *avant-*.

a. In the temporal domain, where the complex word denotes the period of time preceding / following the event denoted by the noun base, the noun is *a priori* masculine: *l'avant-Ceaucescu* / *l'après-Ceaucescu*, *l'avant-11 septembre* / *l'après-11 septembre*, etc.¹⁵

b. *Avant-* can also build up words in the spatial domain that denote an entity preceding the one that is denoted by the noun-base;¹⁶ the complex nouns, in this case, inherit their gender from their noun-base: if this is masculine, the complex word is masculine (*avant-port* ‘outer-harbour’ is masculine as *port*), and if this is feminine, the complex word is feminine (*avant-scène* ‘forestage’ is feminine just like *scène*).

2. *Avant-* and *après-* only combine with nouns to form nouns; the only exceptions are *avant-hier* ‘the day before yesterday’ (Adv. → Adv.) and *avant-dernier* ‘last but one’ (Adj. → Adj.); these formations are not productive in French.

3. In regard to the criteria of endocentricity, we find again the same discrepancy between *après-* and *avant-* in relation to the spatial / temporal domains. Moreover, when one of these formatives builds up exocentric words, these are not of the same type as those formed by *sans*.

Avant- and *après-* build up exocentric words in the temporal domain, such as *avant-guerre* / *après-guerre*, *avant-dîner* / *après-dîner* ‘the period before / af-

ter the dinner”, *avant-Ceaucescu* / *après-Ceaucescu* “the period before / after Ceaucescu”, *avant-mai 68* / *after-mai 68* “the period before / after May 1968”, etc.¹⁷ In each of these cases, the word denotes the period of time preceding the event or situation the base refers to. It is worth noting that the exocentric words are not predicative ones (as those formed by *sans-*); the complex words built by *avant-* or *après-* always refer to “something” related with the denotation of the base: The base denotes an event (directly or via a proper name or a date), and the complex word denotes the period of time which precedes / follows this event. This kind of exocentricity seems to constitute an intermediate level between “real” exocentricity (where the complex word is predicative; and its denotation is not related to the denotation of the base),¹⁸ and “real” endocentricity (where the derived lexeme denotes a close hyperonym of its base);¹⁹ it is a kind of “weak” endocentricity, as it were.

In the spatial domain, *avant* forms endocentric words, such as *avant-port* “outer harbor”, *avant-scène* “forestage”, *avant-bras* “forearm”.²⁰ These words do not constitute canonical cases of endocentricity however since they denote a part-whole relation between the denotation of the complex word (the part) and that of the base (the whole); we can nevertheless consider them as endocentric words because both the simple word and the complex one denote something of the same nature, even if the base is not exactly the hyperonym of the complex word.²¹ This particular feature of their interpretation is due to the semantic instruction of *avant-*, which is a marker of localisation.

4. *Avant-* and *après-* express the same meanings as the corresponding prepositions; they both express anteriority and posteriority in time and in space.

To sum up, there seem to be two *avant-*:

1. In the spatial domain, *avant*₋₁ builds up endocentric nouns which inherit their gender from their base. The formative of spatial posteriority that corresponds to *avant-* is *arrière-*; both elements have exactly the same behavior and form words which often occur by pairs (cf. examples *supra*).

2. *Avant*₋₂ builds masculine exocentric nouns in the temporal domain. The element corresponding to *avant*₋₂ that is used to express temporal posteriority is *après-*. Both elements also have the same behavior and the complex nouns built by these formatives also often occur by pairs (*ibid.*).

These data raise some questions, especially: can the two *avant-* be given a unitary analysis? This is what one would expect, since all the complex words express the same kind of interpretation (anteriority), but it seems difficult since these formatives display opposite characteristics.

Avant₋₁ is close to the prefixes but it exhibits some particularities which show that it is not entirely like a real prefix: it only builds nouns from nouns and expresses the same meaning as the homomorphic preposition.

Avant₋₂ and *après*- resemble *sans*- but also differ from it since they do not build the same kind of exocentric words. Moreover, their corresponding prepositions are also slightly different: whereas *sans* generally introduces bare nouns (cf. examples (4)), *avant* and *après* are usually followed by a NP, whatever the interpretation may be, temporal (5) or spatial (6):

- (5) a. *Ils ont émigré après la crise / *après crise*
 ‘They emigrated after the crisis / *after crisis’
 b. *Ils ont émigré avant la crise / *avant crise*
 ‘They emigrated before the crisis / before crisis’
- (6) a. *Je me suis garé après la mairie / *après mairie*
 I me parked after the town-hall / after town-hall
 ‘I parked my car behind the town-hall’
 b. *Je me suis garé avant la mairie / *avant mairie*
 I me parked before the town-hall / before town-hall
 ‘I parked my car before arriving at the town-hall’

So, *avant*₋₂ and *après*- are not only different from the prefixes but also from *sans*-, which builds complex words in syntax; so, it is necessary to imagine another mode of formation;²² one possibility is that the *avant*₋₂ / *après*-N were built by composition. Such a possibility, however, raises a problem. Generally, compounds are supposed to display the following characteristics: (1) they are formed by morphological rules, (2) these rules associate lexemes²³ and (3) the compounds always denote classes of entities.²⁴ *Avant*-N words, however, do not comply with two of these criteria:

A preposition is not a lexeme since it belongs to a minor / closed category, as determiners or flexional markers do; in the terminology proposed by Fradin (2003), it is a “grammeme”, not a lexeme.

Avant₋₂ / *après*-Ns do not always denote classes of entities, especially when the noun is a proper name ((*avant*-)*Ceaucescu*) or a date ((*avant*-)*mai 68*); the complex words denote the period of time which immediately precedes or follows a singular event and are not real denominations.²⁵

If the first criterion (*avant*₋₁ / *après*- are not lexemes) is a purely theoretical principle, the second (*avant*₋₁ / *après* do not build real denominations) is a more serious empirical one, that compels us to find another solution.

Corbin (forthcoming) proposes another type of word formation, which she calls “syntactiform combination”. This is a paramorphological operation

of word formation, which is subject to few constraints; according to the author “it can make use of syntactic elements, if necessary”. The interpretation of the complex words resulting of this operation is very regular, though, in that it uses interpretative patterns.²⁶

If *avant*₁- / *après*-N were the result of syntactiform combinations, *avant*- / *après*- would be prepositions; at least two arguments seem to confirm this point of view:

1. *Avant*- / *après*- are close to the homomorphic prepositions: they only attach to nouns to form nouns and their meanings are identical in syntax and in word formation (anteriority / posteriority).
2. The exocentricity of complex words:²⁷ a preposition, in its “neutral use”,²⁸ is a two-place predicate. The place to its right is filled by the noun it introduces, whereas the place to its left remains empty. This place to the left of the preposition is conceptually filled by an external element, which provides the type of reference of the complex word, this reference being relatively abstract; *avant*₂- / *après*-N for example, always refer to “the period before / after what is denoted by the noun”.

At this point of the analysis, it seems possible to formulate the following hypothesis: *avant*(-) is a preposition in the process of being grammaticalized as a prefix. The very first level of grammaticalization would be that of cases like *sans*-, where the complex words are lexicalized / desyntactized PPs. The formation of *avant*₂-N (and *après*-N) by syntactic combination would correspond to the second level (*avant*- would be a preposition, i.e. a two-place predicate, and it would form “weak” exocentric nouns in syntax, by means of patterns). The formation of endocentric nouns (*avant*₁-N) would constitute a more advanced level (*avant*- would display a more prefixal behavior, that is, it would become a one-place function,²⁹ and it would form nouns by means of morphological rules). The last level would be that of the real prefixes.

This hypothesis is certainly attractive but it cannot be true because it would mean that the formation of endocentric nouns would have to be more recent than that of exocentric ones, and that is not the case: the first occurrences of endocentric nouns date back to the twelfth century, whereas those of exocentric nouns date back to the nineteenth century.³⁰ These data suggest us to consider that *avant*₁- and *avant*₂- have undergone different grammaticalization processes. *Avant*₁- is at an advanced stage in that process: in modern French, it builds endocentric nouns; but it is known that the first nouns it built were exocentric ones; for example, in the XIIth century, *avant-bras* denoted “the part of the armour that was before the arm”. As for *avant*₂-, its grammaticalization

process starts more recently (in the middle of the XIXth century). Nowadays, it builds “weak” exocentric nouns; however the ways in which it builds new words can evolve further.

4. Conclusion

All elements of word formation studied in this paper should not be analyzed in the same way. Some (*contre-*, *en-*, *entre-*, *sur-* and *sous-*) are real prefixes. Others (*après-*, *avant*₋₂ and *sans-*) are still prepositions. For these last formatives, two ways of formation have been distinguished: lexicalization (*sans*) or syntactiform combination (*avant*₂ and *après*). As for *avant*₋₁, it is close to real prefixes.

Notes

1. *A*, *par* and *pour* could be used as elements of word formation in earlier stages of French (cf. *atterrir* “to make land”, *parfaire* “to finish off”, *pourlécher* “to lick (one’s lips) (all over)”), but they are no longer productive in modern French.
2. Cf. for example, for French, Darmesteter (1893), Martinet (1960), Gross (1986), Mathieu-Colas (1996), etc.
3. Cf. for French, Corbin (1987), forthcoming and Amiot (1997); for Italian, Scalise (1992) and Iacobini (1998, 2004); for Spanish, Rainer & Varela (1992), etc.
4. I limit the list to the criteria which can be useful for the distinction between prefixes and prepositions; for a good synthesis of the different criteria, see Iacobini (2004:99–104).
5. On this topic, cf. for example, Scalise (1992), Rainer & Varela (1992), Zwanenburg (1992), Iacobini (1998, 2004), etc.
6. For a similar claim, cf. also Rizzi (1988).
7. Such as the lexemes built up by real prefixes: a *prélavage* “prewash” is a *lavage* “washing”; an *hypermarché* is a (kind of) *marché*. For a systematic comparison between the functioning of real prefixes which have a prepositional origin but which do not correspond to any preposition, and the formatives which have an homomorphic preposition, cf. Amiot (2004).
8. Rows 1–6 indicate the categorial relations in which an element of word formation can enter; an example is given each time the categorial relation is realized. Row 7 is for endocentricity (plus) vs exocentricity (minus) and row 8 is for meaning: ‘=’ indicates that the element of word formation displays exactly the same meaning(s) as the homomorphic preposition while ‘≠’ indicates that it shows at least one meaning different from it. As we can see, concerning endo/exocentricity, *avant-* and *entre-* have a plus and a minus; this will be clarified later on, Note 11 for *entre-* and §2.2.2. for *avant-*.

9. Here are the translations of the examples: *après-midi* “afternoon”; *avant-guerre* “prewar period”; *contre-exemple* “counterexample”, *contrefactuel* “counterfactual”, *contre-attaquer* “counter-attack”; *entrecôte* lit. inter-rib “rib steak”, *entrevoir* lit. inter-see “to catch sight of”; *sous-préfet* “sub-prefect”, *sous-marin* “submarine”, *sous-doué* lit. under-talented “poorly talented”, *sous-payer* “underpay”; *surcharge* “overload”, *surrénal* “suprarenal”, *surfin* “superfine”, *surévaluer* “overvalue”.

10. *En-* is somewhat particular because it only forms verbs based on adjectives (*riche* → *enrichir* “rich / to enrich”), or based on nouns (*terre* → *enterrer* “earth / lit. to inearth = to bury”). So, the criteria concerning gender or endocentricity do not hold for it.

11. *Entre-* can also make up exocentric words; everything depends on the category of the base and of the complex word: it builds up endocentric verbs (*entrechoquer* “to knock together”, *s’entre-déchirer* “to tear each other to pieces”, *entrouvrir* “to half-open”), but it forms exocentric nouns: *entre-côte* lit. between-rib “rib steak”, *entracte* lit. between-act “interval”, *entre-rail* lit. between-rail “gauge”. The prefix *inter-* displays the same particularity; this fact is relatively easy to explain but space limitations do not allow me to present such an explanation here.

12. This kind of exocentric is sometimes called “attributive”, cf. Lieber (1992), for example.

13. Corbin (forthcoming) calls such a process “desyntactization”. Rainer & Varela (1992: 121) assign the same mode of construction (lexicalization of a PP) to a word like *sinvergüenza* lit. without shame “scoundrel” (the translation comes from the authors).

14. It is perhaps possible to hypothesize, as Barbaud (1997) does, a particular type of conversion (not a morphological conversion but a syntactical one), made from a P’ (if we adapt his analysis to our data), that is: P’ → N.

15. The nouns, which generally denote the period preceding or following a unique event, are preceded by a definite article which is elided before the vowel of *avant-* and *après-*; so there is no alternation *le* (masc.) / *la* (fem.). Moreover, some of these words have the two genders: *avant-guerre* and *après-midi* are both masculine and feminine.

16. *Après-* does not form words with a spatial interpretation; the formative which corresponds to *avant-* for the expression of “spatial posteriority” is *arrière-*: *arrière-pays* “hinterland”, *arrière-cuisine* “back kitchen”; for the organization of the micro-system of anteriority and posteriority in the spatial and temporal domains in French, see Amiot (2003).

17. *Avant-* also builds some scarce endocentric words with a temporal interpretation, such as *avant-projet*; an *avant-projet*, for example, is a (first) project made before the real project, in order to prepare it. *Avant-projet*, however, can also refer to the period of time preceding the project, as *avant-guerre*, *avant-Ceaucescu*, *avant-mai 68*, etc.

18. Cf. *sans-papier* which denotes a human or *sans-dos* which denotes an artefact, a stool.

19. A *surcharge* is a (kind of) *charge*; a *contre-révolution* is a (kind of) *révolution*, etc.

20. As claimed Note 16, *après-* does not built up words with a spatial interpretation; spatial posteriority is expressed by *arrière*, which effectively forms endocentric words. *Arrière-* is not studied here because it does not correspond to a preposition; it is related to an adverb that is only used in few contexts.

21. Zwanenburg (1992) arrives to the same conclusions.

22. Here is another argument that can be given against an analysis in terms of lexicalization: Usually, the formation of this kind of words is not productive and their interpretation is not always regular; this is not the case of the words built by *avant*₂ and *après*: their productivity is very high (I do not have statistics but all the words I quoted are recent and the media coin new words nearly every day) and the nouns receive a regular interpretation, cf. *supra*.
23. A lexeme is a multi-stratal entity, underspecified for flexion, which is characterized by three properties: a phonological representation, a syntactic category, a semantic representation. It is generally claimed that each lexeme belongs to a major category, that is, N, V or Adj. The status of adverbs is not clear; some scholars include them in the major categories, whereas others do not. On this concept, see for example Matthews (1974), Aronoff (1994), Kerleroux (forthcoming) or Fradin (2003).
24. This last criterion is mentioned in Corbin (forthcoming).
25. Cf. Kleiber (1984) for such distinctions.
26. Syntactiform combination is more or less equivalent to Booij's notion of "construction", (Booij, this volume).
27. Even if this exocentricity is a "weak" one.
28. This "neutral use" is shared by all prepositions; it is to be found when a preposition occurs in a structure such as [NP₁+prép+NP₂]. On this notion, see Amiot (2002); Amiot & De Mulder (2002; forthcoming).
29. For an argumentation, see Amiot & De Mulder (forthcoming).
30. Only a few nouns with temporal meaning were attested before this time; for example *avant-veille* "two days before", *avant-hier* "the day before yesterday".

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Cumulative exponence involving derivation*

Some patterns for an uncommon phenomenon

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1. Introduction

As is well known, inflectional markers often display cumulative exponence, with a single marker codifying more than one grammatical category together. It is also usual for cumulative exponents to cross the border between inherent and contextual inflection (in the sense of Booij 1993): one obvious example is given by case-number markers, which are pervasive in the so-called fusional languages. Indeed, this latter fact has been pointed out by Booij (1993: 41–42) as ruling out the possibility of interpreting the inherent-contextual distinction within inflection radically, in terms of a “Split Inflection” model.

What happens, however, when derivation enters the picture? This issue has been much less often addressed in the literature. A very explicit position is taken by Stephen Anderson, as reported below:

An interesting argument for the separation of inflection from derivation is based on the fact that inflectional systems often display ‘portmanteau’ morphs. [...]. It seems to be the case that *portmanteaux are much rarer in derivation* (if indeed such elements exist at all). What is most relevant here, however, is the observation that *there do not ever seem to be elements which combine inflectional and derivational categories in the same portmanteau*.

(Anderson 1992: 75–76; italics mine)

It could be expected that both claims above, if empirically verified, should have had a significant impact on the evergreen debate about the inflection-derivation distinction. This seems not to have been the case, however. The scarcity of cumulative derivational morphemes, as opposed to inflectional ones, has been sometimes mentioned (Dressler 1982: 81, and more recently

Booij 2000:367 and Haspelmath 2002:76), but is absent in several other lists of criteria discussed in the literature (as Scalise 1988; Dressler 1989; Stump 1998:14–18). The second claim in Anderson's statement has probably found still less interest (although Rainer 1993:40 mentions both). This is particularly surprising, since from a theoretical standpoint it is the more relevant of the two, as pointed out by Anderson himself: data falsifying it should be taken very seriously as counterevidence against Split Morphology models.

In this paper I would like to address both issues. Cumulation within derivation will be dealt with in Section 2, and cumulation between derivation and inflection in Sections 3 and 4. I cannot claim any cross-linguistic coverage, since my examples come from a very limited number of languages, mostly Romance. However, I hope they will be sufficient to show that both phenomena, although admittedly uncommon, are nonetheless safely attested; in particular, some diachronic paths leading to cumulation between inflection and derivation will be identified. For the sake of the argument, I will be very cautious in considering any given data as indisputable instances of cumulation, ruling out or at least keeping distinct those cases in which plausible alternative analyses are available according to different theoretical and descriptive choices.

2. Cumulation within derivation

The rarity of cumulation within derivation, as stated by Anderson, is probably uncontroversial, but needs at the same time some further qualifications. In particular, can the scarcity of cumulative exponence be taken as an independent defining criterion for derivation, or is it simply a consequence of more general properties? More radically, to what extent is it safe to speak of cumulation dealing with the rather elusive derivational categories?

As a matter of fact, there is little doubt that derivation is far less paradigmatically structured than inflection. This makes it difficult to identify instances of cumulation, since cumulative exponence should presuppose that the categories involved are recognized as autonomous and independent, not just in a cognitive sense, but also from the point of view of their formal linguistic coding (cf. Coates 2000).

It is true that such a requirement cannot always be taken for granted even for inflection, especially if one thinks of verbal TAM categories: many accounts treat TAM markers as non-cumulative exponents of a single macro-category precisely for that reason. In derivation, however, the difficulty in identifying cross-linguistically comparable categories is more the rule than the exception

(see for instance Bauer 2002). Nevertheless, a list of sufficiently well comparable derivational categories can be built, and would include at least: action nouns, agent nouns, instrument nouns, location nouns, diminutives, augmentatives, collectives, and some categories which in many languages border on inflection, like deadjectival adverbs, causative verbs, relational adjectives, deverbial adjectives expressing potentiality, quality nouns. Unfortunately, many of these categories are not orthogonal, but rather mutually exclusive, which significantly reduces the possibilities of cumulation.¹

A preliminary definition problem specific to derivation is also evident from the list above. There is a trivial sense in which most derivational morphemes might be termed as cumulative, since they usually act simultaneously at two levels: they provide their own semantic contribution to the derived word and at the same time they convey information about input and output syntactic categories. For instance, a suffix like It. *-iere* in *portiere*, meaning both 'doorkeeper' and 'goalkeeper', from *porta*, both 'door' and 'goal (in football)'; categorially derives nouns from nouns and semantically conveys the meaning of 'person whose job/usual activity is related to X'. The two components are well separable in principle, since Italian has both agentive suffixes which are not denominal (e.g. *-tore* in deverbal agent nouns like *giocatore* 'player' from *giocare* 'play'), and denominal nouns which do not have agentive semantics (e.g. nouns derived with locative suffixes like *-eria* in *libreria* 'bookshop').

However, this double function is apparently never taken by itself as an instance of cumulation, nor will it be so treated here. It is rather an inherent feature of lexeme-forming morphology to often convey information and restrictions on the syntactic categories involved, at least in a default sense.² An instance of cumulative derivation should instead mean that a single morphological process involves two different *semantic* components which can be readily isolated from each other as they are codified separately elsewhere. The latter requirement can be met at two levels: in a weaker way, cross-linguistically (as is usually the case for inflection), or, more strongly, also within the same language. Due to the less reliable cross-linguistic comparability of derivational categories, it seems advisable, dealing with derivation, to take as paramount examples of cumulation only those instances which fulfill the stronger requirement, namely, those in which both categories involved are also coded independently within the language under investigation.

2.1 'Agent noun' + 'Male/Female'

A promising case to look for cumulative marking is the combination 'Agent noun' + 'Male/Female'. Some European languages have an unanalysable productive derivational suffix meaning 'Female agent' (Dutch *-ster*, Italian *-trice*,³ French *-euse*), opposed to another suffix meaning 'Male agent' (Dutch *-er*, Italian *-tore*, French *-eur*).⁴ The latter can also refer to animate – usually, human – beings of unknown or unspecified sex: as usual, the male referent functions as the unmarked member of the pair. Therefore, it would be conceivable to label the meaning of Dutch *-er* and its equivalents simply as 'Agent'; but the same move is not feasible for the female counterpart, for which an analysis in terms of cumulation seems hardly avoidable. Indeed, Dutch *-ster* is precisely the unique illustration of cumulative derivation found in Haspelmath (2002: 76). Examples for the three languages are given in (1):

- | | | | | | |
|-----|----|-----|-------------------|-------------------|--------------------|
| (1) | a. | Du. | <i>sprek-(en)</i> | <i>sprek-er</i> | <i>sprek-ster</i> |
| | | | 'to speak' | 'speaker' | 'female speaker' |
| | b. | It. | <i>gioca-(re)</i> | <i>gioca-tore</i> | <i>gioca-trice</i> |
| | | | 'to play' | 'player' | 'female player' |
| | c. | Fr. | <i>vend-(re)</i> | <i>vend-eur</i> | <i>vend-euse</i> |
| | | | 'to sell' | 'seller' | 'female seller' |

For Dutch *-ster*, however, a viable alternative analysis is discussed in Booij (2002: 6–7) and can be represented as in (2):

- | | | |
|-----|----|--|
| (2) | a. | $[sprek]_V + -er_{V \rightarrow N, 'Agent'} \rightarrow [[sprek]-er]_{N, 'Agent'}$ |
| | b. | $[[sprek]-er]_{N, 'Agent'} + -ster_{N \rightarrow N, 'Female'} \rightarrow [[sprek](-er)]_{N, 'Agent'} -ster_{'Female'}$ |

According to the two-step analysis in (2), *-ster* needs no more to be cumulative: the agentive neutral suffix *-er* derives the agent noun from the verbal base, and a further derivational process with *-ster* takes the agent noun as input. The process involves affix substitution, which means that the suffix *-er* is cancelled, but not its features N, 'Agent'. To these, the derivation by *-ster* simply adds 'Female' like any *Movierung* suffix.⁵ Support for this analysis comes from instances in (3), which show that *-ster* can apply to derived agentive nouns, both deverbal as in (3a) and denominal as in (3b), without cancelling the previous agentive suffixation (cf. van Marle 1985: 217–218). Notice, moreover, that *-aar* is etymologically connected with the cancelled suffix *-er* in (2), although synchronically it has become a competing suffix, according to Booij (2002: 182–184).

- (3) a. *wandel-(en)* *wandel-aar* *wandel-aar-ster*
 ‘to walk’ ‘walker’ ‘female walker’
 b. *winkel* *winkel-ier* *winkel-ier-ster*
 ‘shop’ ‘shopkeeper’ ‘female shopkeeper’.

Due to (3), we are forced to admit that in some cases *-ster* means only ‘Female’, which, at least on economy grounds, is a good argument to extend this interpretation to (1a) as well.

Such a way of reasoning, however, does not apply to Italian or French. There is no independent evidence that It. *-trice* or Fr. *-euse* could codify the meaning ‘Female’ only. Therefore, the hypothesis of affix substitution starting from the corresponding derivatives in *-torel-eur* would be entirely *ad hoc*.

A last argument to avoid cumulation in case of It. *-trice* and Fr. *-euse* may be put forward, somehow paradoxically, by exploiting the problematic status of derivational categories as such, as mentioned in 2. Even conceding that the derivational meaning of Italian *-trice* is ‘Agent:Female’, what precludes us from saying that we are nevertheless dealing with a single category, namely precisely ‘Female agent’? As said in 2, this question is less trivial than it could seem: on my opinion, it cannot be ruled out simply because of the cognitive independence of the two concepts involved. Linguistic evidence proper is needed, both at a cross-linguistic level and, when possible, within the language under examination. Fortunately, it is not difficult to find such evidence for the present case. Cross-linguistically, there is plenty of distinct affixes for ‘Agent noun’ and ‘Female’ (just take German *Sprech-er-in* ‘speak-Agent-Female’). Moreover, the two meanings can be codified separately even within Italian, as shown in (4).

- (4) a. ‘V→N, Agent’ *-in-*: *spazz-in-o* / *spazz-in-a*
 ‘street-cleaner m./f.’
-nt-: *canta-nt-e*
 ‘singer m./f.’
 b. ‘Female’ *-ess-(a)*: *poet-a* → *poet-ess-a*
 ‘poet’ ‘female poet’
 inflectional class shift: *deputat-o* → *deputat-a*
 ‘MP’ ‘female MP’.

2.2 Cumulation involving evaluative semantics

Further possible instances of cumulative derivation can be found in Italian. However, they are less clearcut than the one seen in 2.1, since they always involve evaluative meanings, and in this domain it is particularly difficult to

separate affix semantics proper from what might be better identified as either affix-driven semantic restriction on the base, or even pragmatically inferable connotation.

The best example of cumulation involving evaluative semantics in Italian is given in (5a). The suffix *-one(e)*, besides functioning as an Augmentative suffix applied to nouns and adjectives, can also be productively attached to verbal bases.⁶ In this case, it forms agent nouns which also carry Augmentative/Excessive meaning, referred to the action and not to the agent (cf. Lo Duca 2004:361–363).

- (5) *-one*: V→N, ‘Augmentative/Excessive verb’: ‘Agent noun’
- a. *mangiare* ‘eat’ → *mangi-one* ‘heavy eater’
 - b. *chiacchierare* ‘talk (a lot)’
→ *chiacchier-one* ‘great talker, chatterbox’

A slight problem in identifying deverbal *-one* as cumulative is raised by cases like (5b), where the Excessive meaning is already codified lexically in the base verb, so that the Excessive semantics attributed to the suffix may be viewed as redundant. In my opinion, we are nevertheless entitled to assign the same meaning to *-one* in both (5a) and (5b), given that a certain amount of redundancy is nearly always present in those derivations which do not change the category, and particularly in evaluative derivation. At any rate, regarding the process in question, cases like *chiacchierone* in (5b) are not quantitatively dominant with respect to the nonredundant cumulation instances like *mangione* in (5a).

The deverbal suffix *-one* also meets satisfactorily the criterion of separate codifiability – within Italian – of the two categories involved. Derivational processes for deverbal agent nouns with no Excessive meaning are widely present, as seen above. Excessive verbs, derived via prefixation, are less common, but well attested and still weakly productive: for instance *stra-vincere* ‘win hands down’ from *vincere* ‘win’, *sopra-vvalutare* ‘overestimate’ from *valutare* ‘estimate’ (cf. Iacobini 2004: 152).

As said above, a difficulty often met when evaluative meanings come into the picture is to distinguish evaluative connotations from a stable semantic feature attributable to the derivation proper. In Italian, collective suffixes are a case in point. In particular, the collectives in *-aglia* and *-ume*, especially those derived from [+animate] bases, normally carry also a derogatory meaning. For these two suffixes, a description which treats ‘Pejorative’ as a separate semantic component, like in (6), and therefore identifies further cases of cumulation within derivation, may look justified.

- (6) *-aglia, -ume* N→N, ‘Pejorative’: ‘Collective’
 a. *soldato* ‘soldier’ → *soldat-aglia* ‘group of bad soldiers’
 b. *impiegato* ‘clerk’ → *impiegat-ume* ‘clerk class (derogatory)’.

However, the cumulative interpretation in (6) is much less convincing than for deverbal *-one* in (5). Firstly, the two suffixes are only marginally productive. Secondly, the problem of redundancy is more disturbing than in the case of *-one*: as shown in (7) for *-aglia*, either of the two meanings – Pejorative and Collective – can be already present in the base (see 7a and 7b respectively), and sometimes even both of them are (see 7c).

- (7) a. *sbirro* ‘cop (derogatory)’ → *sbirraglia* ‘police (derogatory)’
 b. *gente* ‘people’ → *gentaglia* ‘bad people, scum’
 c. *teppa* ‘mob, scum’ → *teppaglia* ‘id.’

Thirdly, and perhaps more importantly, it is not clear to what extent the two meanings ‘Collective’ and ‘Pejorative’ can be really treated as independent: certainly not as fully as ‘Agent’ and ‘Female’, or even ‘Agent’ and ‘Excessive’. Indeed, the notion of ‘Collective’ implies low identifiability of the single individual, which for animates can quite naturally shift towards an overall negative characterization. This is corroborated by the fact that all collective suffixes in Italian display negative connotations at least in some derivatives (cf. Grossmann 2004: 245–247), although not in the systematic way shown by *-aglia* and *-ume*. On the other hand, the case in (6) is interesting in showing how the existence of a continuum from connotation to stable independent semantic feature may provide a suitable diachronic source for derivational cumulation proper.

Finally, it is worth mentioning the case of the suffix *-aggine*, which forms productively quality nouns from adjectival bases. Contrary to other quality noun suffixes, like *-ità* and *-ezza*, the derived words in *-aggine* always display a stable negative semantics, with no character of a connotation: *goff-aggine* ‘clumsiness’ from *goffo* ‘clumsy’, *sfacciat-aggine* ‘shamelessness’ from *sfacciato* ‘shameless’ etc. (cf. Rainer 2004: 306–309). However, this suffix nearly always applies to bases which already express negative qualities on their own, with very few exceptions (one of them is *lungaggine* ‘lengthiness’ vs. *lunghezza* ‘length’, both from *lungo* ‘long’). The situation is thus markedly different from that of *-one* in (5). In the case of *-aggine*, the pejorative meaning is selected rather than assigned by the suffix, and it seems pointless to speak of derivational cumulation here.

3. Cumulation between inflection and derivation: Some doubtful cases

We come now to the second issue, namely the possibility for derivation and inflection processes to be coded cumulatively. As said in Section 1, these cases, if shown to be present beyond doubt, have a much stronger impact from a theoretical standpoint, since they speak very directly against any Split Morphology hypothesis. Therefore, it is methodologically advisable to keep a very restrictive approach, taking into account possible alternative descriptions whenever they look reasonable. In this section two cases will be discussed in which a cumulative interpretation may appear obvious at first sight, but can be convincingly dismissed by adopting a different analysis; and a third case in which cumulation is beyond doubt, but it depends on more general theoretical assumptions whether derivation is involved or not.

3.1 *Movierung* by inflectional class assignment

A first case can again be illustrated most clearly by Italian (although equivalents can be easily found elsewhere). In Italian, in many pairs of animate nouns, both human and non-human, male/female sex is expressed morphologically by their vowel ending, as shown in (8):

- (8) a. *nonn-* + *-o/-i/-a/-e*, *lup-* + *-o/-i/-a/-e*
 ‘grandparent’ ‘wolf’
- b.

	Singular	Plural
Male	<i>-o</i>	<i>-i</i>
Female	<i>-a</i>	<i>-e</i>

The pattern in (8a) is surely productive and is also quickly expanding nowadays to denote female referents for jobs traditionally restricted to men. As is clear from the table in (8b), the vowel endings codify both the information about the sex of the referent and the inflectional category of number. But there is widespread consensus on the fact that the members of a pair like *nonno/nonna* belong to separate lexemes (cf. Matthews 1991: 45–49, among many others). It follows that the alternation *-o/-a* has a word-forming function, besides the inflectional function of marking number. This looks at first sight very much like a paramount case of cumulation between inflection and derivation.

However, there is a convincing way out, if we take into account the existence of a separate morphological level, to be kept distinct from both inflectional and derivational operations: namely, inflectional class assignment, one of the favourite *loci* for the well-known *Morphology by itself* in Aronoff’s (1994)

sense. We can then say that the lexeme-forming process is realized by assigning the lexemes for ‘grandfather/grandmother’ and the like to the two default classes for male/female animates in Italian: the masculine *-o/-i* class for males, and the feminine *-a/-e* class for females (cf. Dressler & Thornton 1996; Thornton 2004: 220). Once the two lexemes have been distinguished from each other by their belonging to different inflectional classes, they undergo the same inflectional treatment of any other lexeme (derived or underived) in the given class: they are inflected exactly as the [–animate] nouns *libro* ‘book’ and *sedia* ‘chair’ respectively. In this perspective, the two processes, the lexeme-forming one and the inflectional one, can be considered as applying sequentially and there is no cumulation.⁷

3.2 Fusion phenomena at the derivation-inflection boundary

We move now to what is probably the most obvious place to look for inflection-derivation cumulation: namely, the results of a diachronic process of fusion at the boundary between a derivational and an inflectional affix. Also in this case, we do not have to look far away to get examples. This kind of fusion occurs quite often in French and in the dialects of Northern Italy between nominal/adjectival suffixes and Number morphemes, and may often give rise to fully unanalysable monophonemic outputs.

However, such fusion phenomena do not necessarily imply a synchronic cumulative analysis. This point is illustrated in (9), taken from Genovese, a Gallo-Italic dialect from Northwestern Italy (cf. Toso 1997: 281).

(9)	[di – u]	→	[di – 'a:]		/	[di – 'æ:]
	N – SG		N – (N → N): SG			N – (N → N): PL
	‘finger’		‘fingermark’			‘fingermarks’

The Genovese denominal suffix *-[a:]* is cognate with It. *-ata*, and both derive action/result feminine nouns: the Italian equivalent of Gen. [di'a:] is *ditata*, with the same meaning. The suffix is productive, at least to the extent that Genovese can still be seen as having productive derivational morphology independent from Italian. Unlike Italian *-at-a/-at-e*, where the derivational and the inflectional information are perfectly separable, in Genovese they conflate into a single phoneme. Like the case discussed in 3.1, the cumulative interpretation seems to be at first sight unavoidable, as suggested by the glosses in (9): both *-[a:]* and *-[æ:]* have derivational content and codify at the same time singular and plural number respectively.

Similarly to the preceding case, however, there is a viable and indeed convincing alternative. The suffix $[-'a:]$ can be considered as derivational only. Words derived by $[-'a:]$ substitute $[-'a:]$ with $[-'æ:]$ in Plural, but this information needs not to be carried by the suffix $[-'a:]$, since the $[-'a:]$ / $[-'æ:]$ inflectional class in Genoese is phonologically determined: it hosts also underived items with the same final segment (cf. $[fa'na:]$ 'light, lamp', pl. $[fa'næ:]$).

In other words, fusion between a derivational and a number morpheme, as a diachronic process, does not necessarily result into a synchronic cumulative analysis, even when its output is a single phoneme. To escape cumulative analysis, however, the plural formation rule must apply regardless of the morphological structure of the input; if this is not the case, things change, as will be discussed in 4.1.

3.3 Cumulation between borderline categories: Manner adverbs and grade of comparison

The following data from Lithuanian (Ambrazas 1997:138, 386) are hardly questionable as an instance of cumulation. It remains open, however, whether derivation is involved.

- | | | | |
|------|----|-----------------|-----------------------|
| (10) | a. | <i>ger – as</i> | <i>ger – esn – is</i> |
| | | M:SG:NOM | COMP M:SG:NOM |
| | | 'good' | 'better (adj)' |
| | b. | <i>ger – ai</i> | <i>ger – iau</i> |
| | | A → AVV | (A → AVV):COMP |
| | | 'well' | 'better (adv)' |

In (10), the comparative of a deadjectival adverb is quite neatly expressed in a cumulative way. The same pattern is found, with different degrees of generality, in several Slavic languages (e.g. in Polish: examples for the latter in Ricca 2003:198). However, both categories involved are widely recognized as non-prototypical in their respective domains: grade of comparison within inflection (cf. Dressler 1989:6) and deadjectival adverbialization within derivation. Especially for the latter, there is even no universal consensus to assign it to derivation. And if adverb formation is shifted to inflection – as some linguists would do anyway (cf. Haspelmath 1996:49–50) – data like (10) obviously become irrelevant for the current issue. Still, they are not irrelevant against a rigidly modular approach separating inflection and derivation, since they provide some further insight into the prototypical structuring of both domains.

4. Some more convincing cases

4.1 Cumulation originating from fusion

In 3.2 it has been pointed out that fusion phenomena at the derivation-inflection boundary do not necessarily yield a cumulative morpheme as output. However, they remain a possible diachronic source for ‘true’ instances of cumulation. An example of this latter sort, only apparently parallel to the Genoese case in 3.2, is given in my opinion by the French denominal adjectives in *-[al]*, like *national* ‘national’ from *nation* ‘nation’, whose masculine plural ends in *-[o]*: *nationaux*. There is little doubt that *-[al]* has to be marked as derivational only, since the same form is shared by the corresponding feminine adjective, both singular and plural: *nationale(s)*. The question is if *-[o]* may avoid being described as cumulating a derivational function (denominal adjective) and two inflectional ones (masculine and plural).

In principle, this case could be treated in the same way as the Genoese one, by positing an inflectional class *-[al]/-[o]* for adjectives, irrespective of their morphological structure. However, this class seems not to be fully phonologically determined. Some synchronically unanalysable adjectives, like *fatal(s)* ‘fatal (pl.)’, *natal(s)* ‘native (pl.)’, *naval(s)* ‘naval (pl.)’, do not take *-[o]* according to Grevisse (1993:834), although a search with Google shows that both alternatives are possible in real usage.⁸ It is difficult to find adjectives in *-al* also diachronically unconnected with the suffix; at least for *rital* ‘Italian (argot)’, which can be used as an adjective, the plural is nearly always *ritals*. But while there is a good amount of oscillation in use within the established lexicon, the plural *-[o]* seems to apply regularly to newly derived adjectives in *-al*. If this is true, it can be said that the form *-[o]* has really become the plural of the suffix *-[al]*, not necessarily of any final segment *-[al]*, and the cumulative interpretation becomes preferable.

4.2 When a word-forming process is reanalysed as inflectional agreement

A totally different path giving rise to inflection-derivation cumulation can be detected, consisting in a sort of reanalysis of derivation as inflection. A case in point is again the Italian suffix pair (*-tore/-trice*) discussed in 2.1 as an instance of cumulation within derivation. The suffixes *-tore/-trice* do not only form agent nouns: many derivatives also function as adjectives (in both predicative and attributive position), and some are even exclusively adjectives (cf. Ricca 2004:442–443). The same holds for French *-eur/-euse*, whose examples

are not given due to space limitations.⁹ Whenever used as adjectives, *-tore/-trice* derivatives obligatorily mark gender agreement, a prototypically inflectional feature: cf. *uno sguardo rivelatore* ‘a (m.) revealing (m.) glance’ vs. *una risposta rivelatrice* ‘a (f.) revealing (f.) answer’. Such data lead to the cumulative analysis in (11):

- (11) *rivela- tor- e* / *rivela- tric- e*
 v (V→A):M SG v (V→A):F SG

Here there are no ways out via inflectional class assignment, since the inflectional class *-e/-i* is the same for both suffixes. Probably the only possibility to deny the occurrence of cumulation between derivation and inflection in (11) is the terminological choice made by Dressler & Doleschal (1990–91: 128–129), who speak of “gender agreement via derivational morphology” and consequently transfer the cumulative marking to the domain of derivation only. It is not without problems, however, to admit that a prototypically syntax-driven phenomenon like gender agreement may belong to derivation.¹⁰

4.3 Cumulation coming from affix suppletion

A third interesting kind of cumulation between inflection and derivation is found in another dialect of Northern Italy, Milanese (Nicoli 1983: 101–102). Masculine diminutives suffixed by *-[iŋ]* in the singular take *-[it]* in the plural, as shown in (12):

- (12) [*pes - 'iŋ*] / [*pes - 'it*]
 ‘fish’ – DIM:SG ‘fish’ – DIM:PL
 ‘little fish (sg.)’ ‘little fish (pl.)’

The suffix *-[it]* is etymologically the metaphonetic plural, now obsolete, of another diminutive suffix, *-[et]* (Contini 1937). In today’s Milanese, masculine nouns ending in consonant other than [l] are invariable: therefore, the change in the evaluative suffix is the only element which marks plural number. This kind of plural marking is specific of *-[iŋ]* diminutives, and does not extend to other masculine nouns ending in *-[iŋ]*, like [*ka'miŋ*] ‘chimney’, which remain invariable. This fact precludes an analysis in terms of some (morpho-)phonological rule.

The case seen above is peculiar since it originates from a sort of ‘derivational suppletion’, where one derivational suffix takes the place of another synonymous suffix and the two integrate into a single paradigm. Interestingly, the same process is also attested starting from the more usual lexical supple-

tion. In the Central Sudanic language Ngiti (Kutsch Lojenga 1994: 132–133),¹¹ nouns are not generally marked for number, but nouns denoting humans are. The noun for ‘child’, *ingba*, has a suppletive plural, *inzo* ‘children’, and both are employed, according to a common grammaticalization path (cf. Heine et al. 1991:94–97), as diminutive markers. As a consequence, the diminutives (included the non-animate ones) do inflect for number by means of the same morpheme which codifies diminutivization, yielding the same kind of inflection-derivation cumulation seen in (12): compare *itsu* ‘tree/trees’ with *itsù-ngba* ‘small tree’, *itsù-nzo* ‘small trees’ (Kutsch Lojenga 1994: 165).

To think of a more familiar language, the German pairs like *Kaufmann*, pl. *Kaufleute* ‘shopkeeper(s)’ could be considered. A further grammaticalization of *-mann* and *-leute* into full-fledged derivational agentive suffixes possibly will never occur, but surely is not inconceivable. Coming from a suppletive alternance, however, grammaticalization would result in an instance of cumulation similar to those mentioned above, this time concerning Agent noun and Number.¹² To sum up, a third diachronic path capable of generating cumulation between inflection and derivation could be identified by the formula “suppletion + grammaticalization”.

5. Conclusions

The data presented here hopefully suffice to show that there is no principled reason to exclude derivation from participating to cumulative marking of categories, and even from interacting cumulatively with inflection. It has been argued that the scarcity of cumulation within derivation is unlikely to be an independent identifying criterion, but can be related to more general properties of derivation on the whole, namely (1) its far weaker paradigmatic structuring; (2) the scarcity of cross-linguistic comparable categories; (3) the fact that many reasonably established derivational categories are not independent and compatible, but tend to be either mutually exclusive (‘Agent noun’ vs. ‘Location noun’ etc.) or pragmatically correlated (e.g. ‘Collective’ and ‘Pejorative’).

As for cumulation involving both derivation and inflection, three independent paths leading to it have been identified, namely: (1) diachronic fusion across the derivation-inflection boundary, plus synchronic restriction of the fusional pattern to derived new formations only; (2) reanalysis of a productive derivational process, already coded cumulatively, into an inflectional one; (3) grammaticalization starting from suppletive lexemes.

Of course, much more cross-linguistic evidence should be added to evaluate to what extent these processes have to be considered rare and marginal. However, I think that their mere existence is not without consequence on our understanding of the interaction between the two essential subdomains of morphology.

Notes

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1. Of course, some of the categories in the list (like agent, instrument and location nouns) can be codified by the same morpheme, but this is derivational syncretism (Bauer 2002: 42–46), not cumulation.

2. I do not mean that all derivational processes can be pre-eminently defined in category-oriented terms rather than semantically oriented ones.

3. It. *-tric(e)* obviously goes back to Lat. *-trīc(em)*, which is a further case in point. As a reviewer suggests, it may be interesting to look more deeply into the diachrony of this suffix. Etymologically, Lat. *-trīc-* is analysable as *-tr-īc-*, where *-tr-* is the zero grade of the masculine agentive suffix *-tōr-* and *-īc-* cannot be separated from the Indo-European *Movierung* suffix *-ī-*, although the *-c-*, present in Latin only, remains obscure (Sihler 1995: 277). So ultimately we are dealing with an instance of derivational cumulation originating from fusion (cf. the discussion in 3.2 and 4.1 for similar cases involving inflection). However, synchronically a two-morpheme analysis of Lat. *-trīc-* would be entirely *ad hoc*, since Indo-European apophony is not at all productive in Latin, and, more importantly, *-īc-* cannot function as a *Movierung* suffix elsewhere. Clearly, a parallel two-morpheme analysis would be still less acceptable for Italian *-tric-*.

4. The Italian and French Female suffixes – as well as all three Male ones – are also employed to denote instruments, as in It. *lucidatrice* = Fr. *cireuse* ‘floor-polisher’, which is not relevant for the current discussion. Dutch *-er* is not limited to Agent animate nouns, and could perhaps be better labelled as forming ‘Subject names’ (Booij 2002: 122) instead of ‘Agents’. Again, this is not the main point here. For simplicity, I will keep the label ‘Agent’ for it as well.

5. I am not aware of any established English terminological equivalent for German *Movierung*, meaning a morphological procedure to derive a noun denoting animate beings of female sex taking as input the noun for the corresponding male (or, sometimes, the other way round): cf. Doleschal (1992).

6. It can be disputed if the two functions of *-one*, the category-transparent Augmentative and the category-assigning formation of Excessive agent nouns, have to be subsumed under a single polysemic suffix or not: for a discussion and a diachronic account, see Grandi (2002: 262–270).

7. Clearly, the same can be said of similar *Movierung* phenomena in languages with more complex inflectional systems, as in Lat. *dea* ‘goddess’ vs. *deus* ‘god’. Indeed, with complex paradigms, the picture looks clearer, as few people would venture to say that all inflectional exponents in the paradigm of *dea* also fulfill cumulatively a derivational function.
8. A similar oscillation is found for nouns ending in *-[al]*, where several borrowings like *chacal* ‘jackal’, *rial* ‘Iranian currency’ do not take *-[o]* (Grevisse 1993: 795–796); but in case of nouns there is no productive derivational process to compare with.
9. A further case is found in Modern Greek, where the agent nouns derived with the suffixes *m. -itís*, *f. -itria*, can also be (marginally) used as adjectives: see Christofidou, Doleschal & Dressler (1990–1991: 72–73). The authors also mention an interesting case of double inflectional/derivational function: the suffix *-iko*, a productive derivational adjectivalizing suffix, occurs also as an obligatory neuter marker in the declension of the adjectives ending in unstressed *-is* in the masculine. These latter data, however, are not directly relevant here, since they are not an instance of cumulation.
10. It is even less feasible to reduce cumulation in (11) to inflection only, by considering synchronically the adjectival derivatives in *-tore/-trice* as participles: they do not have the full generality typical of inflectional paradigms, and, differently from all verb forms, they cannot govern a bare object, requiring the insertion of the preposition *di*: *un comportamento rivelatore* ‘*un forte imbarazzo/di un forte imbarazzo’ ‘a behaviour revealing a big embarrassment’.
11. I am very grateful to Martin Haspelmath for pointing out the data on Ngiti to me.
12. The same kind of cumulation between Denominal Agent noun and Number is found in Krongo (Reh 1985: 157; I am again indebted to Martin Haspelmath for the reference), where the prefixes *cà-* and *kà-* mark ‘Agent:SG’ and ‘Agent:PL’ respectively: *màliŋ* ‘theft’ → *cà-màliŋ* ‘thief’, *kà-màliŋ* ‘thieves’. Unfortunately, I have no information about the etymological sources of the two prefixes.

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Revising the phonological motivation for splitting morphology*

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1. Introduction

It has long been noticed in the literature that many languages show phonological distinctions between inflection and derivation, or between nominal and verbal morphology. The theoretical importance of such empirical differences for drawing dividing lines within morphology is not yet clear; nonetheless, it remains an intriguing issue. In this paper I present examples of phonological distinctions between nominal and verbal inflection where either the former or the latter correlates with the phonology of derived words. My purpose is to show that one does not have to resort to the use of cyclic or any other stratal organization to account for such distinctions, but they can be inferred from differences in the paradigmatic relations holding between words.

The paper is organized as follows. I first present data from the Cushitic language Oromo and the Romance language Catalan showing that in both languages vowel epenthesis appears to be morphologically conditioned. Then I sketch out an optimality-theoretic parallel analysis that offers a solution to the controversy regarding the split of the morphology for phonological reasons and provides evidence for the role of paradigms.

2. Data

The first example to be discussed comes from Wellegga Oromo (WO), spoken in the west-central area of Ethiopia (cf. Gragg 1976; Lloret 1988, 1989, 1997). Oromo is a pitch-accent language and dialects differ, among other things, be-

cause of the tone system. In WO, pitch and accent are predictable to a great extent from grammatical class and segmental shape, and for this reason they are not usually marked in systematic representations. The segmental phenomena to be discussed in this paper have not been previously related to suprasegmentals but I will later show that they are, and on that ground I will mark tone on the phonetic outputs. The data in (1) illustrate the regular facts of WO with respect to vowel insertion. Oromo does not allow clusters of three consonants. When such clusters would arise through affixation, *i* is inserted between the second and third consonants (for expository reasons, epenthetic vowels appear underlined henceforth). Epenthesis applies without exceptions in verbal inflection and in derivation as well. (The following abbreviations are used: SG = singular, PL = plural, PI = present indicative, CS = causative.)¹

(1) /a/ 1SG.PI:	tum-a	túmà	“I beat”
	arg-a	árgà	“I see”
/na/ 1stPL.PI:	tum-na	túmna	“we beat”
	arg-na	árg <u>ì</u> na	“we see”
/ta/ 2SG.PI:	tum-ta	túmtà	“you beat”
	arg-ta	árg <u>ì</u> tà	“you see”
/s/ CS (stative verbs):	gog-s-a	gógsà	“I dry”
	gudd-s-a	gúdd <u>ì</u> sà	“I raise (children)”
/siis/ CS (active verbs):	tum-siis-a	tùmsiisà	“I make beat”
	arg-siis-a	àrg <u>ì</u> siisà	“I show”
/tuu/ deverbil:	tum-tuu	tùmtúu	“blacksmith”
	danf-tuu	dàn <u>fi</u> túu	“a kind of drink”

In nominal inflection, there are cases where epenthesis applies as expected (2). (FEM = feminine.)

(2) /oota/ PL:	sar-oota	sàróotá	“dogs”	(cf. SG <i>sàrée</i>)
	nam-oota	nàmóotá	“men”	(cf. SG <i>námá</i>)
	fard-oota	fàrdóotá	“horses”	(cf. SG <i>fárdá</i>)
/tuu/ FEM:	diim-tuu	dìimtúu	“red”	(cf. MASC <i>dímáa</i>)
	obs-tuu	òbs <u>ì</u> túu	“patient”	(cf. MASC <i>òbsáa</i>)

The nominative forms, though, never undergo epenthesis in WO, but other arrangements are made to avoid the potential rise of three-consonantal clusters. The examples in (3a) show that in WO the nominative marker /ni/ (sometimes /ti/ in a few feminine nouns) is suffixed to the citation form of a noun ending in a long vowel, where the final high-toned vowel further deletes for independent reasons. (In general, final vowels are very unstable in Oromo, and their

realization is related to their quality and tone. For the present purposes, it is sufficient to note that in WO final high-toned *i*'s – like the ones that appear in the nominative marker – are deleted, unless a syllabification problem arises.)² The examples in (3b, c) illustrate that when the citation form of a noun ends in a short vowel, this final vowel does not surface in the nominative. The examples in (3c) further show that the nominative marker surfaces with a vowel-initial shape (*-i*) when it appears next to two consonants.³ (CIT = citation, NOM = nominative.)

- | | | | | |
|--------|--------|------------------|--------------------|------------------|
| (3) a. | sàrée | “dog.CIT” | sàrée(n <i>i</i>) | “dog.NOM” |
| | tùmtúu | “blacksmith.CIT” | tùmtúun(i) | “blacksmith.NOM” |
| b. | námá | “man.CIT” | námní | “man.NOM” |
| | ìntálá | “girl.CIT” | ìntáltí | “girl.NOM” |
| c. | fárdá | “horse.CIT” | fárdí | “horse.NOM” |
| | bíyyá | “country.CIT” | bíyyí | “country.NOM” |

Surface allomorphy in the shape of the nominative marker avoids vowel insertion in (3c), but this is not the only singularity that the nominative shows. The nominative case is marked on the head noun of the noun phrase, as opposed to the other case markers, which are enclitic suffixes postponed to the noun phrase as a whole (4). (BEN = benefactive.)

- | | | | | | | |
|--------|---|-----------|-----------|------------|-----------------|------------|
| (4) a. | Nám-ní | fárdá | ìntálá-af | bít-à | | |
| | man-NOM | horse.CIT | girl-BEN | buy-3SG.PI | | |
| | “A man buys a horse for a girl.” | | | | | |
| b. | Nám-ní | fárdá | ìntálá | kán | béek-ná-af | bít-à |
| | man-NOM | horse.CIT | girl.CIT | that | know-1PL.PI-BEN | buy-3SG.PI |
| | “A man buys a horse for a girl that we know.” | | | | | |

Phrasal enclitic suffixes, like the benefactive in (4), entail lengthening of the last vowel of the noun phrase to which they attach; therefore, they never give rise to consonantal clusters; cf. *ìntálá-af* “for a girl” (4a), *ìntálá kán béekná-af* “for a girl that we know” (4b). The nominative marker, though, looks more like an inflectional suffix, in the sense that it can appear next to the final consonants of the stem of the noun-phrase head to which it attaches; cf. *nám-ní* “man-NOM” (4a, b).

Former analyses make use of different morphological devices to account for the special behavior of the nominative. Some analyses resort to a rich underlying allomorphy (/ti/~/i/ in a few feminine nouns and /ni/~/i/ elsewhere, which are added to a whole citation form ending in a long vowel or to the citation form minus its final short vowel). Another approach is to depart from

fewer underlying forms (/ni/ or /ti/ added to the full citation form always) and resort to either monostratal morphologically conditioned ordered rules or cyclic organization to account for the outputs. The former propose final-a deletion and consonant deletion rules restricted to nominative forms, which are ordered among them and with respect to epenthesis. The latter propose insertion of the nominative marker in a different cycle, where final-a deletion and consonant deletion apply but not epenthesis.

The second example to be discussed comes from the variety of Catalan spoken in Majorca (MC), in the Balearic Islands (cf. Bibiloni 1983; Lloret 2003, 2004). In Catalan, final consonantal clusters that do not satisfy the sonority sequencing principle are repaired through *e* insertion (underlined henceforth). But MC presents a singularity: Epenthesis always takes place in the nominal morphology (5a) as well as in some verbal forms (5b); however, other inflected verbal forms with sonority-increasing endings surface unchanged (6).⁴ This is the case in all first-person singular present indicative forms (6a) and in second- and third-person singular present indicative forms of conjugation II and III verbs (6b).⁵

- (5) a. \emptyset MASC:
- | | | | | |
|--------------------|----------------|-----------|------------------------|-----------------|
| pont- \emptyset | pont | “bridge” | (cf. <i>pont-et</i> | “small bridge”) |
| teatr- \emptyset | teatr <u>e</u> | “theater” | (cf. <i>teatr-al</i> | “theatrical”) |
| centr- \emptyset | centr <u>e</u> | “center” | (cf. <i>centr-ista</i> | “centrist”) |
| llibr- \emptyset | llibr <u>e</u> | “book” | (cf. <i>llibr-ot</i> | “big book”) |
- b. /r/ infinitive: di-r dir “to say”
bat-r batre “to beat”
- (6) a. \emptyset 1SG.PI (all conjugations):
- | | | | |
|----------------------|---------|------------|-----------|
| cant- \emptyset | cant | [ˈkant] | “I sing” |
| idolatr- \emptyset | idolatr | [idoˈlatr] | “I adore” |
| entr- \emptyset | entr | [ˈɛntr] | “I enter” |
| obr- \emptyset | obr | [ˈɔpr] | “I open” |
- b. /s/ 2SG.PI, \emptyset 3SG.PI (conjugation II-III):
- | | | | |
|------------------|------|---------|--------------|
| obr-s | obrs | [ˈɔprs] | “you open” |
| obr- \emptyset | obr | [ˈɔpr] | “s/he opens” |

As in the WO case, the MC data show a rather puzzling morphophonological phenomenon for which explanations in terms of allomorphy or morphologically conditioned processes are possible. Underlying allomorphy (e.g., $\emptyset \sim e$ in the masculine forms, $r \sim re$ in the infinitives) does not conform the criterion of minimal redundancy and yet something else has to be said in order to

justify the presence of sonority-increasing endings in (6). Another rather controversial account is to posit the existence of a special phonologically empty morph in (6b). In contrast with the other empty morphs (cf. (5a)), this special empty morph would block epenthesis, either because it would only be present in the first level or because it would be considered extrasyllabic. Yet another approach is to resort to Government Phonology and claim that (5) contains phonologically empty nucleus slots, which trigger epenthesis, while (6) contains phonologically empty morphs, which do license the sonority-increasing endings. (For a review of former analyses, see Lloret 2003.)

The proper treatment of morphophonological alternations is an old research question, with well-known arguments in the literature in favor of and against the aforementioned approaches. With respect to the WO and the MC data, if the allomorphical view is preferred, the issue on misapplication of the regular phonology does not arise but it remains unexplained why languages use the form of inflectional morphemes to yield a better syllabification in certain words but not in others. But if the cyclic account is taken into account, it remains as a language-specific stipulation the organization of the morphology in cycles. And if empty morphs with concomitant phonological effects are accepted, it also remains unexplained why they appear in certain cases and not in others. What I propose in this paper is to face the previous data from a different perspective, a perspective in which shape restrictions emerge from surface paradigmatic relations and well-formedness conditions. The analysis is framed within the tenets of Optimality Theory (OT) (Prince & Smolensky 1993).

3. A correspondence surface-oriented analysis within Optimality Theory

3.1 Background of paradigmatic effects in Optimality Theory

Within OT, two different surface resemblance effects among morphologically related words are distinguished: the ones derived from asymmetric relations (7a) and the ones derived from symmetric relations (7b) (cf., among others, McCarthy 2001). In asymmetric relations, the surface phonology of a form (α) can influence the surface phonology of its derived form (β), but not vice-versa. In symmetric relations, instead, every member (α and β) can act as the attractor for the other member, with no precedence.

- (7) a. Asymmetric relation: $\alpha \rightarrow \beta$
 b. Symmetric relation: $\alpha \leftrightarrow \beta$

Symmetric and asymmetric relations are defined in morphological and prosodic terms. Such an approach is highly compatible with the organization of grammar in OT, where prosodic and morphological constraints are part of the same hierarchy. In OT, and specifically in its version of Correspondence Theory (McCarthy & Prince 1995), surface similarities between morphologically related words involve the notion of output-output correspondences (Benua 1997), which derives from the notion of paradigm uniformity in pre-generative linguistics (cf. Kuryłowicz's 1949 work, for instance). This is the line of research that I will pursue next in analyzing the data under study.

3.2 Wellegga Oromo: An asymmetric relation

In WO, the first issue to be addressed is why the nominative forms of the citation nouns that end in a long vowel maintain this vowel (8a), while the ones corresponding to citation nouns ending in a short vowel do not (8b), as neither do other inflected and derived words (8c).

- (8) a. sàrée “dog” (CIT) sàréeen (NOM)
 b. náamá “man” (CIT) námní (NOM)
 fárdá “horse” (CIT) fárdí (NOM)
 c. sar-čča sàríčča “the dog” nam-čča nàmíčča “the man”
 arg-na árginà “we see” arg-ta árgità “you see”
 gudd-s-a gúddisà “I raise” danf-tuu dànfítúu “a drink”

I will work on the assumption that the nominative marker – as all other case markers (cf. (4)) – is always attached to the full citation form, which is a free-standing word, while other suffixes are attached to the root, which is a bound form (see Figure 1). If this is so, there must be an independent reason for the deletion of the final short vowel in (8b). It is clear from the data that the cause is not phonotactical. I argue below that the reason is prosodically grounded and that it is also responsible for the deletion of the consonant of the nominative marker and the failure of epenthesis in the nominative forms of (8b).

To account for the regular phonology of WO, it is sufficient to appeal to the markedness constraints *CCC (against three-consonantal clusters), which is categorical in Oromo, and *i# (against word-final high-toned [i]),⁶ and to the input-output (IO) faithfulness constraints IO-DEP(ENDING) (against epenthesis) and IO-MAX(IMALITY) (against deletion). To account for the spe-

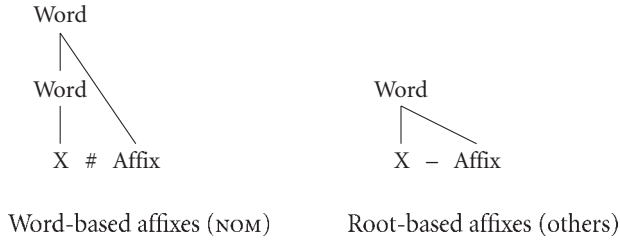


Figure 1.

cial behavior of the nominative forms, we have to resort to output-output faithfulness constraints. In WO, the paradigmatic relation that holds between a case-marked form and its citation form is asymmetrical, in the sense that there is a base and this base imposes its characteristics on its morphologically related form ($\alpha \rightarrow \beta$) (cf., among others, Burzio 1994; McCarthy 1995; Kenstowicz 1996; Benua 1997). Here and in the rest of the paper, I crucially use the notion of base provided by Kager (1999a, b) in order to restrict the number of possible base relations: The base is a freestanding output form (i.e., a word) that contains a subset of the grammatical features of the derived form. (From here on, I will identify this specific notion of base by using small capitals, i.e. BASE.)⁷ In WO, the morphological relation of a nominative form – or any other case-marked form – with respect to its citation form is included in this definition. The morphologically related forms that involve root-based affixes do not match the first criterion; they have no BASE and thus the BASE-oriented constraint is irrelevant for candidate selection. The relevant prosodic BASE-oriented constraint is the following:

- (9) ID(ENTITY)-BA(SE): Let α be a segment in the base, and β be a correspondent of α in the affixed form. If α is a segment of the *prominent syllable*, then β is a segment of the prominent syllable.

The constraint ID-BA states that the segments of the prominent syllable of the BASE must have a correspondent in the prominent syllable of the morphologically related form. It is out of the scope of this paper to analyze the full pitch-accent system of Oromo. For the present purposes, it is sufficient to note that in WO, in nouns, where the ID-BA constraint is relevant, the prominent syllable is identified as the high-toned syllable and it is always predictable. When there is more than one high-toned syllable, the prominent syllable is the stressed one (in nouns the stress falls in the penultimate syllable). Regarding pitch assignment, the generalization is that when the surface form of the noun ends in a long vowel or in a short vowel followed by a consonant, only this last

syllable bears high tone. When the noun ends in a short vowel, the last two syllables are high.

The ranking *CCC, ID-BA » *í# » IO-MAX » IO-DEP accounts for the WO facts. Tables 1–5 illustrate this ranking at work. For expository reasons, prominent syllables appear in boldface in the tables below, and only candidates with the right prominent syllable are taken into account. This implies that highly ranked prosodic constraints regarding tone and stress placement will previously discard candidates with the wrong assignment of prominence. For example, in Table 1 the nominative form has as its BASE the citation form *námá*, with the prominent syllable *ná* (in *námá* both syllables bear a high tone; therefore, prominence is decided on the basis of stress, which falls on the penultimate). Candidates (a) and (b) are eliminated because they violate ID-BA. (Note that candidate (a) would end up having high tones on the last two syllables because the last one ends in a short vowel; therefore, prominence is on the penultimate. Candidate (b) instead would end up having a high tone on the last syllable only, because it ends in a consonant; therefore, prominence is on the last.) Candidate (c) has the final vowel of the BASE deleted, but it appears in a non-prominent position in the BASE. Thus, (c) does not violate ID-BA, and it wins although it violates *í# and IO-MAX.⁸

Table 1. Nominative form of a noun ending in -CV

nama#ni “man#NOM” BASE: námá	*CCC	ID-BA	*í#	IO-MAX	IO-DEP
a. námání		*!	*		
b. námán		*!		*	
☞ c. námní			*	*	

Table 2 illustrates the case of nouns with a BASE ending in a long vowel. Candidate (a), which satisfies ID-BA, is eliminated because it violates *í#. Candidate (c), with the long vowel of the prominent syllable of the BASE deleted, is discarded because it violates ID-BA. Thus, candidate (b) is the optimal one.

Table 2. Nominative form of a noun ending in -CVV

saree#ni “dog#NOM” BASE: sàrée	*CCC	ID-BA	*í#	IO-MAX	IO-DEP
a. sàréeení			*!		
☞ b. sàréeen				*	
c. sární		*!	*	**	

In Table 3, candidate (c) is eliminated because it violates *CCC. All other candidates, except (f), are discarded because they violate ID-BA. Note especially

the case of (e), which complies with the regular phonology of WO with respect to *í# and vowel insertion to destroy three-consonantal clusters. This candidate is nevertheless eliminated because it violates ID-BA.

Table 3. Nominative form of a noun ending in -CCV

farda#ni “horse#NOM” BASE: fàrdá	*CCC	ID-BA	*í#	IO-MAX	IO-DEP
a. fàrdání		*!	*		
b. fàrdán		*!		*	
c. fàrdní	*!		*	*	
d. fàrdíní		*!	*	*	*
e. fàrdín		*!		**	*
☞ f. fàrdí			*	**	

In Tables 4–5, the ID-BA constraint is inactive because these are root-affixed forms, which have no BASE. In both cases, candidate (b), with vowel insertion, wins because IO-MAX is ranked above IO-DEP.

Table 4. Verbal inflected form from a stem in -CC and a suffix in C-

arg-na “see-1stPL.PI” BASE:	*CCC	ID-BA	*í#	IO-MAX	IO-DEP
a. árgnà	*!				
☞ b. árgìnà					*
c. árgà				*!	

Table 5. Derived form from a stem in -C and a suffix in CC-

nam-čča “man-DEF” BASE:	*CCC	ID-BA	*í#	IO-MAX	IO-DEP
a. námččá	*!				
☞ b. nàmíččá					*
c. námčá				*!	

3.3 Majorca Catalan: A symmetric relation

In MC, the main issue to be addressed is why epenthesis fails to apply in present indicative forms without vocalic suffix (10a), whereas sonority-driven epenthesis takes place in other verbal forms (10b) as well as in nominals (10c).⁹

- (10) a. entr-Ø entr “I enter”
 b. bat-r batre “to beat”
 c. centr-Ø centre “center (MASC)”

The relevant constraints here are SON(ORITY) SEQ(UENCING) (complex onsets rise in sonority and complex codas fall in sonority) and IO-DEP. As shown in (11), in a one-by-one analysis of the words there is no means to explain both cases. For the regular cases of (11a) the sonority constraint must be ranked higher than IO-DEP, but for the exceptional cases of (11b) the opposite ranking is needed.

- (11) a. Inputs: centr “center” bat-r “to beat”
 Outputs: centrere batrere (SONSEQ » IO-DEP).
 b. Input: entr “I enter”
 Output: entr (IO-DEP » SONSEQ)

My claim is that verbal forms like *entr* respect the ranking in (11a), but epenthesis is suspended due to surface leveling effects enhanced through symmetric correspondence relations ($\alpha \leftrightarrow \beta$).¹⁰ It is crucial to note that the verbal inflected forms which are now being dealt with cannot be related under BASE Identity (the asymmetric paradigmatic relation that stood in the case-marked Oromo forms), because they do not satisfy the criteria for BASE-hood that were previously mentioned. In particular, verbal forms like *entr* “I enter” are not compositionally related to the other inflected forms because of a conflict of inflectional features (e.g., *entr* vs. *entr-es*: 1st vs. 2nd singular present indicative). The symmetric correspondence analysis that I propose instead goes in line with the findings of the Optimal Paradigms (OP) model of the interaction of phonology with inflectional morphology (McCarthy 2001). The central premises of OP are the following (McCarthy 2001:5):

- a. Candidates consist of entire inflectional paradigms.
- b. Markedness and input-output faithfulness constraints evaluate all members of the candidate paradigm. The violation-marks incurred by each paradigm member are added to those incurred by all the members.
- c. The stem (shared lexeme) in each paradigm member is in correspondence relation \mathfrak{R}_{OP} with the stem in every other paradigm member. (That is, for every candidate paradigm P there is a relation \mathfrak{R}_{OP} on PxP.)
- d. There is a set of output-output faithfulness constraints on the \mathfrak{R}_{OP} correspondence relation.

The stems that stand in a \mathfrak{R}_{OP} correspondence relation are in the output because this model establishes output-output correspondences. Thus, OP faithfulness constraints evaluate the surface form of the stem of each paradigm member with respect to the surface form of the stem of every other paradigm member to minimize differences. The surface forms of the stem (i.e., the output

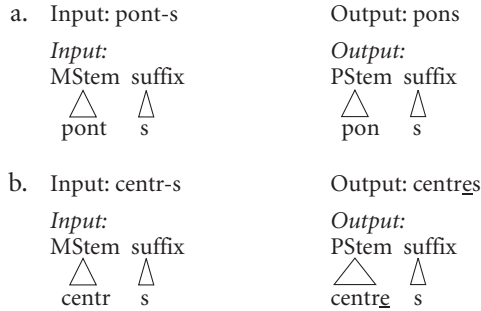


Figure 2. (Input) MStems and (Output) PStems

stems) are prosodized stems (PStem); they are the output string of segments that follows/precedes the inflectional affixes. As shown in Figure 2, whether the input stem (i.e., the underlying form of a morphological stem, MStem) loses (a) or adds (b) a segment in the phonetic form, the output string of segments that precedes the inflectional suffix (i.e., the PStem) is the point of departure of OP relations. (This distinction between MStem and PStem is also defended in Itô & Mester 1997 for composition and in Downing 1999 for truncation.)

The OP constraint that is relevant for the present purpose is OP-DEP, which controls alternations in the output stems with respect to insertion. The ranking OP-DEP, SONSEQ » IO-DEP is sufficient background for analyzing the forms under study. (In the tables, the right margin of the output stems standing in correspondence relation is marked with the symbol ‘!’.) In Table 6, the sonority constraint, which evaluates each paradigm by summing up the violation incurred by each of its members, assigns one violation to the paradigm candidate in (a) because of the shape of its first person (*entr*). But the paradigm candidate in (b), with epenthesis in the first person to satisfy the sonority requirement, violates the OP-DEP constraint many times: OP-DEP scores one violation for each pair of forms within the paradigm with respect to insertion and the correspondence relation is fully symmetric. Thus, there is one violation for the pair *entr*] \mathfrak{N}_{OP} *entr*]es, another one for the pair *entr*] \mathfrak{N}_{OP} *entr*]a, and so on.¹¹ At this point, candidates (a) and (b) fare even; that is, as bad is not to satisfy the sonority constraint as not to satisfy the paradigmatic requirement.

Table 6. Paradigm candidates for *entr*- “enter” (1)

entr “enter”	OP-DEP	SONSEQ	IO-DEP
a. <entr], entr]es, entr]a... >		*	
b. <entr <u>e</u>], entr]es, entr]a... >	many *		*!

In this situation, the IO-DEP constraint favors candidate (a), the one that also satisfies OP-DEP.

A further candidate should be taken into consideration here: A paradigm like <entr_e], entr_e]es, entr_e]a...>, with overapplication of epenthesis in order to satisfy the OP constraint (cf. candidate (c) in Table 7). This candidate is discarded because it violates the markedness constraint *AA (against unstressed *ee/ea* sequences), which is top-ranked because AA sequences are always prohibited in MC.¹² That is, overapplication of epenthesis to homogenize paradigms is blocked by more important markedness considerations. In Table 7, candidate (c), which satisfies OP-DEP, is eliminated because many forms violate *AA, namely, all the inflected forms that display *e/a* initial suffixes.

Table 7. Paradigm candidates for *entr-* “enter” (2)

entr “enter”	*AA	OP-DEP	SONSEQ	IO-DEP
☞ a. <entr], entr]es, entr]a...>			*	
b. <entr _e], entr]es, entr]a...>		many *		*!
c. <entr _e], entr _e]es, entr _e]a...>	many *!			many *

Table 8 illustrates the case of a verb with no syllabic problems in the finite forms but with syllabic problems in the infinitive (from an input *bat-r*). Candidate (b), with epenthesis in the infinitive (*bat]r_e*), wins because it does not violate the OP constraint since in the infinitive the epenthetic vowel (i.e., the final vowel) is not part of the output stem.

Table 8. Paradigm candidates for *bat-* “beat”

bat “beat”	*AA	OP-DEP	SONSEQ	IO-DEP
a. <bat], bat]s, bat]...bat]r>			*!	
☞ b. <bat], bat]s, bat]...bat]r _e >				*

Finally, Table 9 illustrates a case of nominal inflection. Candidate (b), with epenthesis in both forms, wins because it does not violate OP-DEP since both members of the paradigm contain a vowel to satisfy the sonority constraint.¹³

Table 9. Paradigm candidates for *centr-* “center”

centr “center”	*AA	OP-DEP	SONSEQ	IO-DEP
a. <centr], centr]s>			*,*!	
☞ b. <centr _e], centr _e]s>				*,*

4. Conclusion

In the OT theories of surface resemblance among morphologically related words, the distinction between asymmetric (base-oriented) relations and symmetric (not base-oriented) relations is relevant. Asymmetric relations are organized hierarchically and the point of departure of the morphological operation involved is a ‘base’, which, according to Kager (1999a, b), is a freestanding output form that contains a subset of the grammatical features of the morphologically related word (i.e., the *BASE*). Inflected forms cannot be related on asymmetric basis when the two criteria for *BASE*-hood are not satisfied. In this case, instead, they are related symmetrically, and each form of the inflectional paradigm can act as an attractor for the others. What stands in symmetric correspondence is the constant part of each form (i.e., the stem). But since the correspondence relation targets outputs (surface resemblance), it relates the surface realizations of the morphological stems (i.e., the *PSTEM*).

In OT, morphological constraints and prosodic constraints determine the type of operation that emerges in the outputs. There is no need to make a morphological distinction between free stems and bound stems; rather this derives from the way in which a morphological category maps onto a prosodic category (12a) or onto another morphological category (12b). The point of departure of a morphological operation can be a freestanding output form (which is a word, a prosodic category, as in (12a)), or a bound form (which is another morphological category, as in (12b)). *BASE*-Identity constraints can only be active in the first case. However, what decides the kind of relation to surface is not only the kind of morpho-prosodic mapping introduced through constraints but also the arrangement of the grammatical features (if they are a subset of the grammatical features of the morphologically related word or not). And, according to the OT tenets, languages ultimately make significant use of the constraints depending on their relative ranking, which is language-specific.¹⁴

- (12) a. $M_{CAT} = P_{CAT}$: $M_{Stem} = PrWd$ (a freestanding form)
 b. $M_{CAT} = M_{CAT}$: $M_{Stem} = Root$ (a bound form)

Asymmetric and symmetric relations cannot be exclusively derived from the distinction between derivation and inflection (as it is suggested by several authors; cf. Kager 1999b; McCarthy 2001), since there exist, for instance, *BASE*-oriented operations in inflection as well. For example, in *WO* most adjectives have a plural in *-oota* but many also form a plural by reduplicating the first syllable and geminating the first consonant of the adjective (e.g., *gùddóotá* and *gùggùddáa* are the plural forms of *gùddáa* ‘big.MASC’). Reduplication is also

used to derive iterative actions in verbs (e.g., *k'álà* “I slaughter”, *k'ák'k'álà* “I slaughter repeatedly”), and in both cases the point of departure of reduplication is a BASE.

On the whole, this view of the facts shows that noncyclic alternatives are available within the correspondence OT theory and provides support for the claim that paradigms play a role in the linguistic organization of languages (in line with the findings of many other scholars).

Notes

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1. In the examples, a high or low tone over a long vowel will only be marked on the first vowel.
2. That *i* is part of the underlying representation of the nominative marker is proven, among other reasons, by the fact that when it bears a low tone it is overtly realized. This is the case, for example, in copula constructions, which impose a low tone on the last syllable of the sentence: *sàrée* “dog.CIT”, *fírá* “friend.CIT”, *sàreen fírá* “a dog is a friend”, and crucially *sàreeni* “a dog is”. This *i* ~ Ø tonal-depending alternation is found elsewhere in WO: *àfúr* “4”, *àfúri* “it is a 4”; *ilkáan* “tooth”, *ilkáani* “it is a tooth” (cf. Lloret 1988, 1989).
3. Some Oromo dialects show regular epenthesis in a few cases; e.g., *biyyiiti* in the Boraana southern dialect, where the feminine nominative marker is /tii/ (cf. Stroomer 1987).
4. In (5a), underlying forms without the final stem vowels are posited on the basis that the vocalic contacts that would arise through suffixation do appear in other words. Here are some examples: *teatre* ([te'atrə]), *teatr-al* and not **teatre-al*, which would contain the same stressed *ea* sequence; *ate-a* “atheist-FEM” and *ate-ista* “atheistic”, but *centre*, *centr-ista*, and not **centre-ista*, which would contain the same stressed *ei* ([ə'i]) sequence. For further details on the syllable structure of Catalan, see Lloret (2002).
5. For simplicity, in the MC examples I use the orthographic notation unless otherwise specified. It is worth noting, though, that Catalan devoices word-final obstruents and shows vowel reduction in unstressed position. In MC, low and mid front vowels (*a* and *e*) merge as schwa; epenthetic *e* is also schwa. For discussion on the onset/coda position of these odd consonantal endings according to their phonological behavior, see Lloret (2004).
6. The constraint *i# is grounded on the less prominent character of close, high-toned unstressed final vowels. In a more thorough analysis, deletion of final vowels would be derived from the interaction of FINAL-C (“Every prosodic word ends in a consonant”, McCarthy & Prince 1994) with more specific MAX constraints regarding the properties of speech sounds.

(Correlation between suprasegmentals and vowel height and position of vowels in words is well established in the literature; see, among others, Lehiste 1970; Major 1992.)

7. Note that although Kager's (1999a, b) definition of base is a stipulation not forced by the theory, it clearly restricts the problem of arbitrariness concerning language-specific stipulations on the organization of morphology (in cyclic views) or language-specific base-correspondence stipulations (in parallel OT accounts using too-broad definitions of base). In essence, the same stipulations could be added to any cyclic approach.

8. In the tables, candidates with deletion or insertion of segments that alter morphological integrity (such as *náani*, from /nama#ni/) are ignored. This type of candidates would be discarded through the high ranking of IO-CONTIGUITY ("The portion of S_2 standing in correspondence forms a contiguous string ("No intrusion")", McCarthy & Prince 1995; see also Kenstowicz 1994).

9. In OT, Richness of the Base provides two possible inputs, one with the final vowel and one without it. Lexicon Optimization would choose the input with the final vowel, and no issue on misapplication of epenthesis would arise. But Minimal Redundancy would favor the input without the final vowel, which demands an explanation for the failure of epenthesis. The latter is the relevant case to discuss here. (Cf. Prince & Smolensky 1993.)

10. The analysis that I present in this section is motivated and explained in further detail in Lloret (2004).

11. There are many more such violations once the whole paradigm is considered; here, I informally score many violations of OP-DEP. Note also that their symmetric counterparts (i.e., *entr]es* \mathfrak{R}_{OP} *entre]*, *entr]a* \mathfrak{R}_{OP} *entre]*, and so on) incur OP-MAX violations, which are not considered for expository reasons. (Cf. Lloret 2004.)

12. Recall from Note 5 that in MC unstressed *e* and *a* are realized as schwa due to vowel reduction. Therefore, *AA stands, in fact, for *[ə] sequences.

13. In Catalan, singular/plural forms can also be related through the asymmetric correspondence relation, because they do satisfy the two criteria for BASE-hood. That is, the plural is always formed over freestanding output forms (i.e., the singular words) and it is possible to analyze the singular forms as being not marked for the number category. Under this view, nominal inflected forms would undergo ID-BA (singular → plural), which do the two candidates in Table 9 satisfy.

14. In the WO inflected forms under study, for example, no effect of the OP constraints has been discovered; thus, we should assume for now that they are low-ranked. On the role of BASE-Identity constraints in MC within nominal inflection, see Note 13 and Lloret (2004).

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Derivation versus inflection in three inflecting languages

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1. Introduction¹

This paper deals with derivation and inflection from a typological perspective. Derivation and inflection are seen as constituting a continuum between the poles of prototypical derivation and prototypical inflection (cf. Dressler 1989). As is well known from cognitive psychology, categories organized on prototypes are easy to classify when prototypical instances are concerned, but can be problematic in cases of non-prototypical ones. Therefore, in order to contribute to the discussion on the demarcation of derivation and inflection, I will focus on the morphological behavior of non-prototypical derivation and inflection. The categories I analyze, denominal diminutives, formation of females from males and imperfectivization, are interesting examples of non-prototypicality, since they allow for two types of expression, derivational and inflectional. Data from three Slavic languages, Bulgarian, Russian and Serbo-Croatian, all representing the inflecting(-fusional) type, serve as evidence for the discussion.

A salient feature of the inflecting type noted by Skalička (1979) is the clear distinction between derivational and inflectional suffixes. On the basis of this typological characteristic and the principle of constructional iconicity postulating correspondence between addition of meaning and addition of form (Dressler 2000: 290), I assume the following morphotactic structure for a prototypical Slavic word: PREF – ROOT – DSUFF – (TM) – ISUFF. Thematic markers are given in brackets, since they occur as stem-forming elements only in verbal morphology.

I will speak of derivational realization of a category if its formal exponent is in the derivational slot of the word (see 1a, 2a, 3a) and of inflectional realization if a category is formally expressed either by material in the inflectional slot of the word or by a ТМ (see 1b, 2b, 3b). The following examples from Bulgarian illustrate derivational and inflectional realizations of denominal diminutives, formation of females from males and imperfectivization:

Diminutives

- (1) a. MASC *stol* ‘chair’ → DIM NEUT *stol-č-e* vs.
 b. MASC *kotel* ‘caldron’ → DIM NEUT *kotl-ø-e*

Gender (formation of females from males)

- (2) a. MASC *car* ‘king, tsar’ → FEM *car-ic-a* ‘queen’ vs.
 b. MASC *zabravan* ‘chuckle-head’ → FEM *zabravan-ø-a*

Aspect (imperfectivization)

- (3) a. PFV *raz-grom-j-a* / *raz-grom-i-š* ‘I/you defeat’² → IMPFV *raz-grom-jav-a-m* / *raz-grom-jav-a-š* vs.
 b. PFV *ob-misl-j-a* / *ob-misl-i-š* ‘I/you think over’ → IMPFV *ob-misl-ø-ja-m* / *ob-misl-ø-ja-š*

As is typical for inflecting languages, Bulgarian, Russian and Serbo-Croatian express inflectional properties in more than one way, which results in morphological organization based on inflectional classes. I define inflectional class with Aronoff (1994: 64) as “a set of lexemes whose members each select the same set of inflectional realizations”. Due to lack of space, and since the categories I analyze enter productive/major classes, I will deal mainly with productive/major classes (see Tables 1, 2, 3, 4, 5, & 6).

When evaluated by the traditional criteria for distinguishing between derivation and inflection (e.g. word-class change, obligatoriness, morpheme order, etc.), the categories I am interested in exhibit nearly the same behavior. However, when situated within the inflectional systems of Bulgarian, Russian and Serbo-Croatian, formation of females from males and imperfectivization differ from denominal diminutivization in regard to inflection class assignment. In what follows I will try to show that when the traditional demarcation criteria fail to determine the status of a category in an inflecting language, the typologically adequate mechanism of inflection class assignment does not. I claim that non-prototypical inflection is marked by membership in a particular inflectional class, whereas derivation cannot be identified inflectionally. (Note that the connection of a particular inflectional class with a single deriva-

tional suffix does not mean that derivation can be identified inflectionally (cf. Manova 2003b). For example, in Russian, abstract nouns in *-ost'* (e.g. *krasivyy* 'beautiful' → *krasivost'* 'beauty') constitute the main part of class 4 (cf. Table 2). However, in this language there are also other suffixes for abstract nouns which do not take the inflection of class 4, the inflection class of nouns in *-ost'* (e.g. *krasivyj* 'beautiful' → *krasota* 'beauty', class 2, Table 2). In contrast, the numerous Russian suffixes deriving females from males all select the same inflection, namely class 2, Table 2.)

First, I will briefly present diminutivization, formation of females from males and imperfectivization in each of the three languages.

2. Diminutivization

In Bulgarian,³ Russian and Serbo-Croatian, a very productive rule $N \rightarrow N + DIM\ SUFF + ISUFF$ derives diminutives from nominal bases. The suffixes below express diminutive meaning and can occupy the derivational slot of the noun according to the rule mentioned above. Since suffixes in the derivational slot determine the paradigmatic properties of the word, everywhere the inflection is also written. If no inflectional suffix is given, it means that the respective derivational suffix selects zero inflection, i.e. class 1 in the three languages, see Tables 1, 2, & 3.

BG.: *-ec; -k-a; -ic-a; -čic-a; -ičk-a; -c-e; -enc-e; -ic-e; -l-e; -č-e*
 R.: *-ec, -ik, -ok/-ěk/-ek, -čik, -ic-a, -k-a, -očk-a, -ik-o, -k-o, -c-o/-c-e, -ec-o*
 SC.: *-ić, -čić, -ak, -ečak, -ičak, -ic-a, -čic-a, -c-e, -anc-e, -ašč-e, -enc-e, -ešč-e, -eljak, -uljak*

Diminutive suffixes take different inflection and as can be seen in Tables 1, 2, & 3, they can be found in nearly all declensional classes in Bulgarian, Russian and Serbo-Croatian.

Due to the fact that Bulgarian diminutives (or at least some of them) have their diachronic origin in inflection, in modern Bulgarian an unproductive rule $N \rightarrow N + ISUFF$ involving only inflectional change also diminutivizes nominal bases. I will call diminutives formed according to this rule inflectional, in order to distinguish them from diminutives derived by special diminutive suffixes. Inflectional diminutives always take the inflection *-e*, which can be attached to animate nouns as well as to nouns denoting objects, regardless of their gender:

- (4) MASC *kotel* 'caldron' → DIM NEUT *kotl-e*
 MASC *bik* 'bull' → DIM NEUT *bič-e*
 FEM *devojk-a* 'maiden' → DIM NEUT *devoič-e*

In Bulgarian linguistics, one can find two different explanations of the diachronic origin of such diminutives: the first one sees them as continuants of old vocative forms (cf. Mladenov 1929: 224; Mirčev 1963: 150), i.e. the modern Bulgarian DIM *otče* (← *otec* 'father'), DIM *starče* (← *starec* 'old man') should be derived from the OVG. VOC *otъče*, VOC *starъče*. The second explanation connects inflectional diminutives with the Old Church Slavic *ēt-* stems (cf. Georgiev 1985: 164) and seems to be more probable. It is motivated by the plural forms of inflectional diminutives which, as is usual for nouns originating from the OVG.

Table 1. Bulgarian nominal inflection (productive classes), cf. Manova & Dressler (2001)

	1a.(mono-syllables)	1b.(poly-syllables)	2.	3.	4.
SG	-∅	-∅	-a	-o	-e, LWS: -i, -(j)u
SG DEF	-ăt	-ăt	-ta	-to	-to
PL	-ove	-i	-i	-a	-ta
PL DEF	-te	-te	-te	-te	-te

Table 2. Russian nominal inflection (major classes), cf. Corbett (1991: 36)

	1.	2.	3.	4.
SG				
NOM	-∅	-a	-o (-e)	-'
ACC	= NOM OR GEN	-u	-o	-'
GEN	-a	-y	-a	-i
DAT	-u	-e	-u	-i
INSTR	-om	-oj	-om	-ju
LOC	-e	-e	-e	-i
PL				
NOM	-y	-y	-a	-i
ACC		= NOM OR GEN		
GEN	-ov	-	-	-ej
DAT	-am	-am	-am	-jam
INST	-ami	-ami	-ami	-jami
LOC	-ax	-ax	-ax	-jax

Table 3. Serbo-Croatian nominal inflection (major classes)

SG	1a.(mono-syllables)	1b.(poly-syllables)	2.	3.	4.
NOM	- <i>ø</i>	- <i>ø</i> , LWS:- <i>o</i> , - <i>u</i> , - <i>e</i> , - <i>i</i>	- <i>a</i>	- <i>o</i> / <i>-e</i> ⁴	- <i>ø</i>
VOC	- <i>e</i>	- <i>e</i> / <i>-u</i> OR = NOM	- <i>o</i>	= NOM	- <i>i</i>
ACC	= NOM OR GEN	= NOM OR GEN	- <i>u</i>	= NOM	= NOM
GEN	- <i>a</i>	- <i>a</i>	- <i>e</i>	- <i>a</i>	- <i>i</i>
DAT-LOC	- <i>u</i>	- <i>u</i>	- <i>i</i>	- <i>u</i>	- <i>i</i>
INST	- <i>om</i>	- <i>om</i>	- <i>om</i>	- <i>om</i> / <i>-em</i>	- <i>i</i>
PL					
NOM-VOC	- <i>ovi</i>	- <i>i</i>	- <i>e</i>	- <i>a</i>	- <i>i</i>
ACC	- <i>ove</i>	- <i>e</i>	- <i>e</i>	- <i>a</i>	- <i>i</i>
GEN	- <i>ova</i>	- <i>a</i>	- <i>a</i>	- <i>a</i>	- <i>i</i>
DAT-LOC-INST	- <i>ovima</i>	- <i>ima</i>	- <i>ama</i>	- <i>ima</i>	- <i>ima</i>

ęt-stems, has an *-et-* amplification (PL *otęeta*, *staręeta*). A second argument in favour of the *ęt*-stem origin of the diminutives in question is the fact that the OBG. *ęt*-declension was semantically related to the meaning of smallness, since *ęt*-stems originally consisted only of nouns denoting young of animals. According to Georgiev (1985), diminutives in *-l-e* (DIM *petl-e* ← *petel* 'cock, rooster') and *-ę-e* (DIM *vojnię-e* ← *vojnik* 'soldier') where *-l-* and *-ę-* are parts of the respective stems, served as bases for the development of the diminutive suffixes *-ęe* and *-le*, as in DIM *záb-ęe* ← *záb* 'tooth' and DIM *máž-le* ← *máž* 'man'.

Although both Russian and Serbo-Croatian are also descendants of OCS, the diminutive suffix *-e* exists only in Serbo-Croatian where it is bound to the semantic pattern 'young of animals', e.g. *lisic-a* 'fox' → *lisię-e*, *ptic-a* 'bird' → *ptię-e*.⁵ As for nouns such as *vojnię-e* 'soldier VOC' which are homophonous with the respective Bulgarian diminutives (see above), in Serbo-Croatian, these forms express vocative case, without any diminutive meaning at all. It seems that the existence of the category of vocative which often inflects with the suffix *-e* (see Table 3), has blocked the development of the diminutivization rule with the same suffix. On the other hand, modern Russian has no vocative, but even the semantics 'young of animals' is always expressed by suffixes in the derivational slot, e.g. *medvež-onok* 'bear-cub', *tel-ęnok* 'calf', etc., the old *ęt*-stems being preserved in the plural (NOM PL *medvež-ata*, *tel-jata*).

To sum up, in Bulgarian, Russian and Serbo-Croatian, diminutives are usually derived according to a very productive rule requiring a diminutive suffix in the derivational slot of the noun. The numerous diminutive suffixes take

different inflections which allot diminutive formations to different inflectional classes. In addition, Bulgarian and Serbo-Croatian have inflectional diminutives in *-e* (class 4 in Bulgarian, cf. Table 1, and with a peculiar declension in Serbo-Croatian (cf. Endnote 5)).

3. Gender MALES → FEMALES

Although gender is not usually marked by a special suffix in the noun, the category divides the lexicon into classes which trigger agreement. Therefore Slavic grammars consider gender a classificatory category for nouns. There are only two instances when gender has a morphological exponent of its own in the noun: 1) when females are derived from nouns denoting males, and 2) in cases of adjective-to-noun syntactic conversion (cf. Spencer 2002). However, syntactic conversion is irrelevant for us, since adjectives which undergo this change preserve their adjectival inflection. Moreover gender in the adjective is prototypical inflection (cf. Dressler 1989), i.e. always overtly marked, and thus beyond the scope of this paper.

In Bulgarian, Russian and Serbo-Croatian, female nouns with nominal inflection are derived from males by the rule MASC N + GSUFF + ISUFF *-(j)a* → FEM N with the following gender suffixes:

- BG.: *-k-a, -in-ja; -kin-ja; -ic-a, -es-a, -is-a*
 R.: *-k-a, -ix-a, -ic-a, -nic-a, -š-a, -n-a, -in-ja, -ux-a, -ess-a, -is-a*
 SC.: *-k-a, -ic-a, -inj-a, -kinj-a, -es-a*

In addition to the forms derived with special gender suffixes, Bulgarian, Russian and Serbo-Croatian possess a set of nouns formed according to the unproductive pattern MASC N + ISUFF → FEM N involving only affixation with the inflection *-a*:

- (5) BG. *săprug* 'husband' → *săprug-a* 'wife'
 R. *suprug* 'husband' → *suprug-a* 'wife'
 SC. *suprug* 'husband' → *suprug-a* 'wife'

In the oldest Slavic texts, in one and the same source, one finds used parallel forms such as *rab-a* and *rab-yini*, both meaning 'slave-FEM, servant-FEM', and derived from the masculine noun *rabъ* 'slave, servant' (see SJS in the references). Therefore, it is difficult to establish which type of expression, that derived with a special gender suffix or that formed by addition of the inflection *-a*, is diachronically older.

Nouns for females, whether formed with a special gender suffix or derived inflectionally, always take the inflection of the declension class of nouns terminating in *-a* (class 2) in the three languages (see Tables 1, 2, & 3), this without any exceptions. Note, however, that whereas nouns derived with a special gender suffix are always feminine, nouns terminating in *-a* are not (e.g. BG MASC *bašta* ‘father’), i.e. if gender is not expressed morphologically, it does not perfectly correspond to a particular inflectional class. For discussion on gender and declension class assignment in Bulgarian see Manova & Dressler (2001), for Russian Corbett (1991:34–43) and Fraser & Corbett (1995).

4. Aspect

It is well-known that most Slavic verbs can be organized in aspectual triples. An aspectual triple consists of a basic verb, i.e. a primary imperfective verb (IMPFV1) → a perfective verb (PFV) → a secondary imperfective verb (IMPFV2), where PFV and IMPFV2 do not differ semantically. Each member of the triple exhibits its own morphotactic structure (Manova 2002):

- (6) IMPFV1 = ROOT + TM + ISUFF
 Bg. *stro-* *j-* *a* ‘I build’
 PFV = PREF + IMPFV1
 Bg. *do-* *stroja* ‘I complete building’
 IMPFV2 = PREF-ROOT + ASUFF + TM + ISUFF
 Bg. *do-* *stro-* *jav-* *a-* *m* ‘I complete building’

The assumption of triples implies that the primary verbal lexicon consists of imperfective verbs only. However, there are also basic verbs (i.e. without prefixes or aspectual suffixes) which are perfective (in Bulgarian, for example, some 80 verbs,⁶ cf. Stojanov 1993:335). Thus like gender, the category of aspect is a classificatory one for basic verbs, since without being overtly marked for aspect they are classified as either perfective or imperfective.

In regard to IMPFV2 verbs, there exists a fundamental distinction between Bulgarian, on the one hand, and Russian and Serbo-Croatian, on the other: whereas nearly all IMPFV1 verbs in Bulgarian have PFV and IMPFV2 forms, in Russian and Serbo-Croatian, if the perfectivizing prefix has only aspectual meaning and there is no significant semantic difference between IMPFV1 and PFV, imperfectivization is blocked and the basic IMPFV1 form is used instead of IMPFV2. Consider:

- (7) bg. *piša* 'I write', *pišeš* → *napiša* 'I write down', *napišeš* → *napisvam*, *napisvaš*
 R. *pisat* 'to write' → *napisat* 'to write down' → **napisyvat*
 sc. *pisati* 'to write' → *napisati* 'to write down' → **napisivati*

However, if perfectivization involves a significant semantic change, all three forms exist in the three languages. For example:

- (8) bg. *piša* 'I write', *pišeš* → *podpiša* 'I sign', *podpišeš* → *podpisvam*, *podpisvaš*
 R. *pisat* 'to write' → *podpisat* 'to sign' → *podpisyvat*
 sc. *pisati* 'to write' → *potpisati* 'to sign' → *potpisivati*

Bulgarian, Russian and Serbo-Croatian express imperfectivization either by a suffix in the derivational slot or inflectionally by a TM only. However derivational and inflectional realizations of the category of aspect differ in terms of productivity and, as can be seen from the next examples, productive rules always require an aspectual suffix in the derivational slot of the verb.

Bulgarian (cf. Table 4, class 3):

- (9) a. Productive suffixes: *-v-a-*, *-(j)av-a-* (both class 3)
 PFV *kaža* 'I say', *kažeš* → IMPFV *kaz-v-a-m*, *kaz-v-a-š*
 PFV *izora* 'I plow', *izoreš* → IMPFV2 *izor-av-a-m*, *izor-av-a-š*
 b. Unproductive suffixes: *-(j)a-*, *-uv-a-* (both class 3)
 PFV *izgovorja* 'I articulate', *izgovoriš* → IMPFV2 *izgovar-ja-m*, *izgovar-ja-š*
 PFV *kupja* 'I buy', *kupiš* → IMPFV *kup-uv-a-m*, *kup-uv-a-š*

Table 4. Bulgarian verbal inflection (major classes), based on Andrejčin (1978)

	1.		2.		3.
1 SG PRES	-(j)a		-(j)-a		-(j)a-m [-v-a-m, -(j)av-a-m, -uv-a-m]
2 SG PRES	-e-š		-i-š		-a-š
3 SG PRES	-e		-i		-a
	1.1.	1.2.	2.1.	2.2.	
1 SG Aorist	-o-x	-(j)a-x	-i-x	-(j)a-x	-(j)a-x
1 SG Imperfect	-(j)a-x	-e-x	-e-x	-(j)a-x	-(j)a-x

Russian (cf. Table 5, class 1):

- (10) a. Productive suffixes: *-yv-a-*; *-iv-a* (both class 1)
 PFV *perepisat'* 'to copy' → IMPFV2 *perepis-yv-a-t'*
 PFV *oplakat'* 'to mourn' → IMPFV2 *oplak-iv-a-t'*
- b. Unproductive suffixes: *-v-a-*; *-(j)a-* (both class 1)
 PFV *sogret'* 'to warm' → IMPFV2 *sogre-v-a-t'*
 PFV *ob'jasnit'* 'to explain' → IMPFV2 *ob'jasn-ja-t'*

Serbo-Croatian (cf. Table 6, classes 1 & 2):

- (11) a. Productive suffixes: *-(j)av-a-/* 1 SG PRES *-(j)av-a-m* (class 1) and
-(j)iv-a-/ 1 SG PRES *-uj-e-m* (class 2)
 PFV *odòbriti* 'to approve, to permit' → IMPFV2 *odobr-áv-a-ti*
 PFV *zaváriti* 'to weld, to solder' → IMPFV2 *zavar-ív-a-ti*
- b. Unproductive suffixes: *-v-a-*, *-(j)a-* (both class 1)
 PFV *dòbiti* 'to receive, to obtain' → IMPFV2 *dobí-v-a-ti*
 PFV *zàviti* 'to wrap' → IMPFV2 *zaví-ja-ti*

Table 5. Russian verbal inflection (productive classes), based on Isačenko (1982)

	1.	2.	3.	4	5.
Infinitive	<i>-a-t'</i> [<i>-yv-a-t'</i> , <i>-iv-a-t'</i>]	<i>-ov-a-t'</i> , <i>-ev-a-t'</i>	<i>-e-t'</i>	<i>-nu-t'</i>	<i>-i-t'</i>
1 SG PRES	<i>-aj- u</i>	<i>-uj- u</i>	<i>-ej- u</i>	<i>-n- u</i>	<i>-(j)u</i>
2 SG PRES	<i>-aje-š'</i>	<i>-uj-e-š'</i>	<i>-eje-š'</i>	<i>-ne-š'</i>	<i>-i-š'</i>
3 SG PRES	<i>-aje-t</i>	<i>-uj-e-t</i>	<i>-eje-t</i>	<i>-ne-t</i>	<i>-i-t</i>

Table 6. Serbo-Croatian verbal inflection (productive classes), based on Dressler et al. (1996)

	1.	2.	3.	4.
Infinitive	<i>-a-ti</i> [<i>-(j)av-a-ti</i>]	<i>-ov-a-ti</i> , <i>-ev-a-ti</i> , <i>-(j)iv-a-ti</i>	<i>-i-ti</i>	<i>-nu-ti</i>
1 SG PRES	<i>-a-m</i>	<i>-uj-e-m</i>	<i>-i-m</i>	<i>-ne-m</i>
2 SG PRES	<i>-a-š</i>	<i>-uj-e-š</i>	<i>-i-š</i>	<i>-ne-š</i>
3 SG PRES	<i>-a</i>	<i>-uj-e</i>	<i>-i</i>	<i>-ne</i>
Imperative	<i>-a-j</i>	<i>-uj</i>	<i>-i</i>	<i>-ni</i>

Each of the three languages possesses a restricted number of imperfectivizing ASUFFS, two productive and two unproductive, but only three of them use the derivational slot of the verb. In addition, ASUFFS always combine with the TM *-a-* only, which makes them similar to conjugation class markers, i.e. ASUFFS can be seen as complex TMS of the type *-(V)va-*. The same holds for the suffixes *-ova-/ -eva-* in Russian and Serbo-Croatian (see class 2 in Tables 5 & 6).

All IMPFV2 verbs in Bulgarian and Russian are marked by membership in a particular conjugation class (class 3 in Bulgarian and class 1 in Russian, see Tables 4 & 5), whereas Serbo-Croatian IMPFV2 verbs go into two conjugation classes, class 1 and class 2 respectively (Table 6), and this when derived with productive suffixes (11a). However, class 1 and class 2 are phonologically complementary and the most salient feature of the Serbo-Croatian vowel system, accentuation, governs the distribution of the two productive aspectual suffixes *-(j)av-a-* (class 1) and *-(j)iv-a-* (class 2). According to Babić (1991), the exact rule is: if the PFV verb has a long stressed vowel, then secondary imperfectivization uses the suffix *-(j)iv-a-*, e.g. PFV *isključ-i-ti* ‘to turn off’ → IMPFV2 *isključ-iv-a-ti*; if the PFV has a short stressed vowel, its respective IMPFV2 verb is derived with the suffix *-(j)av-a-*, e.g. PFV *ogranič-i-ti* ‘to limit’ → IMPFV2 *ogranič-áv-a-ti*.

Both suffixes *-(j)av-a-* and *-(j)iv-a-* differ in their degree of productivity and verbs derived with the suffix *-ov-a-* (class 2) have IMPFV2 forms with *-iv-a-* (class 2), though with the inflection suffixes of class 1, i.e. *-iv-a-ti / -iv-a-m* instead of *-iv-a-ti / -uj-e-m*,⁷ e.g.: PFV *dar-òv-a-ti* ‘to present, donate’ (← *dar* ‘present, gift’), PRES 1 SG *dar-uj-e-m* → IMPFV & PFV *dar-iv-a-ti*, PRES 1 SG *dar-iv-a-m*. This shift from verb class 2 to verb class 1 speaks for greater productivity of class 1 in comparison to class 2 (Dressler 1997) and assigns to class 1 a status of the default class for IMPFV2. It should also be noted that due to regional and dialectal variants, the Serbo-Croatian verbal system sometimes allows for doublets derived with both *-(j)av-a-* and *-(j)iv-a-* from one and the same base.

In Russian up to the 19th century (cf. Isačenko 1982: 227–229), besides the productive suffixes *-yv-a-/ -iv-a-* (class 1 in Table 5), the suffixes *-ov-a-/ -ev-a-* (i.e. class 2) were also imperfectivizing. Afterwards *-ov-a-* and *-ev-a-* were restricted to nominal and adjectival bases only, and thus specialized for derivation (cf. also the Russian Academy Grammar 1980: 337ff.). This specialization of the suffixes collects all Russian IMPFV2 verbs in class 1 (cf. Table 5), and allots noun-to-verb and adjective-to-verb derivations to more than one verb class: *sovet* ‘advice, council’ → *sovet-ov-a-t’* ‘to advise’; *špric* ‘syringe’ → *špric-iv-a-t’*; ‘to syringe’; *pjatl-o* ‘spot, stain’ → *pjatl-a-t’* ‘to spot, to stain’; *kamen’*

'stone' → *kamen-e-t* 'to stone'; *sekretar* 'secretary' → *sekretar-i-t* 'to work as a secretary'; *pust-ov* 'empty' → *pust-ov-a-t* 'to be empty (for space)'; *slab-yj* 'weak, feeble' → *slab-e-t* 'to lose weight; to weaken'; *čist-yj* 'clean' → *čist-i-t* 'to clean'.

The same holds for verbal derivations in Serbo-Croatian and Bulgarian: sc. *sáv(j)et* 'advice, council' → *sáv(j)et-ov-a-ti* 'to advise'; *sèstr-a* 'sister' → *sèstr-i-ti* 'to accept as a sister'; *vèsl-o* 'oar, scull, paddle' → *vèsl-a-ti* 'to row, paddle, scull'; *bijèl* 'white' → *bijèl-i-ti*, *bijèl-je-ti* 'to whiten, bleach'; bg. *sāvet* 'advice, council' → *sāvet-v-a-m* 'I advise', *sāvet-v-a-š*; *petn-o* 'spot, stain' → *petn-j-a* 'I spot, stain', *petn-i-š*; *bjal* 'white' → *bele-ja (se)* 'I turn/become white', *bele-e-š (se)*.

To sum up: Bulgarian and Russian always connect IMPFV2 verbs with a particular inflectional class. Serbo-Croatian IMPFV2 verbs are distributed into two phonologically complementary classes, of which the class of *-(j)av-a-* (class 1, Table 6) is the more productive one, expressing imperfectivization in general. By contrast, the output of derivations to verb goes into different verb classes.

IMPFV2 verbs in the three languages are always marked by the TM *-a-*, which is the default marker for imperfectivity, i.e. there are only very few verbs with the TM *-a-* which are not imperfective. Note, however, that in Russian and Serbo-Croatian, if a verb has the TM *-a-*, this does not automatically assign it to class 1, and such a verb could belong to class 2 or to an unproductive verb class in both languages.

5. Derivation versus inflection

Now I will briefly evaluate the three categories, diminutives, formation of females from males and imperfectivization, according to some of the traditional criteria for distinguishing between inflection and derivation (surveys in Dressler 1989; Plank 1994; Booij 2000):

1. *Change of word class*: Derivation, unlike inflection, may be word-class-changing.

The three categories I analyze are word-class-preserving by definition, i.e. if we diminutivize a noun, the result is a noun, nouns denoting females are derived from nouns denoting males, and since aspect is a verbal category, imperfectivization always involves only verbs. However, this does not mean that the suffixes expressing the three categories cannot be word-class-changing. The most frequent case of word class change involves addition of aspectual suf-

fixes to nominal and adjectival bases from which verbs are derived, e.g. the above-cited BG. *săvet* ‘advice, council’ → *săvet-v-a-m* ‘I advise’, *savet-v-a-š* (cf. Section 4). In Bulgarian, the unproductive imperfectivizing suffix *-uv-a* is very productive for derivation of verbs from nominal bases, e.g. *săn* ‘dream’ → *săn-uv-a-m* ‘I dream’, *prorok* ‘prophet’ → *prorok-uv-a-m* ‘I prophet’, etc. However, the specialization of the old aspectual suffixes R. & SC. *-ov-a-/ev-a* only for derivation of verbs from nominal and adjectival bases shows that in Russian and Serbo-Croatian, aspectual suffixes tend to be word-class-preserving. Thus paradoxically, aspectual suffixes are word-class-changing only in Bulgarian where the category of imperfectivization has a full set of forms (i.e. seems to be inflectional, cf. Section 4, ex. 6). It should also be mentioned that the addition of the TM *-a-* which is an unproductive realization of imperfectivization can also be word-class-changing (cf. the verbalizations at the end of Section 4).

Gender suffixes, when added to adjectives or verbs, derive common gender nouns. Consider: BG. MASC & FEM *pijan-ic-a* (R. MASC & FEM *p’janica*) ‘drunkard’ formed from the adjective *pijan* (R. *p’janyj*) ‘drunk’ by addition of a gender suffix and without a masculine counterpart⁸ as well as the derivation BG. *băbrja* ‘I chatter, babble’, *băbriš* → MASC & FEM *băbr-ica* ‘babblers’ (there is no masculine noun **băbrik*, cf. FEM *čistnica* ← MASC *čistnik* ‘fastidious person’). Such common gender nouns can refer to males and females but have feminine morphology (class 2 in the three languages).

As for diminutives, unlike languages such as German where diminutive suffixes can change the word class of the base (e.g. *lieb* ‘dear’ → *Liebchen* ‘the dear-DIM’, cf. Dressler & Merlini Barbaresi 1994:103f.), in the three Slavic languages I discuss diminutivization is usually word-class-preserving. Word-class-changing diminutivization is extremely rare and not mentioned in the literature. Yet, an example could be SC. ADJ *zelen* ‘green’ → N *zelen-ić* ‘little green tree’ (cf. Babić 1991:190).

Thus, according to the criterion of word class change, the three categories tend to be derivation, diminutivization being the least derivational one.

2. *Obligatoriness & Syntactic relevance*: Inflection is obligatory, whereas derivation is optional. However, since syntactically required agreement is obligatory, obligatoriness is connected with the criterion of syntactic relevance (cf. Dressler 1989:6) according to which, inflection is relevant to syntax (Anderson 1982:587). Thus, due to the syntactic agreement between subject and predicative positions, feminine gender may be obligatory in sentences with a female subject in Bulgarian, Russian and Serbo-Croatian. Gender agreement is obligatory with inhabitatives, e.g. BG. *Tja e irlandka* ‘She is an Irishwoman’ and not

**Tja e irlandec* ‘She is an Irishman’. This even in the plural where *te* ‘they’ is gender neutral, i.e. if we refer to a group of female persons, we must say *Te sa irlandki* ‘They are Irishwomen’ (and not **Te sa irlandci* ‘They are Irishmen’), although MASC *irlandci* ‘Irishmen’ which expresses the meaning ‘inhabitants of Ireland’ in general is the form expected with a gender neutral subject. Clearly, the gender neutral subject *te* ‘they’ cannot require gender. Therefore, it is not sure that the obligatory feminine gender with inhabitatives is a case of syntactic agreement (cf. also Booij 2002:82). Gender agreement is optional with agent nouns, i.e. both *Tja e učitelka* ‘She is a teacher-FEM’ and *Tja e učitel* ‘She is a teacher-MASC’ are possible, but the latter is more respectful (on gender agreement, see also Dressler & Doleschal 1991).

Aspect can also be required by certain verbs, e.g. regardless of their aspect phase verbs like *to begin*, *to continue* and *to end* combine only with imperfectives, as can be seen from the following examples from Bulgarian:

- (12) *da započna*-PFV *da podpisvam*-IMPFV ‘I begin to sign’
započvam-IMPFV *da podpisvam*-IMPFV ‘I begin to sign’

but not

- **da započna*-PFV *da podpiša*-PFV ‘I begin to sign’
 **započvam*-IMPFV *da podpiša*-PFV ‘I begin to sign’

Obligatoriness is here due to the nature of the perfective aspect which views an activity as a whole and is thus incompatible with the focus on the start/end or the development, whereas the imperfective is. Since in the above examples, the imperfective verb is not required by the aspect of the introductory verb, but by its semantics, (12) does not represent syntactic agreement.

As for diminutives, the use of a diminutive noun requires further diminutivization. Therefore from the Bulgarian examples below, (13) and (14) are well-formed sentences, (15) is strange but acceptable, whereas (16) is impossible.

- (13) *Viž mu rāč-ička-ta, prāst-če-ta-ta j sa tolkova*
 Look his hand-DIM-DEF, finger-DIM-PL-DEF its are-3PL so
bel-i
 white-PL
 ‘Look at his hand-DIM, its fingers-DIM are so white’

- (14) *Viž mu rāč-ička-ta, prāst-če-ta-ta j sa tolkova*
 Look his hand-DIM-DEF, finger-DIM-PL-DEF its are-3PL so
bel-ičk-i
 white-DIM-PL
 ‘Look at his hand-DIM, its fingers-DIM are so white-DIM’
- (15) ²*Viž mu rāč-ička-ta, prāst-i-te j sa tolkova*
 Look his hand-DIM-DEF, finger-PL-DEF its are-3PL so
bel-ičk-i
 white-DIM-PL
 ‘Look at his hand-DIM, its fingers are so white-DIM’
- (16) **Viž mu rāč-ička-ta, prāst-i-te j sa tolkova bel-i*
 Look his hand-DIM-DEF, finger-PL-DEF its are-3PL so white-PL
 ‘Look at his hand-DIM, its fingers are so white’

These examples resemble to some extent the use of honorifics, i.e. if one speaks in a given way, (s)he should keep it up. Thus, the obligatory diminutivization in the above sentences does not look like agreement required by syntax.

To sum up: in regard to obligatoriness, the three categories behave like inflection, but since they do not participate in syntactic agreement, according to the criterion of syntactic relevance, they seem to be derivation (or at least inherent inflection, cf. Booij 2000).

3. *Productivity*: Inflection is typically more productive than derivation.

Of the three categories discussed, diminutives show the greatest degree of productivity. It is possible to derive a diminutive (usually even more than one) from nearly every noun, whereas imperfectivization can, as already discussed (cf. Section 4, ex. 7), be lexically blocked in Russian and Serbo-Croatian. Moreover, verbs of foreign origin are often biaspectual, e.g. bg. *organiziram* ‘I organize’/ r. *organizovat’*/ sc. *organizirati*. The same should be said for the productivity of the rule deriving females from males – loanwords denoting males (e.g. *professor*, *director*) are usually double gender nouns. However, if loanwords are often paired for gender in colloquial style (bg. *direktor-k-a* / r. *direktor-š-a* / sc. *direktor-ic-a*), instances such as bg. MASC *strelec* ‘marksman’ → FEM ∅ and MASC *letec* ‘pilot’ → FEM ∅⁹ undoubtedly speak for the restricted productivity of the females-from-males formation, in Bulgarian at least.

According to this criterion, diminutivization seems to be inflection, whereas formation of females from males and imperfectivization are less inflectional. Yet, diminutivization should be a peculiar type of inflection, since it usually allows for more than one derivation from the same base (e.g. bg. *kniga* ‘book’ → DIM *kniž-ka* & DIM *kniž-le*) and may apply recursively (e.g. bg. *kniž-le*

'book-DIM' → *kniž-le-nce* 'book-DIM-DIM' → *kniž-le-nce-nce* 'book-DIM-DIM-DIM).

4. *Order of morphemes*: Inflection is more peripheral than derivation.

If denominal diminutives, formation of females from males and imperfectivization are expressed in the derivational slot, their suffixes precede the inflection. When the three categories are realized inflectionally, gender and diminutive suffixes are word-final, whereas TMs which are the inflectional equivalent of imperfectivization are between derivational and inflectional suffixes (cf. the prototypical form of the Slavic word in Section 1 and ex. (3a, b)).

According to this criterion, the three categories (except Russian diminutives which should be derivation, cf. Section 2) are neither inflection nor derivation.

5. *Overt analogue criterion*: All three categories, except Russian diminutives, can be expressed either in the derivational or in the inflectional slot of the word, i.e. when realized inflectionally the three categories have overt analogues (see examples (1), (2), & (3)) which, according to Booij (2000), distinguish derivation from inflection. In fact, an overt analogue of a morphological change is a traditional proof for conversion / zero derivation (cf. Sanders 1988) and since it has always been assumed that conversion operates only in derivation, it is expected that the overt analogue criterion should distinguish between derivation and inflection. Thus, if a derivational rule has an overt analogue, it is a case of conversion, however if an inflectional rule has an overt analogue, the morphological theory even lacks a label for it. The problem was discussed in detail in Manova (2003a).

6. *Change of inflectional class*. In Scalise (1984:110), one reads that derivational rules can change the declensional class of nouns and the conjugational class of verbs, whereas inflectional rules cannot. According to this criterion, all three categories represent derivation, since the rule deriving females is always inflection-class-changing, and diminutivization and imperfectivization can be inflection-class-changing as well as inflection-class-preserving.

According to these demarcation criteria, it seems that there is no striking difference between denominal diminutives, derivation of females from males and imperfectivization: the three categories are word-class-preserving by rule, although their suffixes can be word-class-changing; without being syntactically relevant, the three categories can be obligatory in certain contexts; they obey the expected morpheme order; have overt analogues; and can be inflection-class-changing. (All these, of course, with some nuances in the three languages). Only in respect to productivity, diminutivization appears

to be more productive (inflectional) than females-from-males formation and imperfectivization.

However, when situated within the inflection systems of Bulgarian, Russian and Serbo-Croatian, the three categories in question clearly differ in regard to inflection class assignment. Therefore, I suggest inflection class assignment as a criterion for demarcation between derivation and inflection. I formulate the criterion in the following way:

7. Inflection class assignment: If a category can be identified either with a particular inflectional class or with complementary classes, it is expressed inflectionally and therefore represents (non-prototypical) inflection. If a category cannot be identified inflectionally, i.e. its output belongs to different (unrelated) inflectional classes, it is derivation.

This criterion assigns to nominal diminutives the status of derivation and to formation of females from males and imperfectivization the status of inflection. (Note that this holds only for Bulgarian, Russian and Serbo-Croatian and does not exclude that in other languages, the same categories can behave differently according to inflection class assignment).

Of course, now the question about the reliability of the criterion of inflection class assignment arises. And really, why should a single criterion be enough evidence for the derivational or inflectional status of a category? There are at least two reasons:

First, it is not very probable that the most salient feature of an inflecting language, its inflection class organization, should be irrelevant for the differentiation between derivation and inflection.

Second, only on the basis of their inflection class organization can Bulgarian, Russian and Serbo-Croatian successfully distinguish between the following four types of inflectional categories: 1) inflection such as case or definiteness identified as a cell of the paradigm of an inflectional class; 2) categories such as nominal number which constitute a part (i.e. involve more than one cell) of the paradigm of an inflectional class (e.g. singular and plural subparadigms); 3) categories such as gender and aspect which can, when expressed by an overt suffix, be identified with a particular inflectional class or with complementary classes, e.g. gender (cf. Stump 1998) as formation of females from males and aspect in terms of imperfectivization.¹⁰ (Note, however, that if this type of inflection is not overtly expressed, it does not perfectly correspond to a particular inflectional class. For example, although masculine nouns usually belong to inflectional class 1 in the three languages, they can be found in other inflectional classes as well. The same holds for feminine and neuter nouns.); 4) categories

such as the above-discussed diminutives which cannot be identified inflectionally, since their output enters more than one inflectional class.

Clearly, the inflection class system of an inflecting language cannot distinguish between different types of derivation.

6. Conclusion

In Bulgarian, Russian and Serbo-Croatian, non-prototypical categories such as denominal diminutivization, formation of females from males and imperfectivization allow for two types of forms, derivational and inflectional. Of these, in harmony with the semiotic principle of constructional iconicity (correspondence between addition of meaning and addition of form), only derivational realizations are productive. This preference for derivational forms over inflectional ones is category-specifically realized: diminutivization has developed a rich set of derivational suffixes and its output has thus dispersed within the inflectional systems of the three languages; formation of females from males exhibits numerous gender suffixes, but has been left connected with a single noun class only; imperfectivization uses a few *ASUFFS* and is also connected with a particular inflectional class, the two classes of Serbo-Croatian *IMPFV2* verbs being phonologically complementary. This makes denominal diminutives unidentifiable inflectionally and according to the criterion of inflection class assignment, defines them as derivation, whereas formation of females from males and imperfectivization, since identifiable with a particular inflectional class (or complementary classes), represent inflection.

In addition to the typologically-adequate connection of non-prototypical inflection with particular inflectional classes, for distinguishing between derivation and inflection, Bulgarian, Russian and Serbo-Croatian use language-specific strategies: in order to underline the inflectional status of imperfectivization, Bulgarian has developed a full set of aspectual forms, Russian and Serbo-Croatian have reduced the number of their aspectual suffixes specializing *-ova/-eva-* only for derivation. Although Serbo-Croatian *IMPFV2* verbs have a less clear inflectional status than Bulgarian and Russian ones, the distribution of *IMPFV2* verbs into conjugation classes in Serbo-Croatian is not chaotic, but governed by a language-specific feature – the accentuation of the vowels.

Thus, on the one hand, non-prototypical derivation and inflection in Bulgarian, Russian and Serbo-Croatian with their two types of forms, derivational and inflectional, confirm the assumption of a derivation-inflection contin-

uum. On the other hand, however, the three non-prototypical categories I analyzed undoubtedly show that inflecting languages tend to make distinction between derivation and inflection, and this even in cases where the traditional demarcation criteria do not.

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Notes

1. Abbreviations: ACC – accusative, ADJ – adjective, ASUFF – aspectual suffix, BG. – Bulgarian, DAT – dative, DIM – diminutive, DIM SUFF – diminutive suffix, DSUFF – derivational suffix, FEM – feminine, GEN – genitive, GSUFF – gender suffix, IMPFV 1 – (primary) imperfective, IMPFV2 – secondary imperfective, INSTR – instrumental, ISUFF – inflectional suffix, LOC – locative, LW – loanword, MASC – masculine, N – noun, NEUT – neuter, NOM – nominative, OBG. – Old Bulgarian, OCS – Old Church Slavic, PFV – perfective, PL – plural, PREF – prefix, PRES – present, R. – Russian, SC. – Serbo-Croatian, SG – singular, TM – thematic marker, VOC – vocative.
2. Since Bulgarian has no infinitive, all Bulgarian verbs are given in their basic form, 1 SG PRES, and in 2 SG PRES which exhibits all possible inflectional suffixes.
3. In contrast to all other Slavic languages, Bulgarian nominal morphology has lost the category of case and developed the category of definiteness. Thus in a Bulgarian noun, number and definiteness are always overtly marked, definiteness being expressed by suffixes, whereas in Russian and Serbo-Croatian nouns, the categories of case and number are always overtly signalled (see Tables 1, 2, & 3).
4. Diminutives derived with the suffixes *-ce*, *-ance*, *-ence*, *-ašce*, and *-ešce* either have the inflection of class 3 or take the amplification *-t*, as is usual for a minor inflection class, cf. Barić et al. (1995:144).

5. Such nouns, as descendants of OCS *et*-stems, have *-et-* amplification with the endings of class 3 in the oblique singular cases, their NOM PL is formed either with the collective suffix *-ad* (class 4 inflection in the oblique cases) or with *-či/-ci* (inflection of class 1).
6. Such verbs have only the last two forms of the aspectual triple, e.g.: BG. PFV *xvārl-ja* 'I throw', *xvārl-i-š* → IMPFV *xvārl-ja-m*, *xvārl-ja-š*, R. PFV *bros-i-t'* 'to throw' → IMPFV *bros-a-t'*; SC. PFV *bác-i-ti* 'to throw' → IMPFV *bác-a-ti*.
7. Some regional variants allow both *-iv-a-ti* / *-iv-a-m* and *-iv-a-ti* / *-uj-e-m*.
8. In Serbo-Croatian, there also exists a common gender noun MASC & FEM *pijanica* 'drunkard'. However, in this language in contrast to Bulgarian and Russian, from the adjective *pijan* 'drunk', one can derive the masculine noun *pijanac* 'drunkard'.
9. Cf. MASC *pluvec* 'swimmer' → FEM *pluvkinja*; and MASC *kosmonavt* 'cosmonaut' → FEM *kosmonavtka* (colloquial) which is semantically related to *letec* 'pilot'.
10. Note that what holds for imperfectivization is also correct for perfectivization with the thematic marker *-n-* / *-nu-* (the only perfectivizing suffix in the three languages). As can be seen in Tables 5 and 6, perfective *-n-* / *-nu-* verbs even constitute verb classes of their own in Russian and Serbo-Croatian.

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Antipassive *sja*-verbs in Russian*

Between inflection and derivation

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1. Introduction

In the focus of this paper are the so-called *vozvratnye* (literally, ‘reflexive’, although this label is a fairly conventional one) verbs in Russian, i.e. verbs with the postverbal *-sja* affix (or ‘postfix’ in the parlance of the traditional Russian linguistics). These verbs have long been a brainteaser for the students of Russian morphology, especially for those willing to draw a dividing line between inflection and derivation. The position of *sja*-verbs with respect to this dichotomy is the central question of the present paper; a special emphasis will be put on several subtypes of these verbs that arguably have not been given due attention in the literature.¹ It must not be inferred, however, that my aim is to present a consistent piece of evidence in favour of a certain conclusive (‘solely correct’, so to speak) qualification of those verbs in terms of the opposition between inflection and word formation. Nor is it my goal to adduce arguments in support of a certain approach to these theoretical notions in the light of the empirical facts of the Russian grammar.

Rather, this study is carried out on the assumption that such notions as ‘inflection’ and ‘word formation’ are able to capture recurrent correlations between more atomic properties of morphological patterns (otherwise they would have been superfluous). The study of the ways in which such properties interact thus appears to be crucial and instructive.

Which of these properties should be viewed as defining criteria for e.g. inflection as opposed to word formation (the rest would be automatically downgraded to the status of frequent side-effects) is a problem that is largely solved at the discretion of individual scholars based on their theoretical (or

aesthetical?) preferences; in view of this I will restrain from any solution of this problem with respect to the phenomena discussed below. My goal is merely to present some unusual patterns of the interaction between those properties that are firmly associated with inflection resp. word formation in the behaviour of (some of) the Russian *sja*-verbs. It is hoped that such an examination would broaden our understanding of the empirical essence of this dichotomy.

2. Russian *sja*-verbs: Inflection vs. word formation

2.1 *Sja*-verbs: An overview

A unified analysis of the Russian *sja*-verbs is seriously impeded by their baffling heterogeneity. Although the use of *-sja* is quite transparent from a morphotactic point of view (there are only two morphologically patterned allomorphs *sja* and *s'*), which somewhat indirectly favours inflectional interpretation, it seems to be much harder to find any consistency in its semantic and syntactic functions. There have been numerous attempts to ascribe an invariant function to all the uses of this affix (for example, overt signalling of intransitivity or valency recession, see also Footnote 9 and discussion in Wiemer, *forthc.*). However, despite all significant insights that these approaches can offer, none of them has been able to account for all the diversity of the attested facts. For the sake of further argument it will suffice to establish that *-sja* is a polyfunctional recessive/detransitivising marker. With respect to the issues discussed in this paper *sja*-verbs break up into the following subtypes (tentatively listed in order of increasing semantic regularity).² (1) Non-correlative *sja*-verbs, that is, *sja*-verbs that do not have any non-*sja* counterpart, e.g. *smejat'sja* "to laugh" (cf. **smejat'*). (2) Idiosyncratic *sja*-verbs, that is, verbs that are related to their non-*sja* counterpart in an idiosyncratic way, e.g. *rešit'sja* "to dare" (cf. *rešit'* "to solve, to decide"). (3) *Sja*-verbs that signal a valency shift if compared to their non-*sja* counterparts (several further subtypes such as reflexive, reciprocal, de-causative etc. could be distinguished). (4) Passive *sja*-verbs (counted separately from 3 by reasons explicated below).

In what follows, the verbs belonging to types (1) and (2) will generally not be discussed, since their formation more or less undoubtedly represents a lexical phenomenon (that is, derivation), and the stress will be put on more recurrent uses of *sja*. It must be borne in mind, however, that the contrast between (2) and (3) is not always straightforward, since it is often a matter of degree of semantic opacity of a derivative that goes hand in hand with what

can be otherwise treated as a mere change of valency. However, one has to acknowledge the basic contrast between (2) and (3), even if it is not always easy to tease apart the change in the valency of a verb and the changes in (the remaining parts of) its lexical semantics.³ An equally essential contrast between (3) and (4) will be discussed in more detail below.

2.2 The properties of inflection and word formation

With respect to the inflection vs. word formation dichotomy, it might seem tempting to give a unified account of all instances of the *sja*-affixation in Russian. However, it is in the spirit of the approach explicated in the introduction to examine the facts in all their complexity and not to rule out beforehand the possibility that various uses of *sja* may differ in their inflectional resp. derivational status, cf. Stump's observation that "nothing excludes the possibility that the very same operation might serve a derivational function in some instances and an inflectional function in others" (1998: 19).

As this paper is concerned with *properties* of inflection and derivation rather than with *defining criteria* thereof, the choice of a particular list of such properties is not crucial for my purposes. I will deliberately use the list proposed by Haspelmath (2002: 71); alternative, but generally not incompatible sets could be found in, e.g., Dressler (1989), Plank (1994), Stump (1998). If tested against the twelve properties discussed by Haspelmath, *sja*-verbs will yield the results presented in Table 1.

Table 1. Properties of inflection and derivation: *sja*-verbs in general

	Inflection	Derivation	<i>sja</i> -verbs
(i)	relevant to the syntax	not relevant to the syntax	as inflection
(ii)	obligatory	optional	???
(iii)	not replaceable by simple word	replaceable by simple word	???
(iv)	same concept as base	new concept	see below
(v)	relatively abstract meaning	relatively concrete meaning	see below
(vi)	semantically regular	possibly semantically irregular	see below
(vii)	less relevant to base meaning	very relevant to base meaning	see below
(viii)	unlimited applicability	limited applicability	see below
(ix)	expression at word periphery	expression close to the base	as inflection
(x)	less base allomorphy	more base allomorphy	as inflection
(xi)	cumulative expression possible	no cumulative expression	as derivation
(xii)	not iterable	iterable	as inflection

Of course, the list of properties in Table 1 must be viewed with a good deal of caution; as is pointed out in the source book, consistent sets of unequivocally defined properties are supposed to be characteristic only of most pure cases of derivation resp. inflection, while much less homogeneous profiles could be observed otherwise. Thus, for instance, if one distinguishes contextual inflection from inherent inflection (following Booij 1996), it would be only the former, “the prototypical case of inflection” (ibid.: 14), that will consistently show properties from the left column of Table 1, while inherent inflection would appear to be rather derivation-like.

However, the following generalisations can be made based on the data in Table 1.

1. *Sja*-verbs do not behave uniformly with respect to five properties (iv–viii); these inconsistencies will be discussed in more detail in the following subsections.

2. It is problematic to test *sja*-verbs against two of the twelve properties at issue, viz. obligatoriness (ii) and replaceability by a simple word (iii). In fact, as typical of two-member oppositions of the ‘zero exponent – non-zero exponent’ type, the problem of obligatoriness of the putative category depends on whether we postulate a zero ‘non-reflexiveness’ morpheme in non-*sja* verbs, which in its turn largely depends on whether or not *sja*-affixation is considered an inflectional process. Thus, the use of criterion (ii) appears to be somewhat circular with respect to *sja*-verbs. As for (iii), replaceability by a simple word, the value of this criterion basically depends on properties of contexts, rather than verbs. For instance, non-*sja* verbs generally cannot be substituted by *sja*-verbs in transitive contexts, since *sja* verbs are intransitive, but the two types of verbs are syntactically interchangeable in many other contexts. Thus, on the one hand, replacement of a verb with its *sja* counterpart often triggers changes in syntactic behaviour (thus, as it were, non-replaceability), but on the other hand, many contexts neither ban nor trigger the use of *sja* (thus, as it were, replaceability).

3. Out of those five properties (i, ix–xii) that can be unequivocally ascribed to the whole set of *sja*-verbs, there is only one, viz. possibility of cumulative expression (xi), that yields derivational value. The other four properties among these five are congruent with the inflectional nature of a morphological process. Indeed, *sja*-affixation is relevant to the syntax (i).⁴ *Sja* always occupies peripheral (word-final) position following all other morphemes including those whose inflectional status is beyond doubt (ix).⁵ Base allomorphy under *sja*-affixation is very limited and morphonologically transparent (x). Fi-

nally, *sja*-affixation is not iterable; it must be stressed that the latter point is explained formally rather than semantically. Indeed, the width of semantic functions of *sja* (see below) could have made it possible for a single word-form to bear two *sja* affixes with two different functions, e.g. reflexive / reciprocal and deagentive / impersonal. Such forms are not attested in reality, though.

4. At least two of the ‘unequivocal’ properties, viz. possibility of cumulative expression (xi) and iterability (xii), seem to involve privative, i.e. non-equipollent, oppositions. Thus, for example, the property of (non)-iterability is inherently defective, in that iterable processes of affixation are indeed strongly associated with derivation, while non-iterability of an affixation process hardly gives any indication as to its derivational or inflectional status. In other words, a more exact way to represent profiles of inflection and derivation in Table 1 would be to have ‘non-iterability’ for inflection and ‘blank’ or ‘either way’ for derivation. Accordingly, inflectional value of this property for *sja*-affixation must be viewed as a rather conventional one. Equally conventional is the derivational value of (xi), ‘possibility of cumulative expression’, since here we encounter a mirror image of the situation with property (xii). Indeed, while cumulation is cross-linguistically found almost exclusively with inflectional categories, non-cumulation is equally possible for both inflection and derivation. In other words, it would be more accurate to have ‘unknown’ or ‘no clear evidence for inflection’ instead of ‘as derivation’ as *sja*’s value according to the property of cumulative expression.

2.3 Passive vs. other productive types of valency-changing *sja*-uses

In the remainder of this section I will concentrate on those verbs that have a semantically transparent correlation with their non-*sja* counterparts, i.e. belong to the types (3) and (4) according to the classification in Section 2.1. In so doing, I will try to emphasise a contrast between passive uses of *sja* and other productive models of valency-affecting *sja*-derivations in terms of properties (iv) to (viii) above.

The use of the Russian *sja* covers a wide range of valency-changing functions that are cross-linguistically associated with the middle voice phenomenon. These functions include (but are not limited to) the following:

- a. ‘proper reflexive’ *sja*-verbs, e.g. *myt’sja* ‘to wash (oneself)’ from *myt* ‘to wash (transitive)’;
- b. reciprocal *sja*-verbs, e.g. *celovat’sja* ‘to kiss (each other)’ from *celovat* ‘to kiss (transitive)’;

- c. decausative *sja*-verbs, e.g. *otkryt'sja* “to open (intransitive)” from *otkryt'* “to open (transitive)”.⁶

It is crucial that formation of *sja*-verbs of these types is either non-productive (a, b) or only very limitedly productive (c). Thus, in principle it must be possible to count the number of verbs belonging to these three types in the whole of the Russian lexicon. However, the problem is aggravated by at least two factors: 1) it is not always easy to draw a dividing line between the functions of *sja* and in particular to delimitate its grammatical and lexical effects; 2) there are many verbs that dwell on the border between undisputedly standard verbs and neologisms. Discrepant approaches to the two problems mentioned lead to noticeable divergence in the estimate of the size of particular groups of verbs by different scholars. Here, I will adopt the figures arrived at by Korolev (1968), definitely the most detailed, even if not irreproachable methodologically study entirely devoted to the issue of quantitative assessment of *sja*-verbs. Korolev claims that in the Russian lexicon, there are some 200 ‘proper reflexive’ *sja*-verbs, some 40 reciprocal *sja*-verbs and some 1600 decausative *sja*-verbs.

These figures should be compared to the number of those verbs that can be used with *sja*-affix in the passive function.⁷ It is a more or less commonly accepted view that this class of verbs is very productive, although there are some restrictions on its productivity, both regular (rule-based) and idiosyncratic. The two most well-known restrictions of the former type are that *sja*-passive can only be formed from verbs that are transitive and imperfective.⁸ Besides, Korolev formulates a number of further subtler constraints so that he finally examines a list of 4500 verbs that meet all these constraints and could theoretically form *sja*-passives. It appears that out of these 4500, there are no less than 4300 verbs that actually do allow formation of *sja*-passive (ibid.: 17). A comparable statistical result was independently arrived at by Xrakovskij (1991: 149), who claims that almost 90% of imperfective transitive verbs are able to form *sja*-passives. Thus the passive function of *sja* crucially differs from the other functions in terms of productivity. It must be specifically stressed that in the discussion of ‘proper reflexives’, reciprocals and decausatives it was the overall *number* of those verbs that have been discussed, while one can only estimate the productivity of *sja*-passives in terms of *relative number*, i.e. percentage, and not of absolute figures.

It is, however, even more crucial that the passive function of *sja* differs from other functions semantically. Let us take an example of a passive *sja*-construction (2) and compare it to its active transitive counterpart (1):

- (1) *Rabočie strojat školu.*
 workers.NOM build.3PL school.ACC
 ‘Workers build/are building the school’
- (2) *Škola stroit-sja rabočimi.*
 school-NOM build.3SG-SJA workers-INSTR
 ‘The school is being built by workers’

Although (2) is a hackneyed sentence used as an example of the passive construction in many grammatical studies, sentences of this type are stylistically marked and are rarely encountered in stylistically neutral texts (they are more common in academic and especially bureaucratic discourse). However, it is very important that (2) is perfectly grammatical and does not differ in its so-called ‘cognitive content’ from (1), the difference being in the speaker’s perspective on the situation and not in the number of arguments or their semantic roles.⁹ Thus, the contrast between (1) and (2) is a change of the diathesis marked on the verb, i.e. a voice phenomenon.

The paradigmatic status of *sja*-passives is corroborated by the fact that perfective verbs, i.e., the verbs that never form *sja*-passives (although see Footnote 8), show the same change of diathesis in the analytic passive construction (4) that contrasts with its active transitive counterpart (3) in the same way as (2) contrasts with (1) above:

- (3) *Rabočie postroili školu.*
 workers.NOM built.PERF school.ACC
 ‘Workers have built the school’
- (4) *Škola byla postroena rabočimi.*
 school.NOM was build.PERF.PTCP workers.INSTR
 ‘The school has been built by workers’

Let us now proceed to decausatives, proper reflexives and reciprocals. Decausative *sja*-verbs are crucially different from passives in that they do not coincide with their non-*sja* counterparts in denotational semantic properties, cf. transitive *otkryt’* ‘to open’ in (5) and decausative *otkryt’sja* ‘to open (intransitive)’ in (6):

- (5) *Mal’čik otkryl okno.*
 boy.NOM opened window.ACC
 ‘A/the boy opened the window’
- (6) *Okno otkrylo-s’.*
 window.NOM opened-SJA
 ‘The window opened’

In (6) the Agent is not only left out, but it is moreover absent on the semantic level. In other words, the hearer of (6) is not licensed to make any inference as to whether the event was or was not (voluntarily) brought about by any Agent (hence, (6) has to be translated as it is, and not as “the window is opened”, as would be the case with the passive construction). Thus, although a decausative *sja*-verb may sometimes be used to describe a real-world situation that could be equally well referred to by a non-*sja* verb, such pairs of verbs *always* convey discrepant *concepts* (see Padučeva 2001 for a lengthy discussion of the semantics of the Russian decausative verbs).

As for reflexive and reciprocal *sja*-verbs, the main source of their irregularity lies in the fact that, despite their traditional and somewhat misleading labels, they are almost never used to signal simple coreference between participants bearing distinct semantic roles, e.g. Agent and Patient. For that purpose, Russian normally employs reflexive pronoun *sebja*, as in (7), cf. the ungrammaticality of (8) (for further discussion see Isačenko 2003:383):

(7) *On vidit sebja v zerkale.*
 He.NOM sees self.ACC in mirror
 ‘He sees himself in the mirror’

(8) **On vidit-sja v zerkale.*
 He.NOM sees-SJA in mirror
 Ungrammatical in the meaning of (7).

‘Proper reflexives’ are mostly derived from those verbs that denote natural reflexive actions, i.e. actions that are typically performed by a human agent on him- or herself; as has been argued by Kemmer (1993:55ff.), these situation types are far from *par excellence* reflexive contexts. Besides, the so-called ‘proper reflexives’ in Russian often convey a sort of a conventionalised meaning that often goes beyond the compositional sum of the meaning of the base verb and the indication of the coreference of its two arguments. This point could be illustrated by the verb *zastrelit’-sja*, literally “shoot-SJA”. An appropriate translation of this verb would be “to commit suicide by way of shooting oneself”, as can be seen from the ungrammaticality of (9):

(9) **On slučajno zastrelil-sja.*
 He.NOM unintentionally shot-SJA.
 ‘He unintentionally shot himself’ (e.g. shivered while holding a gun in his hands).

Table 2. Properties of inflection and derivation: selected classes of *sja*-verbs

	passive	decausative	reflexive	reciprocal	other classes
iv 'sameness' of concept	i*	d	$i \approx d$	$i \approx d$	$d > i$ (mostly)
v 'abstractness' of meaning	i	$i > d$	$i > d$	$i > d$	$d > i$ (mostly)
vi semantic regularity	i	i	$d > i$	$d > i$	d
vii relevance to base meaning	i	$d > i$	$i > d$	$i > d$	d
viii applicability	$i \gg d$	$i > d$	$d > i$	d	—

* In this table, "i" means that the given class of *sja*-verbs yields a value typical of inflection if tested against the given property, and "d" that the value is typical of derivation. Since the properties at issue are themselves continuous, I used symbols ">", ">>" and " \approx " iconically when appropriate (cf. e.g. the values for applicability ranging from " $i \gg d$ " for almost unrestrictedly productive passive to "d" for the closed class of some 40 reciprocal *sja*-verbs).

Thus, the meaning of *zastrelit'sja* encompasses the component of intentionality, that is not necessarily present in its transitive counterpart *zastrelit'* "to shoot". In general, the former verb denotes a social, rather than merely a physical act.

Such non-compositional unpredictable nuances in meanings are typical of verbs that are traditionally classified as proper reflexives and reciprocals. They are almost impalpable with some verbs, but may cause significant conceptual differentiation in other cases, giving rise to highly idiomatic *sja*-derivatives, such as e.g. *videt'sja*, a quasi-reciprocal derivative of *videt'* "to see", whose actual meaning is "to meet (each other), most likely at some event and/or on purpose", and not merely "to see each other" (see also Footnote 3).

In general, Russian demonstrates a picture typical of languages with 'two-form cognate system' of reflexive / middle markers (cf. Kemmer 1993:25), namely, "[t]he heavy form (*sebja* in Russian – S.S.) is (...) quite productive; it can be used in general with transitive roots to produce a reflexive reading", while the light form (*sja* in Russian) "cannot appear with most roots to indicate reflexive meaning" (ibid.: 27).

We are now in a position to draw a summary of testing some classes of *sja* uses against the properties (iv)-(vii) from Haspelmath's list, see Table 2. Unfortunately, due to space limitations the values in most of the cells have not been properly discussed; besides, the data in Table 2 are somewhat simplified and could be further elaborated in many details. However, these data highlight a significant contrast between passive uses of *sja* and its other functions. It appears that passive *sja* consistently shows important properties typical of inflection. In particular, they denote the same propositions as their non-*sja* counterparts, their meanings are different only on a very abstract and essentially pragmatic/discourse level, passive *sja*-affixation is semantically regular

and is not relevant to the base meaning; finally, this sort of derivation is almost unlimitedly applicable to those verbs that meet the fundamental requirements on passive *sja*-formation (imperfective transitive verbs with probably further restrictions).

Other types of *sja*-verbs are quite different in that they either show a pronounced gravitation towards derivational values of observed properties (idiosyncratic *sja*-verbs) or show rather inconsistent patterns (more regular types, such as decausatives, reflexives and reciprocals).

The contrast between the passive function of *sja* and all its other functions has been repeatedly underscored in the relevant literature (Švedova 1980:616; Wiemer, *forthc.*).¹⁰ Whether the former should be ultimately treated as an inflectional process and the latter as a derivational process, is a question that largely depends on definitions; such analysis is only one of a wide range of viewpoints. The arguments presented here are not intended to underpin such an analysis. However, the essential summary of the data presented so far is that the process of *sja* affixation in Russian covers a motley spectrum of subtypes that are rather inconsistent with respect to the properties that are associated with inflection resp. word formation. In what follows a particularly puzzling sub-pattern of *sja* uses will be discussed that has not received due attention in the relevant literature.

3. 'Lexical *sja*-antipassives'

Among the types of *sja*-verbs in Russian there is a type that is often referred to as 'possessive reflexive *sja*-verbs' (Gerritsen 1990:80–85), '*sja*-verbs of (semantically) incorporated (inanimate) object' (Kretov 1978) or 'partitive object reflexives' (Geniušienė 1987). This type of *sja* use is exemplified by (10), if compared to its transitive counterpart (11):

- (10) *Ja zažmuril-sja.*
 I screwed.up-sJA
 'I screwed up my eyes' = (11)

- (11) *Ja zažmuril glaza.*
 I screwed.up eyes.ACC

Sja-verbs of this kind are intransitive verbs whose semantic representation incorporates the argument that can be used as the direct object of the corresponding transitive non-*sja* construction.

This type of use may be classified as an instance of ‘antipassivisation’ if the latter phenomenon is loosely understood as an intransitivising mechanism which either suppresses or demotes the O (transitive object) preserving the A (transitive subject), cf., e.g., Polinskaja (1986).¹¹ It is important that the direct object of the corresponding transitive verb can never be overtly expressed in the construction with what will be henceforth labelled as ‘antipassive *sja*-verbs’. It is partially illustrated by (12), in which I show ungrammaticality of three deliberately chosen imaginable ways of coding the object, but it must be understood that it can not be overtly expressed in antipassive *sja* construction in any other way either:

- (12) **Ja zažmuril-sja glaza / glazami / s glazami* (etc.)
 I screwed.up-SJA eyes.ACC / eyes.INSTR / with eyes.INSTR

The cognitive basis of this type of *sja*-derivation is a well-known process of metonymic identification of the possessor with its (inalienable) possessee that is further widened by the «metaphoric extension of inalienability to nouns whose referents are normally presumed to be alienable» (Levine 1980: 18).¹² Kretov (1978) distinguishes the following types of objects that can get semantically incorporated into *sja*-verbs of this kind:

- a. Body-parts. The corresponding group of verbs is by far the largest one; it includes for instance *naxmurit'sja* “to knit one’s brow, to frown” (cf. *naxmurit'* “to knit”), *vysmorkat'sja* “to blow one’s nose” (cf. *vysmorkat'* “to blow”), etc. (see also ex. (10)). In many cases these verbs border reflexives proper: *umyt'sja* “to wash one’s face, to wash (intransitive)”, cf. *umyt'* “to wash (transitive)”.
- b. ‘Spiritual parts’ (thoughts, attention etc.), e.g. *sosredotočit'sja* “to concentrate one’s attention”, cf. *sosredotočit'* “to concentrate”.
- c. Products of one’s creativity, e.g. *pečatat'sja* “to have one’s works published (in ...)”, cf. *pečatat'* “to publish, to print”.
- d. Several types of objects of personal use, such as clothes, money, vehicles, living places, etc.: *zastegnut'sja* “to button one’s clothes up” (cf. *zastegnut'* “to fasten, button up”), *potratit'sja* “to spend one’s money” (cf. *potratit'* “to spend”), *zapravit'sja* “to refuel one’s vehicle” (cf. *zapravit'* “to refuel”).

There are two properties of this type of *sja*-verbs that have been mentioned in the literature and that are essential for the discussion undertaken here.

First, each verb of this type presupposes a *particular type* of semantically incorporated object that is idiosyncratic for that *sja*-verb, cf.:

One may *stroit'* ("build" – S.S.) houses, bridges, clubs, roads etc., *stroit'sja* means "to build a living place, a house, an edifice for living"; (...) one may *tratit'* ("spend" – S.S.) one's money, salary, stipend, paper as well as (metaphorically) one's time, forces etc., but *tratit'sja* means "to spend one's money, (financial) means"; (...) one may *propit'* ("drink away" – S.S.) anything (without any lexical restriction), but *propit'sja* means "to drink away everything one possesses". (Janko-Trinickaja 1962: 175)

Second, this type of *sja*-derivation is a lexically restricted process, even for those transitive verbs whose expected objects are subject's (inalienable) possessors, cf. ungrammaticality of **vsklokočit'sja* (intended meaning "to tousle one's hair" from *vsklokočit'* "to tousle") or *zarobotat'sja* (this verb is ungrammatical in the intended meaning "to earn one's money" from *zarobotat'* "to earn"), although there is no principled way in which these underlying transitive verbs are different from such verbs as *zažmurit'* or *potratit'* that allow lexical *sja*-antipassivisation (see examples above).

All these facts imply that the process at issue is basically a lexical phenomenon (hence, 'lexical antipassives') that shows derivational values if tested against the properties (iv)-(viii) from Haspelmath's list. It has unpredictably restricted applicability, the verbs in this class are conceptually different from their transitive counterparts, and what is more, this discrepancy is idiosyncratic for each particular pair of verbs.

4. Grammatical *sja*-antipassives

In this section I will examine a pattern of *sja* use (henceforth referred to as 'grammatical *sja*-antipassive') that is superficially very similar to lexical antipassivisation as discussed above. However, I will try to demonstrate that the two phenomena are essentially different in a number of important ways. The discussion undertaken here is largely based on data from informal registers, so that for many speakers of Russian some of the utterances below may seem coarse or awkward. Nevertheless, these utterances form a homogeneous and productive class, which has been strangely ignored in the relevant literature. A corpus of utterances with grammatical *sja*-antipassives that I am gathering is accruing almost every day, and these utterances are not only registered in spontaneous informal conversation, but also in more planned types of discourse, such as, for example, TV news reports or academic presentations, as well as, sporadically, in written texts. Besides, introspective reports obtained from the speakers who have produced utterances of the type discussed here allow one to

conclude that they are produced in accordance with the speakers' intention, i.e. they are not slips of the tongue, but rather represent a regular, even if innovative phenomenon in the grammar of Russian that needs appropriate linguistic examination.

With this in mind, I will leave aside sociolinguistic aspects of the phenomenon (e.g. its standardness, sociolinguistic and stylistic diffusion, its possible and often intended comic effect, etc.) and will devote the remainder of this section to the discussion of this model's grammatical properties.

The phenomenon of the 'grammatical *sja*-antipassive' can be exemplified by utterances (13)–(23). For the sake of simplicity, utterances in this section are provided with more or less word-by-word translations and not with glosses as such. Irrelevant grammatical information is reduced to a minimum, and *sja*-verbs are boldfaced; the type of contextually understood object and extralinguistic comments are provided in parentheses.

- (13) *Sejčas Ekaterina Ivanova budet **perezarjažat-sja**.*
 'Now, Ekaterina Ivanova is about to **reload-sja**' (Rifle; registered in a TV-report from a biathlon competition).
- (14) *Kogda ja **pered** ètim **zapuskala-s'**, on **rabotal**.*
 'When I **launched/started-sja** just before that, it was working properly' (Computer programme; a novice user tells a serviceman about a trouble she had encountered).
- (15) – *Pojdu, **pereključu-s'**, čto li. – Da ladno, lučše **vykluči-s'** prosto.*
 '– I'll probably go and **switch.to-sja**. – 'Well, you better just **switch.off-sja**' (TV-set; in the room next door a TV-set is switched on. Suddenly, the broadcasting stops, and an almost unbearable sound of buzzer appears. The speaker wants to somehow eliminate the sound of the TV).
- (16) *Vy tam sami **zavernëte-s'**?*
 'Will you **wrap-sja** yourself?' (Purchase, buying; a saleswoman asks a customer if he could wrap up something that he had bought. The saleswoman points at the package when uttering the sentence).
- (17) *Vy čto, **obmenjat'-sja**?*
 ≈ 'Is it to **change-sja** that you have come?' (Money; a security guard of a currency exchange office is addressing a putative customer).
- (18) *Xočeš', **uberi-s'** ko mne.*
 ≈ 'You can **put.away-sja** into mine if you want' (Bag; a person with a rucksack offers his mate who is carrying an awkward plastic bag to put this bag into the rucksack).

- (19) *Ja budu stírat'sja potom.*
 'I will **launder-sja** later' (Laundry; the members of a family are using the same washing machine and have to discuss the order of its use).
- (20) *A, stabilizněm-sja!*
 'Ah, let's **stabilise-sja!**' (Winnings; the transitive verb *stabiliznut'*, literally 'to stabilise', is a novel verb introduced in a TV show in which players gain money).
- (21) *Ty čto, xočeš' vyrovnjat'sja?*
 'Are you going to **align-sja?**' (Car; a passenger asks a driver if he is going to park the car parallel to the edge of the road).
- (22) *To est' vsě ravno večerom nužno otščelknut'-sja, daže esli ty ostaěš'sja na noč.*
 'That is, you have to **otščelknut'-sja**, even if you stay for the whole night' (Magnetic card; the speaker explains his interlocutor the way one has to handle an employees' attendance to office controlling system. In the previous discourse the speaker introduces a novel transitive verb *otščelknut'*, a derivative of *ščelknut'* 'click', for a manipulation that one has to perform with the magnetic card when entering or leaving the office).
- (23) *Ne davi-s', otkroj novuju.*
 'Don't **squeeze-sja**, open a new one' (Parcel; the addressee is trying to squeeze the dregs of sour cream off an almost empty pack).

These constructions are similar to the lexical antipassives in that they can be roughly paraphrased by transitive clauses with the corresponding non-*sja* verbs. Thus, compare (23) and (24):

- (24) *Ne davi ètu pačku, otkroj novuju.*
 Not squeeze this.ACC parcel.ACC, open new.ACC
 'Don't squeeze this pack, open a new one'

The similarity extends to the fact that the direct object of the corresponding transitive construction can not be overtly expressed in the construction with grammatical *sja*-antipassives, cf. (12) above; once again I only show ungrammaticality of three imaginable patterns of coding the object, and once again other patterns are no better:

- (25) **Ne davi-s' ètu pačku / ètoj pačkoj / s*
 Not **squeeze-sja** this.ACC pack.ACC / this.INSTR pack.INSTR / with
ètoj pačkoj.
 this.INSTR pack.INSTR

However, there is an indispensable difference between lexical and grammatical antipassives, namely, the contextual nature of the semantic interpretation of the latter. It is thus not coincidental that I am providing utterances and situations and not isolated verbs in this section. Given in isolation, these verbs would not be appropriately interpreted. It can be clearly demonstrated by the fact that one and the same antipassive *sja*-verb may get discrepant interpretations as to what is its implied argument depending on the context, see examples (26)–(29):

- (26) *Nu davaj, Lenka, zakryvaj-sja.*
 ‘Well, Lenka, close-*sja*’ (Door; the addressee stands in the doorway of a flat from which the speaker has just come out).
- (27) *Xorošaja xozjajka zakryvaet-sja rafinirovannym.*
 ‘A good housewife closes-*sja* with the help of refined (oil)’
 (Jar; = ‘Uses refined oil for impermeabilisation of the jars’; registered in a TV-advertisement of refined oil).
- (28) *Uže zakryvat’-sja pora.*
 ‘It is time to close-*sja*’ (Computer programme; = ‘it is time to close/stop the computer programme’).
- (29) *Nu čto, zakroem-sja.*
 ‘Well, let’s close-*sja*’ (Playing cards; in a card game, in which cards could be either ‘opened’ or ‘closed’, that is, kept unshown to other players).

Thus, unlike lexical antipassives, grammatical antipassives do not seem to show any tight connection between the verbal lexeme and the type of implied object. Correct interpretation of these utterances is made possible by the context (in the broad sense of the word). I will side-step probably the most intriguing side of this phenomenon, that is, those pragmatic stipulations that urge speakers to use these *sja*-constructions instead of more usual transitive clauses (this topic is discussed at great length in Say, *forthc.*). For the purposes of this study it will suffice to say that speakers tend to use grammatical *sja*-antipassives in those cases when the pairing of the Actor and Undergoer has been established beforehand (contextually, deictically or based on the common knowledge of the extralinguistic reality), and the latter is unimportant for the discourse (has low topicality and persistence in Givón’s terms, see e.g. 1990: 570 and a further reference therein). Given the informal character of the speech situation, this pragmatic unimportance enables speakers to iconically suppress the argument, regardless of whether this might-have-been direct object is semantically definite (16), (18), (21), (23), referential indefinite (17), (22) or non-referential (19), (27).¹³

These pragmatic functions of the grammatical antipassive do impose certain lexical restrictions on the use of this model. These restrictions are not discussed here in much detail, but basically they are of the same order as the restrictions on the formation of *sja*-passive. For instance, grammatical antipassive constructions are almost never used when the second participant is animate, which nicely fits the general motivation of this construction outlined above, i.e. elimination of unimportant objects. Accordingly, it is very unlikely to encounter *sja*-antipassives of such transitive verbs that normally take animate objects (e.g. *ubit* 'to kill' or *kormit* 'to feed'). Another example of a severe restriction on the productivity of *sja*-antipassive is that it is only possible with verbs of action, which is also true for *sja*-passive. Thus non-action transitive verbs, such as for example *stoit* 'to cost', *znat* 'to know', *prevosxodit* 'to surpass, to exceed' etc. are never used in *sja*-passive and *sja*-antipassive constructions.

However, there seem to be no idiosyncratic, arbitrary lexical restrictions on the applicability of the grammatical antipassive *sja* use, at least I cannot trace any on the basis of the corpus of utterances with *sja* antipassive that I have registered in oral speech. This unrestrictedness is obliquely indicated by the fact that some of the base transitive verbs used in *sja*-antipassivisation are neologisms themselves (20), (22).

It is absolutely crucial that the grammatical antipassive *sja*-verbs retain all semantic arguments of the base verb, the difference being that in the antipassive clauses the second argument (\approx Undergoer) is not overtly expressed and remains a semantic variable to be interpreted on the level of the discourse. The function of *sja* in these cases is precisely to mark on the verb the elimination of direct object. It must be stressed once again that grammatical antipassive *sja*-verbs are different from lexical antipassives in this respect, since in lexical antipassives there is no semantic variable that has the role of Undergoer and *sja* signals incorporation of a *particular* type of the original direct object into the meaning of the verb.

Thus, grammatical antipassive is a diathetic permutation of a transitive construction, that is, a 'function-changing' (as opposed to 'event-changing', see Haspelmath 2002:218) or 'morphosyntactic' (as opposed to 'morpholexical', see Sadler & Spencer 1998:208ff.) operation. Verbs under grammatical *sja*-antipassivisation are conceptually identical with their transitive base verbs, the meaning of the diathetic change is rather regular and abstract (its function is pragmatically-driven), and the process presumably has no arbitrary restrictions on applicability. In other words, the process of grammatical *sja*-antipassivisation shows important properties that are tightly associated with inflection.

5. Lexicalisation of antipassives

In the two preceding sections the contrast between lexical and grammatical poles of *sja*-antipassivisation was presented in a rather black-and-white manner, which is important for rhetorical reasons but gives a somewhat simplified view on the overall complexity of *sja*-antipassives. We are now in a position to briefly tackle some processes that take place on the borderland between the two phenomena.

It has been repeatedly noticed in the literature, that “one of the mechanisms for semantic change in grammaticization is the conventionalization of implicature, by which a frequently-occurring inference that a hearer is licensed to make beyond the explicit meaning of an utterance becomes part of the explicit meaning” (Bybee 1994:240). This type of semantic development is probably even more typical of lexicalisation, a process that generally shares many properties with grammaticalisation. It is no wonder that such a conventionalisation of implicature is shown by some instances of what originally used to be a grammatical antipassive *sja* construction, that is, a construction whose essence is by definition an implicature. In other words, there are antipassive *sja*-verbs that seem to lexicalise in a certain speech community, in that the interpretation of the implied object gets fixed in that community and does not require specific pragmatic prerequisites typical of grammatical antipassives.¹⁴

Several examples are necessary. *Sdavat'*, literally “to hand in”, is a verb that is used – among other uses – in such collocations as e.g. *sdavat' èkzamen, začët* (or the like) “to pass an exam, test etc”. In some (student) communities, the verb *sdavat'sja* is regularly used in this latter meaning. *Podat'* is a polysemous verb roughly meaning “to give (to)”, the verb *podat'sja* got to mean “to submit a paper / an abstract” for some young people involved in academic activities; *gasit'* is “to put out, to extinguish”, *gasit'sja* is regularly interpreted as “to put out the light (most likely before going to bed)” in informal family communication of some speakers. *Zabit'* (literally “to hammer in”) is used in an utterly substandard idiom *zabit' strelku*, literally, “to hammer in the hand (of a watch)” that means “to make a date”. This latter meaning can be compactly expressed by an even more substandard *zabit'sja*.

Sja-verbs like those quoted in the previous paragraph can easily emerge and receive conventional interpretation for the speakers in a certain speech community and remain understandable or only contextually understandable for other speakers of Russian. In the process of conventionalisation antipassive *sja*-verbs acquire properties that have been described for *lexical* antipassives above, i.e. they no longer involve a semantic variable that is inter-

preted contextually as a might-have-been direct object of the corresponding transitive non-*sja* verb. These secondary lexical antipassives are only different from those discussed in Section 3 in that they do not necessarily meet the restrictions on types of incorporated objects, i.e., these conventionally understood objects are not necessarily (quasi-)inalienable.

6. Discussion

In this paper, I have examined the ways in which the characteristics that had been claimed to be defining criteria / concomitant properties / epiphenomena of the inflectional vs. derivational status of a morphological process are distributed among the various uses of *sja*-affixation in Russian, a process of notorious grammatical complexity. Central for the discussion undertaken here were the two types of *sja*-verbs that are conventionally labelled here as *lexical* and *grammatical antipassives* correspondingly. The essence of the two processes can be somewhat loosely devised by the following formulae: lexical antipassive *sja*-verb *V-sja* means “to V an object of the type A” where A is a semantic constant idiosyncratically assigned to the verb V, while grammatical antipassive *V-sja* means “to V an object X” where X is a semantic variable whose reference is identified in the context.

The two processes are very similar to each other in terms of *coding* the participants of real-world events. Most likely, grammatical *sja*-antipassivisation is diachronically tightly related to lexical antipassivisation being a result of an extension of productivity of the latter process.¹⁵ However, despite all similarity, the two processes show for the most part opposite values of the properties associated with inflection vs. derivation dichotomy. As the very terms proposed here imply, lexical antipassives show many of the properties of derivation and grammatical antipassives show many of the properties of inflection.¹⁶

However, numerous cases of on-going lexicalisations are an evidence of a dynamic interplay between the two processes. Basically, the distinction between lexical and grammatical antipassives appears to be a distinction between the types of *strategies* that speakers use when producing and interpreting these *sja*-forms. If the implicit object is contextually omitted (e.g. for reasons of economy) and the hearer is forced to make a pragmatic inference *ad hoc*, the construction has to be qualified as an instance of grammatical antipassive. But if the object is viewed by the speaker as inherent / conventional for the given lexeme, we have to postulate a case of lexical antipassive.¹⁷ Thus, ultimately, *one and the same* antipassive *sja* construction may appear to be a lexical antipassive

for one speaker, and a grammatical antipassive, for another (or, theoretically, even for the same speaker at another moment of time).

The last statement actually comes as the final theoretical conclusion of this paper. Once again, it has *not* been my goal to put forward an argument for a certain view on what is inflection and what is derivation in the realm of the Russian *sja* affixation. Rather, my goal was to demonstrate that absolutely crucial discrepancies in the distribution of properties that are thought of as criteria of inflection and derivation can not only cross-cut a polyfunctional process of affixation, but also a semantically homogeneous fragment of such a process, or even different instances of use of one and the same linguistic form, depending on the type of mental mechanisms that stand behind that use.

Notes

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1. Throughout, I use the term '*sja*-verbs' as a cover term that encompasses all the forms of Russian verbs with *sja* affix, regardless of whether they have to be treated as inflectional or derivational counterparts of the corresponding non-*sja* forms. This term is deliberately chosen among traditional labels, for the lack of a better, non-interpretative, solution (*sja*-forms is no better, since it implies inflectional interpretation of the phenomenon no less than traditional '*vozvratnye glagoly*', literally 'reflexive verbs', implies derivational interpretation).

2. I am not discussing prefixal *sja*-verbs, that is, verbs that are derived from their bases by the simultaneous prefixation and *sja*-affixation, e.g. *raz-bežat'-sja* "to make a running approach" or "to run to different places", cf. *bežat'* "to run", but **bežat'sja*, **razbežat'*. Semantically, such verbs are similar to those in subtypes 2 and 3 in the main text.

3. This contrast is sometimes disregarded in the relevant literature. For instance, one can often find *drat'sja* "fight (each other)" under the rubric of reciprocal *sja*-verbs, which is not accurate, since *drat'sja* is not a reciprocal derivative of the polysemous verb *drat'* "to tear to pieces", although there is indeed a reciprocal component in the meaning of *drat'sja*. Numerous examples of other quasi-reflexives, quasi-reciprocals, quasi-decausatives etc. can be found in the literature and dictionaries.

4. Unfortunately, the assignment of [+/-] values of inflectional and derivational properties inevitably involves a certain degree of simplification. With respect to this first criterion it partially follows from the short discussion of the role of syntax in *sja*-affixation (see preceding passage in the main text). Besides, there are some further complications. For instance, although *sja*-affixation is indeed almost always relevant to the syntax, one can find a number of *sja*-verbs that are almost synonymous to, and do not deviate in their syntactic behaviour from, their non-*sja* counterparts, e.g. *belet'sja* “to show white” \approx *belet'* (in one of its meanings).
5. One could expect *sja* to appear not in the word periphery in deverbal nouns or adjectives; however, *sja* is simply never used (left out) in such lexemes even if they are semantically and formally derived from *sja*-verbs, cf. *stremi-enie* (strive-ACT.NOUN) “aspiration, striving” < *strem-it'-sja* (aspire-INFIN-*sja*) “to aspire, to strive”.
6. Further types of valency-affecting *sja*-derivatives include ‘conversive’, ‘impersonal’, ‘potential passive’, ‘absolute’ and ‘synonymous’ (see Footnote 4). For the sake of simplicity, in the remaining part of Section 2 I will only discuss reflexive, reciprocal and decausative functions of *sja* and compare those functions to *sja*-passives. There are at least two more important functions of *sja*; these are discussed in great detail in the following sections.
7. It must be borne in mind that sometimes several (homonymous) *sja*-verbs differing in their functions could be derived from one and the same transitive verb.
8. The latter constraint has been recently called in question by Percov (2003) who examines the phenomenon of occasional *sja*-passivisation of perfective verbs and relates it to the general problem of ‘(non)-existence’ in morphology.
9. This view has been criticised by Gerritsen, whose basic claim is that Russian *-sja* has an invariant function, namely, the function of “the assignment of an extra role as compared to NR (non-reflexive construction, that is, non-*sja* construction in my terms – S.S.)” (1990:276). In particular, with respect to the passive function of *sja*, Gerritsen observes (not indisputably) that it “cannot be interpreted ‘actually’” and notices that “[m]ost of the time ‘passive’ *-sja* sentence is iterative; in a number of cases other extra nuances are present – for instance, the sentence depicts a hypothetical event, or the event is the consequence of certain properties of the subject” (ibid.:7). From these observations Gerritsen further concludes that “[t]he presence of this extra nuance points to an extra level, present over and above the concrete action. On this extra level the subject (being a patient on the level of the concrete action) may be said to have an extra role: it is his presence (iterative), his nature or properties which are the cause of the fact that the action is carried out”. I would agree that the very use of the passive voice is usually indeed triggered by something unusual in the discourse status of the patient, which drives the speaker to put it into syntactically prominent position of the subject. However, I don’t see any reasons to consider this pragmatic and syntactic stress on the patient as “the assignment of an extra role”.
10. This contrast is also echoed in lexicographic practice, in that passive *sja*-verbs are never given independent glosses and are explicated by reference to their non-*sja* counterparts, while other types of *sja*-verbs usually get their own semantic interpretation.

11. There are linguists who understand antipassivisation more narrowly acknowledging this phenomenon only in languages with ergative alignment, where demotion of the object is accompanied by the concomitant ergative-to-absolutive promotion of the original A.
12. Cf. Zribi-Hertz's discussion of the French phenomenon parallel to the Russian lexical antipassives (N_1 is the semantically incorporated object): "dans tout une série de cas, le N_1 approprié est un nom de partie du corps (...). [N]ous relevons par ailleurs parmi les N_1 (...) des substantifs apparemment assez peu nombreux, (...) tels que *vie, comportement, nature, sentiments* (...), dont l'analyse détaillée révèle qu'ils partagent plusieurs propriétés remarquables avec les noms de parties du corps inaliénables" (1978: 121).
13. It is curious that the Russian grammatical antipassive (as well as the lexical antipassive discussed above) is not associated with the cross-linguistically prevalent function of antipassives, namely, signalling generic or unspecified objects (Heath 1976; Cooreman 1993). However, there is a handful of the so-called 'absolutive' *sja*-verbs in Russian that are used in exactly this function, i.e. no affected entity is coded in the constructions with these *sja*-verbs, so that the whole construction expresses the meaning of a characteristic property of the subject rather than a particular instance of a real-world event, cf. *èta sobaka kusaetsja* (literally 'this dog bites-*sja*') 'this dog bites (is a biter)'. Absolutive *sja*-verbs constitute the third and last (by far the smallest) group of *sja*-verbs in Russian that meets Polinskaja's definition of antipassive adopted in this paper (along with 'lexical antipassives' and 'grammatical antipassives' discussed in the main text).
14. Cf. "Not infrequently a morphosyntactic operation becomes a morpholexical operation in historical change (lexicalization). As a result of this one and the same piece of morphology may realize a morphosyntactic operation in one language / dialect and a morpholexical operation in a closely related language / dialect" (Sadler & Spencer 1998:212).
15. Diachronic links between reflexives proper, possessive reflexives (\approx lexical antipassives) and object-demoting constructions (\approx grammatical antipassives) are widely discussed in the literature. An insightful notion that seems to offer a unified semantic account of possible diachronic relations between such constructions is 'non-distinction of arguments', cf., e.g., Langacker (1976).
16. In a certain way, the contrast between lexical resp. grammatical antipassive is reminiscent of that between passive and decausative functions of *sja* (I want to thank Christian Lehmann for that intriguing remark proposed at the conference in Vienna). Whether there is any theoretical relevance of the fact that in both cases it is the function with lower text frequency (passive and grammatical antipassive correspondingly) that shows more properties of inflection needs further exploration.
17. The fact that I do not intend to offer an analytical technique for teasing apart these two possibilities when examining particular utterances and even doubt that such a technique can be offered should not undermine the theoretical relevance of the contrast discussed.

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Slavic prefixes as State morphemes*

From State to change-of-state and perfectivity

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1. Introduction

This paper treats Slavic prefixes as morphemes introducing an event value of State, which allows preserving a direct link with the locational use of their homophonous prepositions. I claim that the directionality of spatially prefixed verbs, and the change-of-state of prefixed verbs in general, arises when the event value of the prefix is evaluated with respect to its opposition, which happens when a verbal stem and a State prefix are combined. It is thus claimed that prefixes on verbs of directed motion are not directional themselves. Moreover, I argue that the perfectivity of prefixed verbs with an imperfective base is a consequence of the presence of a prefix-introduced result state/change of state. In other words, I claim that the correlation between a prefix (derivation) and the verb's perfectivity (an inflectional category) is only indirect, and can be explained in terms of the prefix's introduction of a State, which is interpreted as a result state/change of state after event composition. Finally, I show that not all prefixes introduce a State, and that not all prefixed verbs are perfective.¹

Section 2 presents the model as well as the data that motivate the view of prefixes as State morphemes. Section 3 disputes the claim that inceptive *za*-verbs do not represent result-state verbs. Sections 4 and 5 discuss two further sets of possible counterexamples, 'manner prefixes' and Source-prefixes, showing that these also yield to the analysis proposed. Finally, Section 6 argues that the attenuative ('pofective') *po*- is a crucially different prefix and that *po*-verbs are not perfective, thereby saving the generalization that a prefix's (result) State always triggers perfectivity.

2. Event-structure value of prefixes & event structure of prefixed verbs

I adopt an event structure model in the spirit of Pustejovsky (1991), with three basic event types – T(ransition), S(tate), P(rocess) – and rules of event composition. While S and P are simple event types, T is a combination of two (sub)events, say, S_1 and S_2 , where one of these, e.g. S_1 , is the logical opposition of the other one. A result state – such as that denoted by the adjective *flat* in the resultative complex predicate *hammer the metal flat* – is seen as denoting a subevent of type S and *hammering* as denoting a subevent of type P. Combining the two subevents triggers event composition, in which the S composes with the other subevent and is, by an inference procedure, interpreted relative to its logical opposition, $\neg S$. This yields a complex predicate of type T, containing a change of state/transition from $\neg S$ to S or from S to $\neg S$. In other words, it is due to event composition that the S subevent is interpreted as a result state.

In parallel to the English *run away* (cf. Pustejovsky 1991), I view the Slovenian prefixed verb *od-laufati* (lit. away-run) as combining an S event denoted by the prefix and a P event denoted by the verb root, (1). Putting the two together triggers event composition, i.e. the evaluation of S relative to $\neg S$ and P. The output is a T, a change-of-state predicate.

- (1) a. *run* (P) + *away* (S) \rightarrow *run away* (T)
 b. *od-* (S) + *laufati* (P) \rightarrow *od-laufati* (T)

Note that locational prepositions can also be seen as denoting simple two-place relational predicates of type S. However, when they are not combined with another predicate, they will not be evaluated relative to their opposition and the other subevent, there will be no event composition and no new, change-of-state/T predicate.

In view of such an approach, one may wonder whether the prefix in (1b) could not have an event-structure value of either P or T, especially since Slavic prefixes are often seen as ‘directional’ (e.g. Muha 1993; Merše 1995; Žele 2001; Filip 2003). If the prefix were P, prefixed-verb predicates would not be delimited, contrary to standard views (e.g. Brecht 1985), since the composition of P and P does not yield a T/change of state (Hout 2000). But if the prefix lexically denoted a T (as in Hout 2000: 415), event composition would still yield a change of state, since lexical T’s include a S subevent. Nevertheless, I will argue that the event structure of prefixes is S, not T.

Consider the meanings of homophonous preposition–prefix pairs. Since prepositions often have both a locational and a directional use (e.g. *v* ‘in, into’) and since some prefixed verbs (e.g. *v-teči* ‘run in’) denote directed-motion

events, it is often said that (some) such prefixes are directional (cf. above). This may imply that the directionality of directed-motion verbs stems from the prefix's directional semantics.

Copular predicates can be used to test whether a preposition has a stative/locational use. For example, *Črt je iz forme* 'Črt is out of shape' (lit. Č. AUX out-of shape) shows that besides its more frequent directional use, *iz* 'out-of' also has a locational use. In fact, although this is not always obvious at first sight, all Slovenian prepositions that have homophonous prefixes² pass the copular test and thus exhibit a locational use (Žaucer 2002). On the other hand, one preposition with a homophonous prefix, i.e. *pri* 'at', *only* has a locational but no directional use; in directional PPs, *pri* is replaced by *k* 'to', (2). And although *pri* only has a locational meaning, *pri*-prefixed verbs always have a directional interpretation, (3).

- (2) *Juš je šel k reki / *pri reki*
 Juš AUX went to river / at river
 'Juš went to the river'

- (3) *Črt je pri-nesel sekiro.*
 Črt AUX at-carried axe
 'Črt brought an axe [to a discourse-specified location] / *carried an axe at [a discourse-specified location]'

Therefore, if we claim that the directionality of (3) stems from directional semantics of the prefix, we detach the prefix *pri-* from its homophonous preposition *pri*; *pri* would only have a locational meaning, *pri-* only a directional meaning. Such detachment is theoretically undesirable, especially since our event-composition model offers to treat *pri* and *pri-* uniformly. Simply, the prefix *pri-* gets the meaning of its cognate preposition, i.e. the locational meaning 'at', while the 'directionality' of *pri*-prefixed verbs, as in (3), is only an inferential interpretation of the change of state that arises in event composition when the S subevent, BE[AT], is interpreted relative to its opposition, [¬BE[AT]], and the P subevent introduced by the verb stem. Moreover, *k* 'to', as in (2), is a rare monosyllabic preposition with no cognate prefix **k-*. Now, by claiming that Slavic prefixes are locational, while the verb's directionality is really just the event-composition's change of state, we have in fact predicted – correctly – the absence of a prefix **k-*: directional-only prepositions (in Slavic) will not have cognate prefixes.³

Therefore, I generalize that (perfectivity-associated) prefixes have locational semantics. They introduce a S, and event composition yields a change

of state. In the absence of imperfective inflection (*-va-* or its allomorphs), this change of state triggers perfectivity. Prefix-triggered perfectivity is thus *always* a result of a change of state. But the fact that all prepositions with cognate prefixes have a locational use only means that they all *can* introduce a S (leading to a change of state), not that they all *always do*. That is, all such prefixes can and do occur on perfective-turned verbs, but some also attach to verbs that, after prefixation, remain imperfective, in which case they do not introduce a S (cf. Section 6).⁴

Note that I do not claim that *all* perfectivity results from a change of state. Perfectivity can also be encoded in the inflectional suffix *-ni-*. The crucial difference between the two mechanisms reveals itself with respect to unselected objects. It is by now standard to see these as licensed by the result state introduced by an adjective or particle in English (Rappaport Hovav & Levin 2001) or by a prefix in Slavic (Spencer & Zaretskaya 1998a). In view of *misлити* (**načrt*) ‘think (**the plan*)’, the unselected object in *pre-misliti načrt* ‘think the plan over’ is thus seen as evidence of a prefix-introduced result state. Now, direct/inflectional perfectivity-encoding does not license unselected objects, *hrk-ni-ti^p* (**se*) (lit. hawk self) ‘hawk’, while indirect encoding via State-prefixes does, *od-hrk-ni-ti^p se* (lit. off-hawk self) ‘(relieve oneself by) hawk(ing)’. Therefore, we cannot simply consider prefixes as grammaticalized, inflectional perfectivity morphemes (cf. Filip 2000). They only trigger perfectivity via their introducing a State.

Two closely related proposals are Spencer & Zaretskaya [S&Z] (1998a) and Strigin & Demjjanow (2001). S&Z show that prefixes on verbs which license unselected objects introduce a result state, but they exclude prefixes such as the inceptive *za-*. Strigin & Demjjanow claim that *all* prefixes contribute a state, which is either terminated or initiated (or both), as their underspecified meaning. I assume with both of these proposals (also Brecht 1985) that the change of state of prefixed verbs is entailed, i.e. triggers perfectivity, unless the imperfective *-va-* is present, in which case it is only implied. Note that such a view forces a distinction between the concept of change-of-state and quantization.^{5,6} As to the claims about the prefix-introduced result state, however, I will argue that S&Z’s position is overrestrictive and that of Strigin & Demjjanow is overgeneralizing.

3. Inceptive prefix *za-*

This section looks at the inceptive prefix *za-* on verbs such as *za-laufati*^P ‘start running’ (the spatial meaning of its cognate preposition is ‘behind’). *Za-* is typically considered a phasal ‘mode of action’ prefix (e.g. S&Z 1998a; Muha 1993; Brecht 1985). S&Z thus exclude it from result prefixes, saying that the inceptive *za-* is a case of “adjunct-type modification of the basic event type” (op.cit.:25). Since inceptive *za-* prefixation triggers perfectivity on imperfective stems (e.g. *laufati*^I ‘run’ vs. *za-laufati*^P ‘start to run’), *za-* could be problematic for the claim that prefix-triggered perfectivity stems from the presence of a result state.

Although S&Z give no Lexical Conceptual Structure for inceptive *za-*verbs, they provide the LCS for *za-*’s ‘logical opposite’, i.e. the terminative phasal *do-*, such as in the Russian *do-čitat*^P *stat*[’]*ju* ‘finish reading the article’, (4a). Extrapolating from (4a), we can assume that a S&Z-style LCS for *za-špilati*^P ‘start playing’ would be as in (4b).

- (4) a. [FINISH(x) [READ(x,y)]] (S&Z 1998a:25)
 b. [START(x) [PLAY(x)]]

If this LCS is correct, we could expect perfective *za-*verbs to behave in parallel to the combination of the aspectual perfective verb *začeti*^P ‘begin/start’ and an infinitival complement. The same holds for Verkuyl (1999), who sees *za-* as a VP-embedding aspectualizer like *start/begin*. However, this prediction is not borne out regarding compatibility with the restitutive adverb *nazaj* ‘back’, (5), and with result-state adverbials, (6)–(7).⁷ And since restitutive adverbs and result-state adverbials are licensed when the meaning of the constituent they combine with includes a result state (Piñón 1999), (5) and (6) show that inceptive *za-*verbs must contain a result state in their denotation. The prefix introduces a State, interpreted as a result state due to event composition. Moreover, with the change of state, *za-*verbs get quantized, rejecting further quantizers such as durative adverbials. Their admitting result-state adverbials, then, which are also quantizers, clearly shows that *za-*verbs contain a stative subevent, which the result-adverbial quantizes. As to their morphosyntax (cf. Ramchand 2003), *za-*verbs would be unaccusatives, which explains the absence of unselected objects despite the presence of the result state.

- (5) *Juš je nazaj za-laufal*^P / **začel*^P *nazaj laufat*
Juš AUX back back ZA-ran / began back to-run
 ‘Juš broke back into a run’

- (6) Črt je za-laufal^P za deset minut
 Črt AUX ZA-ran for ten minutes
 ‘Črt broke into a run for ten minutes (a ten-minute run)’
- (7) *Črt je začel^P laufat za deset minut
 Črt AUX started to-run for ten minutes

4. Filip’s (2003) “manner prefixes”

Filip (2003) states that prefixes such as in (8b) add a manner component ‘unintentionally, inadvertently, by mistake’. Given that the unprefixed base is imperfective, (8a), while the prefixed version is perfective, (8b), this could be a case where perfectivity comes with a prefix but does not stem from a result state. Therefore, (8b) could be a problem for our proposal. However, (8a) and (8b) also differ as to the unselected object *se* ‘self’, impossible in (8a) and obligatory in (8b). Drawing on S&Z (1998a:22–23), I submit that the prefix introduces a result state, which licenses the reflexive, and the adverbial modification is a pragmatic inference. The state of being *za-* (‘behind x’) is metaphorized as something unpleasant, e.g. trouble, and since one typically does not get oneself into trouble on purpose, there is an inference that the ‘talking’ was done ‘inadvertently, by mistake’ (cf. the English *talk oneself into a corner*, where *corner* is metaphorized as trouble and a similar inference of inadvertence obtains). Of course, the metaphor whereby being ‘behind x’ means being in trouble can be lexicalized, in individual *za-*verbs or in *za-* itself, and so can the inferential ‘inadvertence’. But this does not mean that the prefix does not, quite regularly, introduce a result state, which triggers perfectivity.

- (8) a. *govoriti*^l (**se*)
 talk REFL
 ‘talk’
- b. *za-govoriti*^P *(*se*)
 behind-talk REFL
 ‘get oneself in trouble by talking’

5. Filip's (2003) Source-prefixes

Based on the general ban on double quantization and their compatibility with a quantizing expression such as '10 meters', Filip (2003) argues that some Source-prefixes, (9), unlike Goal-prefixes, (10), are directional and do not quantize the input verb. Such verbs, then, could contain no change of state; but since the Source-prefix in (9) still turns the imperfective *laufati*^I 'run' perfective, *od-*verbs – if indeed without a result state – refute our analysis. However, the ban on '10 meters' that Filip notes for Goal-prefix verbs, (10), does not stem from the prefix, as it also holds for their unprefixated variants, (11). In fact, the contrast in (9)–(10) even holds in copular predicates with the same PPs, (12), which are stative and clearly without a change of state. So, the contrast with respect to '10 meters' in (9)–(10) may say little about the quantization or change-of-state properties of *pri-laufati*^P (at-run) and *od-laufati*^P (away-run). Indeed, if (9), without '10 meters', is non-quantized, why does it reject durative adverbials?

- (9) *Od-laufal*^P *je* (10 *metrov*) *od hiše*
 away-ran AUX 10 meters from house
 'He ran (10 meters) away from the house'
- (10) *Pri-laufal*^P *je* (*10 *metrov*) *k hiši*
 at-ran AUX 10 meters to house
 'He ran (*10 meters) to the house'
- (11) *Laufal*^I *je* (*10 *metrov*) *k hiši*
 ran AUX 10 meters to house
 'He ran (*10 meters) to the house'
- (12) *biti*^I (10 *m*) *od hiše* / *biti*^I (*10 *m*) *pri hiši*
 be 10 m from house be 10 m at house
 'be (10 m) away from the house' / 'be (*10 m) at the house'

In fact, *od-laufati*^P – just as its English equivalent *run away* – *does* contain a change of state and *is* quantized. Consider VP-coordination with *laufati*^I 'run': a natural reading for (13) is that of a single (long-lasting) running event. 'Running', then, is cumulative, 'running' plus 'running' is still 'running'. In contrast, VP-coordination with *od-laufati*^P 'run away', (14), cannot refer to a single event of running (far) away but only to two events of running away. In other words, 'run away' plus 'run away' can only equal 'run away twice' and not simply 'run (far) away', so *od-laufati*^P 'run away' is non-cumulative and thus quantized. Moreover, *od-* licenses unselected objects, (15), showing that it indeed intro-

duces a result state. *Od-* is thus not directional, it introduces a state, which in turn triggers perfectivity.

- (13) *Juš je laufal^l in laufal^l*
 Juš AUX ran and ran
 ‘Juš ran and ran (= ran a lot, ran far)’
- (14) *Juš je od-laufal^P in od-laufal^P*
 Juš AUX away-ran and away-ran
 ‘Juš ran away and ran away (= ran away twice)’
- (15) a. *misliti^l (*težave)*
 think problems
 ‘think (*problems)’
 b. *od-misliti^P težave*
 away-think problems
 ‘think problems away’

So, if *od-laufati^P* ‘run away’ is quantized, what does ‘10 meters’ quantize in (9)? I claim that it modifies the predicate ‘away’, by picking out a point somewhere in the extension of ‘away-ness’.

Depending on the syntactic position, non-verbal predicates may or may not affect the quantization of verbal predicates. For example, unlike *legs*, the nominal predicate *2 legs* is quantized; *2 legs* and *2 legs* equals *4 legs*. *Having 2 legs*, though, is a non-quantized verbal predicate; it admits a quantizing adverbial, *have 2 legs for 10 years*, and *Jill having 2 legs* and *Jill having 2 legs* still equals *Jill having 2 legs*, not *Jill having 4 legs* or *having 2 legs twice*. Similarly, unlike *away*, *2 meters away* can be seen as a quantized adverbial predicate; *2m away* and *2m away* equals *4m away*. But *being 2 meters away* is a non-quantized verbal predicate; it accepts a quantizing adverbial, *be 2m away for 2 hours*, and *Jill being 2m away* and *Jill being 2m away* still equals *Jill being 2m away*.

Thus, (9)’s admitting ‘10 meters’ but not the durative adverbial ‘for 10 hours’ shows exactly that the quantized *od-laufati^P* ‘run away’ contains a result state, whose non-verbal predicate *od-* ‘away’ the modifier ‘10 meters’ quantizes.⁸ Such *od-*verbs, therefore, do not support Filip’s (2003) view that perfectives can be non-quantized. The change-of-state is entailed, which means that such perfectives are quantized. Accordingly, they do not admit durative adverbials, which would be illicit double quantization. Our change-of-state-perfectivity correspondence is thus preserved. Finally, the contrast in (12) reflects the fact that *at* really means ‘right at’. While *a bit away* and *far away* are both fine, we can only specify *at* as *right at* but not as **a bit at*. *At (x)*, unlike

away (from x), is thus a quantized prepositional predicate, but *be at* (x) is a non-quantized verbal predicate that can be quantized into *be at x for 2 hours*.⁹

6. Attenuative vague-measure *po-* ('pofective' *po-*)

If verbs like *po-sedeti* 'sit for a little while', based on the imperfective *sedeti*¹ 'sit', are perfective, as is standardly considered (Muha 1993: 174; Herrity 2000: 209; Brecht 1985: 15; Fowler 1996: 105–107; cf. Filip 2000), then my account predicts that *po-* contributes the meaning of 'for a little while' and a (result) state triggering perfectivity. But given its meaning of 'for a little while', what kind of state could *po-* denote? A state both initiated and terminated (cf. Strigin & Demjanow 2001: 63), i.e. a transition from absence of state to the state and back to its absence? This seems odd, and our model of event composition is actually unfit to derive this. However, Depraetere (1995) has advocated a distinction between 'boundedness', i.e. the presence of actual temporal boundaries as introduced by durative adverbials, and the presence of a change of state/result state. On this view, (16) denotes a bounded event with no change of state, while (17) denotes a bounded event with a change of state.

(16) *He ran from three to five*

(17) *He ran into the room*

In contrast, Filip's (2000) quantization collapses this distinction and treats both durative adverbials and delimiting PPs/prefixes as quantizers; the distinction between (16)–(17) is thus wiped out. Drawing on Depraetere, I argue that *po-* is a degree adverb introducing no state, that *po-*verbs are not change-of-state predicates and that they are *not* perfective; they are bounded and imperfective.¹⁰ Consider the adverbial tests in (18).

(18) *Juš je po-sedel par minut / *v par minutah / *za par
Juš AUX PO-sat a-few minutes / in a-few minutes / for a-few
minut
minutes
'Juš sat for a while, for a few minutes'*

The impossibility of the time-span adverbial suggests that the *po-*predicate is not perfective, since such adverbials generally pattern with perfectives, and the impossibility of the result-state adverbial suggests that the predicate contains no result state. In contrast, the acceptability of the durative adverbial suggests

Table 1. Filip's (2000:53) additional im-/perfectivity tests, bounded imperfectives and *po*-added

	perf.	impf.	bounded impf.	'po'
OK with point adverbials (<i>right now</i>)	–	+	–	–
future time reference in present tense	+	?	?	?
OK with phasal verbs (<i>start</i>)	–	+	–	–

that the *po*-predicate is imperfective, since such adverbials in general pattern with imperfectives. Now, Filip (2000:52–53) still concludes that – adverbial tests aside – *po*-verbs behave like perfectives, and should thus not be seen as fitting in neither the perfective nor the imperfective class, but rather as genuine perfectives. However, Filip only compares perfectives to bare imperfectives. And if we add the category of bounded imperfectives, as in *laufati¹ od dveh do petih / tri ure* 'run from two to five / for three hours', *po*-verbs as in (18) indeed turn out to pattern with bounded imperfectives, as shown in Table 1.¹¹

At the same time, *po*-verbs and change-of-state prefixed perfectives exhibit a further difference which warrants their distinct treatments. Smith (1999) shows that explicit temporal boundaries need not coincide with the beginning or termination of the event. Durative adverbials only specify the minimum duration, and while the latter is typically interpreted as the exact duration, this is just a pragmatic inference; therefore, a sentence such as *Mary worked for two hours* can be felicitously continued with ... *and she went on working for a while* (Smith 1999:484), i.e. there can be direct continuation of the event without there having been any interruption. In the same way, (19), with an imperfective 'sit' and a durative adverbial, allows an uninterrupted continuation of the event, showing that the predicate, though bounded, contains no right-edge change of state (similarly, with regard to the left edge, the 'sitting' could have started before three without being interrupted at three).

- (19) *Juš je sedel^l od 3h do 4h, in pol je še kar naprej*
 Juš AUX sat from 3 to 4 and then AUX still PTCL further
sedel^l
 sat
 'Juš sat from three to four, and then he just went on sitting'

Applying this to *po*-verbs, (20) shows a sentence compatible with the scenario where the sitting had started before the left-edge temporal boundary of the *po*-predicate and continued into the sitting denoted by the *po*-predicate without any interruption. Similarly, (21) shows a sentence compatible with a scenario where the *po*-predicate's bounded event of sitting continues without inter-

ruption beyond its temporal boundary. However, since the change-of-state of prefixed perfectives is entailed, the *po*-sitting events of (20)–(21) should be incompatible with readings without any interruption if *po*-verbs were really perfective. Our *po*-predicates are thus bounded imperfectives, with (20) demonstrating an absence of a left-edge change of state and (21) an absence of a right-edge change of state.

- (20) *Sedel^l je, moral bi vstati, ampak je raje še kar*
 sat AUX must would rise-INF but AUX instead still PTCL
malo po-sedel
 little PO-sat
 ‘He was sitting, he should’ve gotten up but instead he just sat a bit longer’
- (21) *Po-sedel je par minut, do štirih, in pol je še kar*
 PO-sat AUX few minutes till four and then AUX still PTCL
naprej sedel^l
 further sat
 ‘He sat for a few minutes, till four, and then he just went on sitting’

As a control test, compare this with phasal-prefixed perfectives. The (terminative) *do*-predicate in (22) contains a right-edge change of state, preventing a continuation reading, and the (inceptive) *za*-predicate in (23) contains a left-edge change of state, preventing a reading with an earlier phase of singing continuing into the singing denoted by the *za*-verb.

- (22) **Juš je do-trpel^P in pol je še naprej trpel^l*
 Juš AUX DO-suffered and then AUX still further suffered
 ‘Juš finished suffering and then he went on suffering’
- (23) **Juš je pel^l in pol je za-pel^P*
 Juš AUX sang and then AUX ZA-sang
 ‘Juš sang and then he started to sing’

In fact, Piñón (1994) applies a similar reasoning to *po*-, concluding that Polish *po*-verbs denote situations that do not culminate, treating *po*-verbs as bounded imperfectives, and paralleling *po*- to durative adverbials. But while Piñón (1994:354) gives a pair of examples to show that *po*-verbs, rather curiously, do not allow for an uninterrupted continuation, the Slovenian examples in (20)–(21) show that this is incorrect and that *po*-verbs do in fact pass this test for bounded imperfectives. So I conclude that *po*-verbs are not perfectives but bounded imperfectives whose denotation contains no change of state (with Piñón 1994, also Bertinetto & Delfitto 2000:220, but contra Filip 2000). This also predicts, correctly, that such *po*-verbs will not admit unselected objects

(e.g. **po-misliti načrt* ‘think the plan for a while’ vs. *pre-misliti načrt* ‘think the plan over’).¹² Our proposed strict correlation between perfectivity of prefixed verbs and the presence of a result state is thus saved. As a degree adverb, *po-* has no event-structure value, and so when a verb combines with *po-*, there is no event composition, no change of state, and no perfectivity. Finally, this analysis suggests that compatibility with durative adverbials is a true and sufficient diagnostic for imperfectives.

6.1 Precise meaning of *po-*

As a first approximation, *po-* can be seen as a derivational equivalent of the durative adverbial ‘for a little while’; an optional durative adverbial with *po-*verbs (cf. (18)) further specifies the derivational adverb. Piñón (1994) states that – combined with the general ban on double quantization – this explains why *po-*, a quantizing modifier, only attaches to activities, which are non-quantized. However, *po-* is better viewed more broadly, as a pure degree adverb meaning ‘a little’, so as not to dissociate perfective verbs such as *po-skočiti^P* ‘✓jump a little, *jump for a little while’, derived from the perfective and thus quantized base *skočiti^P* ‘jump’, where *po-* seems to add the same meaning, only to a different ingredient of the base verb (cf. Filip 2003 for Czech examples). On the narrower account, as in Piñón (1994), *po-skočiti^P* should either be ruled out as illicit double quantization, or the *po-* on such verbs should be left unrelated to Piñón’s *po-*, despite the fact that both add an attenuative meaning. Instead, we can view the two *po-*’s as realizing the same adverb, with the difference in the interpretation depending on the properties of the input verb. This also captures verbs such as the Czech *po-od-skočit^P* ‘jump a little bit away’, based on *od-skočit^P* ‘jump away’, where *po-* modifies only the *od-*introduced predicate ‘away’ rather than the whole prefixed verb *od-skočit^P* ‘to jump away’ but again has the same meaning of ‘a little’.¹³

7. Conclusion

Based on the meanings of prefix-cognate prepositions, I argued that the event structure of prefixes is one of State, and that the directionality and – more generally – change of state of prefixed verbs arises through event composition. As a result of the change of state, State-prefixed verbs with an imperfective base turn perfective. The proposal preserves the link between the seemingly directional prefix *pri-*, found on directed-motion verbs, and its cognate locational-only

preposition *pri* ‘at’. Anticipating possible objections, I showed that with inceptive *za*-verbs as well as with “manner-prefixed” and Source-prefixed verbs, the presence of the prefix indeed means the presence of a result state. In contrast, I argued that *po*-verbs such as *po-sedeti* ‘sit for a while’ are not perfectives but rather bounded imperfectives with no change of state. I was thus able to save the generalization that the perfectivity of prefixed verbs with an imperfective base always correlates with the presence of a result state/change of state.¹⁴

Though Slavic prefixes often seem inextricably linked to perfectivity, an inflectional category, my analysis preserves the status of prefixes as truly derivational morphemes (cf. Bertinetto & Delfitto 2000:214) by invoking their locational prepositional semantics and relegating the perfectivity of State-prefixed verbs to a mere consequence of the change of state. Though treated separately, the perfective *po*- also remains truly derivational, being seen essentially as an affixal adverb.

Notes

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1. I use the terms ‘im-/perfective’ (marked ^I and ^P) as is common in Slavic linguistics (cf. Brecht 1985; Filip 2003). For an alternative, see Bertinetto (2001). I use Pustejovsky’s (1991) term ‘change of state’ instead of ‘telicity’. My case language is Slovenian.

2. *Iz* ‘out of’, *na* ‘on; onto’, *nad* ‘over’, *o(b)* ‘at, next to; to’, *od* ‘away from’, *po* ‘over, across, along’, *pod* ‘under’, *pred* ‘in front of’, *prek* ‘over, across’, *pri* ‘at’, *raz* ‘off of, apart’, *s/z* ‘with, off of’, *v* ‘in; into’, *za* ‘behind’.

3. Directional prefixes may exist in other languages, but they will presumably not derive change-of-state verbs. In Slavic, this possibility may have disappeared due to the widely generalized use of State-prefixes for encoding perfectivity (cf. Bertinetto & Delfitto 2000). Such perfectivity-encoding, though, is only a by-product of the prefix’s basic function, that of introducing a (result) state (see below).

4. Therefore, verbs such as *v-teči*^P ‘run into’, *na-risati*^P ‘draw up’, *po-rušiti*^P ‘demolish, bring down’, *s-kuhati*^P ‘cook’, *na-polniti*^P ‘fill up’, *do-trpeti*^P ‘finish suffering’, *za-špilati*^P ‘start playing’, *pri-striči*^P ‘cut shorter’, *na-peči*^P ‘bake a lot of x’, *na-laufati*^P ‘run one’s fill’, *od-sekati*^P ‘chop off’, *na-mazati*^P ‘daub onto’, whose unprefixated counterparts are all imperfective, all contain a prefix-introduced result state, which triggers perfectivity.

5. I assume familiarity with the notion of quantization. I consider a predicate non-quantized if it is both cumulative and divisive; otherwise it is quantized. See e.g. Filip (2000, 2003) and references therein.

6. The change-of-state–quantization split is warranted also by the fact that a result state licenses unselected objects not only in quantized perfectives but also in non-quantized imperfective/progressive predicates (*Fido is digging up the bone*). See also Section 6.

7. The gloss may be unclear, as the English result-state and durative adverbial look the same (*for 5 minutes*). In Slovenian, though, they are distinct, *5 minut* being the durative one and *za 5 minut* the result-state one. Cf. also French, *pendant / pour (5 minutes)*.

8. In fact, one can say *run 10m away from home for 10 hours*, using a result-state adverbial to quantize the result state, which is a subevent of a quantized complex verbal predicate; at the same time, the non-verbal predicate *away from home* is quantized by *10 meters*.

9. Filip (2003) says that (11) is fine in Czech. This is not true, unless it contains an (elided) degree adverb ‘more’. But then we cancel the meaning of *pri* ‘at’ and *k* ‘to’ as ‘right at/to’, turning it into a protracted zone where various points count as ‘at x’. One can then first be sort of at x and then move and be even more at x (closer to x) and still need not be right at x. With such a scalar ‘at-ness’, ‘10 meters’ can quantize it. This construal seems hard with the English *at*, but it works with *pri* ‘at’, and if invoked, even copular examples such as ‘x is more at the house than y’ are fine. On this construal a complex *pri*-prefixed predicate will still be quantized only once, via the onset of the result state; the non-verbal predicate ‘at x’, though, will be quantized in its own right via the adverbial ‘10 meters’.

10. See Fn. 1. In Bertinetto’s (2001) model, *po*-verbs would be perfective verbs without a change of state. In fact, Filip (2000) seems to straddle the traditional Slavic concept of im-/perfectivity and a Bertinetto-like account; she subsumes boundedness and change-of-state under quantization, thus capturing perfectivity with quantization, but at the same time she treats some verbs as lexical imperfectives (e.g. p. 81). And in Filip (2003) she explicitly steers clear of a Bertinetto-like model, separating quantization and perfectivity.

11. Filip (2000), working on Russian, uses a fourth test, which I omit since it does not apply to Slovenian.

12. In support for this view, Andrew Spencer notes that *po*-verbs do not form ‘secondary imperfectives’ with a progressive/non-iterative meaning (*po-sedati*¹ *‘sit for a while’, ✓ ‘repeatedly sit for a while, sit around’). This is expected if *po*-verbs are imperfective.

13. Since *po-* on Filip’s *po-od-skočit*^P ‘to jump a small distance away’ modifies only the prefix *od-* rather than the whole prefixed verb (cf. Section 5), such examples cannot be used – contra Filip (2003) – to support her claim that perfectives can be non-quantized. *Od-skočit*^P ‘jump away’ is quantized via the result state, while *od-*’s predicate ‘away’ is quantized via *po-* to mean ‘a bit away’. See also S&Z (1998b).

14. One can think of other possible problems for my analysis, such as some attenuative *pri*-verbs, for which I refer the reader to S&Z (1998b). S&Z show that this *pri-* licenses unselected objects, as in the Russian *pri-sypat*^P *jamu* (lit. PRI-pour hole) ‘pour a hole partly full’, revealing a result state and preserving our change-of-state–perfectivity correlation (cf. Strigin & Demjjanow (2001:64)). Another case are Filip’s (2003) ‘modal prefixes’. For reasons of space, I have to leave a discussion of these for another time.

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Delineating the boundary between inflection-class marking and derivational marking

The case of Sanskrit *-aya*

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1. Sanskrit causatives

A prominent feature of Sanskrit verb morphology is the frequent incidence of synthetic causatives: alongside most verbal lexemes there is a corresponding causative lexeme whose present-tense stem is marked by the suffix *-aya*; examples of some verbs and their causative counterparts are given in Table 1. The *-aya* suffix typical of causative verbs is affixed directly to the verb root, which is most often “strengthened” in some way or other; the examples in Table 2 illustrate some of the observable sorts of strengthening. The particular operation by which a root is strengthened is at least partially determined by the root’s phonological shape; see Whitney (1889: §1042) for details.

An enduring question in Sanskrit grammar is whether the suffix *-aya* should be regarded as a mark of inflection-class membership or as a mark of derivation.¹ In theory, the difference is a clear one. The appearance of a mark of derivation on a lexeme’s stem signals that lexeme’s derivation from some more basic lexeme. By contrast, the appearance of a mark of inflection-class membership on a lexeme’s stem signals that stem’s availability to a particular subset of inflectional rules. Notwithstanding the clarity of this distinction in principle, it is, in practice, sometimes quite difficult to distinguish a mark of inflection-class membership from a mark of derivation. This is because a derivational rule in general has the effect of assigning its derivatives to a particular inflection class; for this reason, it would be logically possible for the set of stems bearing a par-

Table 1. Some Sanskrit verbs and their causative derivatives in *-aya*

Sample root	Simple present-system stem		Causative stem	
	Form*	Class		
√ <i>vad</i>	‘speak’	<i>vada-</i>	I	<i>vādaya-</i>
√ <i>dviṣ</i>	‘hate’	<i>dveṣ-</i>	II	<i>dveṣaya-</i>
√ <i>dā</i>	‘give’	<i>dadā-</i>	III	<i>dāpaya-</i>
<i>sam</i> √ <i>pad</i>	‘succeed’	<i>sampadya-</i>	IV	<i>sampādaya-</i>
√ <i>śru</i>	‘hear’	<i>śṛṇo-</i>	V	<i>śrāvaya-</i>
√ <i>kṣip</i>	‘throw’	<i>kṣipa-</i>	VI	<i>kṣepaya-</i>
√ <i>yuḥ</i>	‘yoke’	<i>yunaj-</i>	VII	<i>yojaya-</i>
√ <i>kr</i>	‘make’	<i>karo-</i>	VIII	<i>kāraya-</i>
√ <i>grah</i>	‘seize’	<i>grhñā-</i>	IX	<i>grāhaya-</i>

* Here and below, alternating stems (e.g. *karo-* ~ *kuru-*, *grhñā-* ~ *grhñī-*) are given in their strong form.

Table 2. Ways of strengthening Sanskrit roots in the formation of *-aya* stems (Whitney 1889: §1042)

Operations		Sample root	Causative stem
Root modification	Suffixation		
unchanged root	+ <i>aya</i>	√ <i>il</i> ‘be quiet’	<i>ilaya-</i>
Guṇa-grade root	+ <i>aya</i>	√ <i>vid</i> ‘find’	<i>vedaya-</i>
Vṛddhi-grade root	+ <i>aya</i>	√ <i>mṛj</i> ‘wipe’	<i>mārjaya-</i>
root with lengthened vowel	+ <i>aya</i>	√ <i>duṣ</i> ‘become bad’	<i>dūṣaya-</i>
nasal form of root	+ <i>aya</i>	√ <i>lip</i> ‘smear’	<i>limpaya-</i>
Zero-grade root	+ <i>aya</i>	√ <i>grah</i> ‘grasp’	Vedic <i>grbhaya-</i>
unchanged root	+ <i>p</i> + <i>aya</i>	√ <i>sthā</i> ‘stand’	<i>sthāpaya-</i>
Guṇa-grade root	+ <i>p</i> + <i>aya</i>	√ <i>ṛ</i> ‘rise, reach’	<i>arpaya-</i>
root with shortened vowel	+ <i>p</i> + <i>aya</i>	√ <i>snā</i> ‘bathe’	<i>snapaya-</i>
modified root (<i>ī</i> → <i>ā</i>)	+ <i>p</i> + <i>aya</i>	√ <i>ji</i> ‘conquer’	<i>jāpaya-</i>
modified root (<i>i</i> → <i>a</i>)	+ <i>p</i> + <i>aya</i>	√ <i>kṣi</i> ‘pass, wane’	<i>kṣapaya-</i>

ticular mark of derivation to be exactly the set of stems available to a particular subset of inflectional rules. Most often, though, the inflection class to which a derived stem belongs is not coextensive with the derived stem-class to which it belongs. Whether Sanskrit *-aya* stems constitute an instance of this sort of coextensiveness is, as we shall see, not entirely clear.

My intention here is to examine the status of Sanskrit *-aya* stems in some detail, with the objective of clarifying the criteria necessary for distinguishing marks of inflection-class membership from marks of derivation. I should emphasize at the outset that the issue here is not simply that of distinguishing inflection from derivation. Inflectional rules can, in general, be distin-

guished from rules of derivation by a criterion of syntactic relevance (Anderson 1992:82ff.). On the other hand, a stem's membership in a particular inflection class very often has no more syntactic relevance than its membership in a particular derived stem-class; that is, inflection-class distinctions are very often morphomic (Aronoff 1994:22ff.) – their relevance is confined to the workings of the morphology. For this reason, the criteria for distinguishing marks of inflection-class membership from marks of derivation must themselves be morphological rather than syntactic in nature.

The reader should note at the outset that the issue here is not whether 'causative' is a derivational category in Sanskrit – that is, the question is not whether *vādaya-* 'cause to speak' is a derivative of \sqrt{vad} 'speak': the evidence that Sanskrit causatives are derivatives is indisputable. The question here is instead whether *-aya* is a morphological concomitant of causative derivation or the mark of the inflection class to which causative derivatives belong.

2. The traditional view of *-aya* as a mark of inflection-class membership

The ancient Sanskrit grammarians treated the stem in *-aya* as the mark of the so-called tenth class, one of ten inflection classes relevant for the conjugation of present-tense verb forms. Each class has its own peculiar pattern of stem formation, involving either an internal modification of the verb root or the attachment of a stem-forming affix or both; the inventory of stem-forming affixes for each of the ten classes and sample roots and stems are given in Table 3. As Table 3 shows, the ten classes fall into two principal conjugations – the thematic and the athematic: verb stems belonging to the thematic conjugation are distinguished by a stem-final short *a*; in addition, verb stems belonging to the athematic conjugation frequently participate in a distinctive pattern of stem gradation. As members of the tenth class, stems in *-aya* inflect according to the thematic conjugation.

The traditional assumption that *-aya* is a mark of inflection-class membership affords a direct account of the fact that among present-tense verb forms, the distribution of the stem formative *-aya* parallels that of the other stem-forming affixes in Table 3, and that like these other affixes, *-aya* is absent from forms such as a verb's past passive participle; the forms in Table 4 illustrate this latter similarity. Thus, the traditional analysis of *-aya* as a mark of inflection-class membership implicitly appeals to the criterion of distributional parallelism in (1).²

Table 3. The ten traditional present-system conjugation classes in Sanskrit

	Class	Inflection-class affix	Sample root		Present-system stem
Thematic conjugations	I	-a	√bhū	'be'	bhava-
	IV	-ya	√dīv	'play'	dīvyā-
	VI	-a	√tud	'thrust'	tuda-
	X	-aya	√cur	'steal'	coraya-
Athematic conjugations	II	(none)	√dviṣ	'hate'	dveṣ-
	III	reduplicative prefix	√hu	'sacrifice'	juho-
	V	-no	√su	'press out'	sunō-
	VII	infix -na-	√rudh	'obstruct'	runadh-
	VIII	-o	√tan	'stretch'	tano-
	IX	-nā	√krī	'buy'	krīṇā-

Table 4. Past passive participles of some Sanskrit verbs

	Class	Sample root		Past passive participial stem
Thematic conjugations	I	√bhū	'be'	bhūta-
		√bhās	'shine'	bhāsita-
	IV	√dīv	'play'	dyūta-
		√kup	'boil'	kupita-
	VI	√kṣip	'throw'	kṣipta-
		√ujjh	'forsake'	ujjhita-
X	causative derivative of √viś 'enter'		veśita- 'caused to enter'	
Athematic conjugations	II	√dviṣ	'hate'	dviṣta-
		√śnath	'pierce'	śnathita-
	III	√hu	'sacrifice'	huta-
		√bhas	'consume'	bhasita-
	V	√su	'press out'	suta-
		√jinv	'hasten'	jinṅvita-
	VII	√rudh	'obstruct'	ruddha-
		√hiṅs	'hurt'	hiṅsita-
	VIII	√tan	'stretch'	tata-
		√van	'hold dear'	Epic vanita-
IX	√krī	'buy'	krīta-	
	√math	'stir'	mathita-	

- (1) **Criterion of distributional parallelism of inflection-class markings:** If a mark x of inflection-class membership appears in particular cells of the paradigm of a member of inflection class A and some contrasting mark y appears in the same cells of the paradigm of a member of some contrasting inflection class B, then y , like x , is a mark of inflection-class membership.

(This is, of course, a “second-order” criterion, in the sense that it depends on the existence of independent criteria for identifying the marks of present-system classes 1 through 1X as marks of inflection-class membership; by the additional criteria considered below, there can be no doubt that this is their status.)

3. The criterion of semantic contrast

In his landmark grammar of Sanskrit, W. D. Whitney (1889: §§607, 775, 1041) rejects the traditional assumption that the *-aya* suffix is a mark of inflection-class membership, asserting instead that *-aya* is a derivational formative. He appeals to two criteria in support of this conclusion: to the criterion of semantic contrast in (2) and to a fuller consideration of the criterion of distributional parallelism.

- (2) **Criterion of semantic contrast between derived stems and their bases:** A mark of derivation signals a particular semantic relation between two lexemes. A mark of inflection-class membership does not, in itself, signal a particular semantic relation between two lexemes.

Consider first (2), the criterion of semantic contrast. On the one hand, there is no sense in which the mark of a stem’s membership in any of conjugations 1-1X signals a semantic relationship between distinct lexemes. For instance, the present-system stem of the lexeme ‘enter’ (root $\sqrt{viś}$) is *viśa-*, whose short *-a* suffix (together with its root grade) marks it as a member of conjugation VI; but this suffix doesn’t signal any sort of semantic contrast between the ‘enter’ lexeme and any other lexeme; it is simply the stem formative required for the realization of present-system forms such as *viśati* ‘s/he enters’, *aviśat* ‘s/he entered’, *viśatu* ‘s/he must enter!’. But typically, the *-aya* suffix marks the stem of a lexeme which is related to some more basic lexeme as its causative counterpart. For instance, *-aya* marks the present-system stem *veśaya-* appearing in forms such as *veśayati* ‘s/he causes to enter’, *aveśayat* ‘s/he caused to enter’, and *veśayatu* ‘s/he must cause to enter!’; both the form and the meaning of this stem are

Table 5. Sanskrit denominative verb stems in *-aya*

Nominal source		<i>-aya</i> stem	
<i>artha-</i>	‘aim, purpose’	<i>arthaya-</i>	‘seek’
<i>ṛta-</i>	‘sacred order’	<i>ṛtāya-</i>	‘act according to the sacred order’
<i>kulāya-</i>	‘nest’	<i>kulāyaya-</i>	‘build a nest’
<i>mantra-</i>	‘speech, instrument of thought’	<i>mantraya-</i>	‘take counsel’
<i>mṛga-</i>	‘wild animal, deer’	<i>mṛgaya-</i>	‘treat as a wild animal, hunt’
<i>varṇa-</i>	‘color’	<i>varṇaya-</i>	‘depict’
<i>vavra-</i>	‘hiding place’	<i>vavraya-</i>	‘put in hiding, shrink from’
<i>vīra-</i>	‘man’	<i>vīrāya-</i>	‘play the man, be a hero’

Table 6. Some deverbal derivatives in *-aya* whose meaning doesn’t differ from that of their base or doesn’t differ in the expected way

Root		Present-system stem		<i>-aya</i> stem	
√ <i>il</i>	‘be quiet’	<i>ila-</i>	(VI)	<i>ilaya-</i>	‘cease’
√ <i>kṛp</i>	‘lament’	<i>kṛpa-</i>	(VI)	<i>kṛpaya-</i>	‘lament’
√ <i>cud</i>	‘impel’	<i>coda-</i>	(I)	<i>codaya-</i>	‘impel’
√ <i>juṣ</i>	‘enjoy’	<i>juṣa-</i>	(VI)	<i>joṣaya-</i>	‘caress’
√ <i>duṣ</i>	‘spoil’	<i>duṣya-</i>	(IV)	<i>dūṣaya-</i>	‘spoil’
√ <i>mṛc</i>	‘injure’	<i>mṛcya-</i>	(IV)	<i>marcaya-</i>	‘injure’
ā√ <i>lip</i>	‘besmear’	<i>ālimpa-</i>	(VI)	<i>ālimpaya-</i> or <i>ālepaya-</i>	‘besmear’
√ <i>sprḥ</i>	‘be eager’	<i>sprha-</i>	(VI)	<i>sprhaya-</i>	‘be eager’

built upon those of the root √*viś*. The simplest account of this fact is to treat *-aya* as a causative derivational suffix relating the lexeme ‘enter’ to a derivative lexeme ‘cause to enter’.

The situation is complicated, however, by the properties of certain *-aya* stems: although it is certainly true that most *-aya* stems are causative derivatives, there are exceptions. First, some stems in *-aya* are denominative rather than causative; examples are the stems in Table 5.³ Second, some *-aya* stems, though clearly derivative, do not have a causative meaning: either their meaning is the same as that of the root from which they derive, or it is not the expected causative meaning; the examples in Table 6 illustrate. Finally, a small number of *-aya* stems don’t seem to be derivatives at all; examples are given in Table 7.

The incidence of basic *-aya* stems such as *cintaya-* and of denominative *-aya* stems such as *arthaya-* seems, on first consideration, to exclude the possibility of analyzing *-aya* stems as a unified class of derived stems. But in many iron-clad cases of derivation, one can find a minority of apparently derivative

Table 7. Nonderivative verbs having stems in *-aya*

Root		Present-system stem
√ <i>kal</i>	‘push on’	<i>kālaya-</i>
√ <i>kal</i>	‘incite’	<i>kalaya-</i>
√ <i>gaṇ</i>	‘count’	<i>gaṇaya-</i>
√ <i>cint</i>	‘contemplate’	<i>cintaya-</i>
√ <i>cur</i>	‘steal’	<i>coraya-</i>
√ <i>pāl</i>	‘guard, protect’	<i>pālaya-</i>
√ <i>pūj</i>	‘worship’	<i>pūjaya-</i>

forms for which no base form exists (e.g. *quality* alongside *tranquility*, *curious* alongside *furious*, *happy* alongside *sleepy*, *bashful* alongside *harmful*, and so on), derivative forms which do not differ semantically in the expected way from their base form (e.g. *highness* alongside *sadness*, *uneasy* alongside *unable*, *stately* alongside *friendly*, *comfortable* alongside *enjoyable*, and so on), or derivative forms whose base form belongs to the wrong category (e.g. *actionable* alongside *manageable*, *merriment* alongside *acknowledgement*, *tireless* alongside *helpless*, *mournful* alongside *beautiful*, and so on). One might therefore assume that the property at issue in criterion (2) – that of signalling a particular semantic contrast between lexemes – is a DEFAULT property of derived stems, i.e. one subject to override by lexical stipulation.

On that assumption, one could regard a basic *-aya* stem such as *cintaya-* or a denominative *-aya* stem such as *arthaya-* as a lexically listed form whose complex morphology is that of a derived causative but whose semantics is just stipulated. (In the case of *cintaya-*, the stipulated meaning would be simplex; in the case of *arthaya-*, the stipulated meaning would be complex, but would fail to conform to the default semantics for derived causatives.) This approach allows one to maintain that *-aya* stems constitute a derived stem-class, but does not actually exclude the possibility that they are also the expression of an inflection class; that is, (2) leaves open the possibility that the rule which derives forms whose default interpretation is causative assigns those forms to a special inflection class *x*, and that *-aya* is the inflectional mark of membership in that class. In other words, the semantic contrast between √*vis* ‘enter’ and *veśaya-* ‘cause to enter’ isn’t sufficient evidence that *-aya* is a mark of derivation. Moreover, the usefulness of (2) as a necessary criterion is diminished once one assumes that the property of signalling a particular semantic contrast is a default subject to override by the derived lexeme’s lexical entry. Thus, criterion (2) does not afford a decisive argument for treating *-aya* as a derivational formative.

4. More on the distribution of *-aya* stems

Whitney does, however, invoke a second criterion to justify his classification of *-aya* as a mark of derivation, namely the criterion (1) of distributional parallelism. To appreciate the relevance of this criterion more fully, it is important to understand the structure of the Sanskrit system of verb inflection. A Sanskrit verb's finite inflection is elaborated in four "systems": the present, perfect, aorist, and future systems. Each system encompasses a particular set of temporal and modal properties, as in Table 8. Within a given verb's paradigm, each of the four systems is based on a different stem of that verb; in the paradigm of \sqrt{bhr} 'carry', for instance, present-system forms are based on the stem *bhara-*; perfect-system forms are based on the stem *babhar-*; aorist-system forms are based on the stem *bharṣ-*; and future-system forms are based on the stem *bhariṣya-*.⁴

The inflection classes I-IX in Table 3 are only relevant to the present system; that is, no rule for the inflection of a verb's perfect-, aorist-, or future-tense forms is sensitive to that verb's membership in any of classes I-IX. The same is not true, however, of the class of *-aya* stems, whose use extends beyond the boundaries of the present system; the examples in Tables 9 and 10 (in which underlined forms are built on the *-aya* stem) illustrate.⁵ Thus, the second reason for Whitney's conclusion that *-aya* stems constitute a derived stem-class is that, on closer consideration, *-aya* is distributionally unlike any of the unequivocal marks of inflection-class membership in Sanskrit; that is, the criterion (1) of distributional parallelism simply doesn't apply in the case of *-aya*.

Table 8. The Sanskrit tense systems (root \sqrt{bhr} 'carry')

System	Stem	Tense/mood properties	3sg active form
Present	<i>bhara-</i>	present, indicative	<i>bharati</i>
		imperfect, indicative	<i>abharat</i>
		present, imperative	<i>bharatu</i>
		present, optative	<i>bharet</i>
Perfect	<i>babhar-</i>	perfect, indicative	<i>babhāra</i>
Aorist	<i>bharṣ-</i>	aorist, indicative	<i>abhārṣīt</i>
		aorist, optative (= "precative")	<i>bhriyāt</i>
		injunctive	<i>bhārṣīt</i>
Future	<i>bhariṣya-</i>	future, indicative	<i>bhariṣyati</i>
		conditional	<i>abhariṣyat</i>

Table 9. 3rd-person singular forms of two Sanskrit verbs

	Forms of \sqrt{rudh} 'obstruct'			Forms of the causative derivative of \sqrt{gam} 'go'		
	Active	Middle	Passive	Active	Middle	Passive
Present system	<u>runaddhi</u> <u>arunat</u> <u>runaddhu</u> <u>runddyāt</u>	<u>runddhe</u> <u>arunddha</u> <u>runddhām</u> <u>rundhīta</u>	<u>rudhyate</u> <u>arudhyata</u> <u>rudhyatām</u> <u>rudhyeta</u>	<u>gamayati</u> <u>agamayat</u> <u>gamayatu</u> <u>gamayet</u>	<u>gamayate</u> <u>agamayata</u> <u>gamayatām</u> <u>gamayeta</u>	<u>gamyate</u> <u>agamyata</u> <u>gamyatām</u> <u>gamyeta</u>
General tenses	Aorist Perfect - <i>ya</i> Future - <i>tās</i> Future Conditional Benedictive	<u>arautsīt</u> <u>rurodha</u> <u>rotsyati</u> <u>roddhā</u> <u>arotsyat</u> <u>rudhyāt</u>	<u>aruddha</u> <u>rurudhe</u> <u>rotsyate</u> <u>roddhā</u> <u>arotsyata</u> <u>rutsiṣṭa</u>	<u>ajīgamat</u> <u>agamayān cakāra</u> <u>gamaysiyati</u> <u>gamayitā</u> <u>agamaysiyat</u> <u>gamyāt</u>	<u>ajīgamata</u> <u>gamayān cakre</u> <u>gamaysiyate</u> <u>gamayitā</u> <u>agamaysiyata</u> <u>gamaysiṣṭa</u>	
Underlined forms exhibit:	the - <i>n(a)</i> - infix		the - <i>aya</i> suffix			

Table 10. Nonfinite forms of two Sanskrit verbs

		Forms of \sqrt{rudh} 'obstruct'	Forms of the causative derivative of \sqrt{gam} 'go'
Present participial stem:	active	<u>rundhant-</u>	<u>gamayant-</u>
	middle	<u>rundhāna-</u>	<u>gamayamāna-</u>
Past passive participial stem		ruddha-	gamīta-
Gerund:	in -tvā	ruddhvā	<u>gamayitvā</u>
	in -ya	-rudhya	-gamyā
Gerundive stem:	in -ya	rodhya-	gamyā-
	in -tavya	roddhavya-	<u>gamayitavya-</u>
Infinitive		roddhum	<u>gamayitum</u>
Underlined forms exhibit:		the -n(a)- infix	the -aya suffix

But even if the distribution of an *-aya* stem does not match that of a stem in any of the present-system Classes I-IX, one might argue that that fact alone doesn't exclude the possibility that *-aya* is a mark of inflection-class membership. First off, one could regard (1) as a sufficient property of inflection-class markers without regarding it as a necessary property, since there is no logical reason why members of a particular inflection class couldn't have a distribution unlike that of members of any other inflection class. Moreover, *-aya* stems have a second distributional property that is typical of inflection classes. As Table 9 suggests, causative derivatives do not exhibit their stem in *-aya* in their aorist inflection; instead, they regularly follow the aorist conjugation known as the reduplicated aorist, as in Table 11. Sanskrit has seven aorist conjugations; these are exemplified in Table 12. Whatever the status of the *-aya* suffix might be, the markings of the reduplicated aorist are clearly inflection-class markings. First, all of the aorist conjugations are restricted to the aorist-tense system; thus, the markings of the reduplicated aorist conjugation are distributionally parallel to those of other aorist conjugations.⁶ In addition, not all members of the reduplicated aorist conjugation are causative derivatives, as the examples in Table 13 show. Thus, although the distribution of *-aya* stems does not parallel that of stems in any of the present-system Classes I-IX, *-aya* stems stand in paradigmatic opposition to aorist-system stems whose morphology is clearly the expression of an inflection class.

This is significant: in the paradigm of a given lexeme, marks of inflection-class membership may stand in paradigmatic opposition to other marks of inflection-class membership but not to marks of derivation; for instance, in the inflection of the verb \sqrt{bhr} 'carry' (cf. Table 8 above), the mark of membership in present-system class I stands in paradigmatic opposition to the

Table 11. Causatives and their aorists in Sanskrit

Root		3sg present active	3sg aorist active
√ <i>bhū</i>	‘become’	<i>bhāvayati</i>	<i>abībhavat</i>
√ <i>dṛś</i>	‘see’	<i>darśayati</i>	<i>adīdṛśat, adadarśat</i>
√ <i>grah</i>	‘seize’	<i>grāhayati</i>	<i>ajjgrahat</i>
√ <i>śubh</i>	‘shine’	<i>śobhayati</i>	<i>aśūśubhat</i>
√ <i>vad</i>	‘speak’	<i>vādayati</i>	<i>avīvadat</i>
√ <i>vid</i>	‘know’	<i>pravedayati</i>	<i>prāvīdat</i>
√ <i>vṛdh</i>	‘grow’	<i>vardhayati</i>	<i>avīvṛdhat</i>

Table 12. Aorist conjugations in Sanskrit

Conjugation		Sample stem	
Asigmatic:	Root aorist	<i>abhū-</i>	(root √ <i>bhū</i> ‘become’)
	Thematic aorist	<i>asica-</i>	(root √ <i>sic</i> ‘sprinkle’)
	Reduplicated aorist	<i>acūcura-</i>	(root √ <i>cur</i> ‘steal’)
Sigmatic:	- <i>s</i> aorist	<i>anaīṣ-/aneṣ-</i>	(root √ <i>ni</i> ‘lead’)
	- <i>iṣ</i> aorist	<i>apāviṣ-/apaviṣ-</i>	(root √ <i>pū</i> ‘cleanse’)
	- <i>siṣ</i> aorist	<i>ayāsiṣ-</i>	(root √ <i>yā</i> ‘go’)
	- <i>sa</i> aorist	<i>adikṣa-</i>	(root √ <i>diś</i> ‘point’)

Table 13. Six noncausative verbs with reduplicated aorists

Root		3sg aorist form
√ <i>kam</i>	‘love’	<i>acīkamata</i>
√ <i>dru</i>	‘run’	<i>adudruvat</i>
√ <i>dhā</i>	‘suck’	<i>adadhāt</i>
√ <i>śri</i>	‘resort’	<i>aśīśriyat</i>
√ <i>śvi</i>	‘swell’	<i>aśīśviyat</i>
√ <i>sru</i>	‘flow’	<i>asusruvat</i>

mark of membership in the -*s* aorist conjugation class. Thus, by the criterion (3) of paradigmatic opposition, the -*aya* suffix behaves like an inflection-class marker. A mark of inflection-class membership needn’t, of course, be opposed to anything: it may appear throughout a lexeme’s paradigm; for this reason, paradigmatic opposition to a mark of inflection-class membership is a sufficient but not a necessary property of marks of inflection-class membership.

- (3) **Criterion of paradigmatic opposition of inflection-class markings:** In the paradigm of a given lexeme, a mark of inflection-class membership may be paradigmatically opposed to another mark of inflection-class membership, but not to a mark of derivation.
[N.B.: Like (1), this is a “second-order” criterion.]

5. The criterion of uniformity

A final criterion is also relevant to determining the morphological status of the *-aya* suffix. Compare the derivational category of deverbals causatives with that of deverbals desideratives. The marks of desiderative derivation are a reduplicative prefix and a sibilant suffix. These marks are present throughout a desiderative verb's paradigm of forms; Tables 14 and 15, for example, show that the finite and nonfinite forms of the desiderative derivative of \sqrt{kr} ‘make, do’ invariably exhibit the desiderative morphology. This sort of uniformity is typical of derivational markings. Because the *-aya* suffix does not exhibit this uniformity (cf. again Tables 9 and 10, which exhibit several gaps in the incidence of the *-aya* suffix), criterion (4) favors the conclusion that *-aya* is an inflection-class marking.

- (4) **Criterion of uniformity of derivational marking:** Marks of derivation are associated with whole lexemes, and therefore occur on all of a derived lexeme's stems; that is, their appearance is insensitive to differences among the morphosyntactic property sets associated with the various cells in a derived lexeme's inflectional paradigm. Marks of inflection-class membership, by contrast, are associated with individual stems, and may therefore be associated with some of the stems in a lexeme's paradigm but not others; that is, their appearance may well be sensitive to differences among the morphosyntactic property sets associated with the various cells in a lexeme's inflectional paradigm.

This same criterion, however, does not exclude the possibility that the root modifications exhibited by causative stems are in fact marks of derivation. Recall from Table 2 that the formation of a causative stem doesn't merely involve the addition of the suffix *-aya*; it also typically involves some sort of root modification, whose most usual effect is to strengthen the root quantitatively. These root modifications generally remain constant throughout the paradigm of a causative derivative. For instance, the root extension *-p* which appears in *sthāpaya-* (the causative stem of the verb root $\sqrt{sthā}$ ‘stand’) appears through-

Table 14. 3rd-person singular forms of the desiderative derivative of \sqrt{kr} 'make, do'

		Active	Middle	Passive
Present system	Present	<u>cikīrṣati</u>	<u>cikīrṣate</u>	<u>cikīrṣyate</u>
	Imperfect	<u>acikīrṣat</u>	<u>acikīrṣata</u>	<u>acikīrṣyata</u>
	Imperative	<u>cikīrṣatu</u>	<u>cikīrṣatām</u>	<u>cikīrṣyatām</u>
	Optative	<u>cikīrṣet</u>	<u>cikīrṣeta</u>	<u>cikīrṣyeta</u>
General tenses	Aorist	<u>acikīrṣīt</u>	<u>acikīrṣista</u>	<u>acikīrṣi</u>
	Perfect	<u>cikīrṣām āsa</u>	<u>cikīrṣām āse</u>	
	-sya Future	<u>cikīrṣisyati</u>	<u>cikīrṣisyate</u>	
	-tās Future	<u>cikīrṣitā</u>	<u>cikīrṣitā</u>	
	Conditional	<u>acikīrṣisyat</u>	<u>acikīrṣisyata</u>	
	Benedictive	<u>cikīrṣyāt</u>	<u>cikīrṣisīsta</u>	

Underlined forms exhibit identical desiderative morphology.

 Table 15. Nonfinite forms of the of the desiderative derivative of \sqrt{kr} 'make, do'

Present participial stem:	active	<u>cikīrṣant-</u>
	middle	<u>cikīrṣamāna-</u>
Past passive participial stem		<u>cikīrṣita-</u>
Gerund:	in -tvā	<u>cikīrṣitvā</u>
	in -ya	<u>-cikīrṣya</u>
Gerundive stem:	in -ya	<u>cikīrṣya-</u>
	in -tavya	<u>cikīrṣitavya-</u>
Infinitive		<u>cikīrṣitum</u>

Underlined forms exhibit identical desiderative morphology.

out its paradigm, as the representative forms in Tables 16 and 17 show; thus, criterion (4) does not exclude the possibility that the root extension $-p$ is a mark of causative derivation.

6. Summary of criteria

In summary, there are at least four criteria for distinguishing marks of inflection-class membership from marks of derivation. Whitney's conclusion that $-aya$ is a mark of derivation draws upon criteria (1) and (2); criteria (3) and (4) suggest that $-aya$ is instead a mark of inflection-class membership. How can this paradox be resolved?

I believe that there is, in reality, no real paradox in this Sanskrit evidence, and that the four criteria can be reconciled with one another simply by ar-

Table 16. 3rd-person singular forms of the causative derivative of $\sqrt{sthā}$ ‘stand’

		Active	Middle	Passive
Present system	Present	<u>sthāpayati</u>	<u>sthāpayate</u>	sthāpyate
	Imperfect	<u>asthāpayat</u>	<u>asthāpayata</u>	asthāpyata
	Imperative	<u>sthāpayatu</u>	<u>sthāpayatām</u>	sthāpyatām
	Optative	<u>sthāpayet</u>	<u>sthāpayeta</u>	sthāpyeta
General tenses	Aorist	atiṣṭhipat	atiṣṭhipata	
	Perfect	<u>sthāpayāñ cakāra</u>	<u>sthāpayāñ cakre</u>	
	-sya Future	<u>sthāpayisyati</u>	<u>sthāpayisyate</u>	
	-tās Future	<u>sthāpayitā</u>	<u>sthāpayitā</u>	
	Conditional	<u>asthāpayisyat</u>	<u>asthāpayisyata</u>	
	Benedictive	sthāpyāt	<u>sthāpayisīta</u>	

Underlined forms exhibit the *-aya* suffix.

Table 17. Nonfinite forms of the causative derivative of $\sqrt{sthā}$ ‘stand’

Present participial stem:	active	<u>sthāpayant-</u>
	middle	<u>sthāpayamāna-</u> or <u>sthāpayāna-</u>
Past passive participial stem		sthāpita-
Gerund:	in <i>-am</i>	-sthāpam
	in <i>-tvā</i>	<u>sthāpayitvā</u>
	in <i>-ya</i>	-sthāpya
Gerundive stem:	in <i>-ya</i>	sthāpya-
	in <i>-tavya</i>	<u>sthāpayitavya-</u>
	in <i>-anīya</i>	sthāpanīya-
Infinitive		<u>sthāpayitum</u>

Underlined forms exhibit the *-aya* suffix.

articulating their logical status more clearly. Consider first the criterion (2) of semantic contrast. This should be seen as a “weakly necessary” property of marks of derivation. It isn’t a sufficient property since all members of a particular class of derivatives might be assigned to an exclusive inflection class (as, for instance, Sanskrit nominal derivatives in *-mant* and *-vant* are assigned to their own special declension class). In instances of this sort, in which the membership of an inflection class is coextensive with that of a particular class of derivatives, criterion (2) fails to distinguish between marks of derivation and marks of inflection-class membership. Moreover, the criterion of semantic contrast is only weakly necessary in the sense that marks of derivation sometimes show up in words that don’t bear any synchronic relationship to any more basic word (as in the case of *quality*, *curious*, *happy*, *bashful*, and so on).

The criterion (3) of paradigmatic opposition should be seen as a sufficient property of marks of inflection-class membership, but not a necessary one. It's not a necessary property because a single mark of inflection-class membership might actually persist through an entire paradigm – that is, it might not be paradigmatically opposed to anything within its paradigm.

The criterion (4) of uniformity is best regarded as a necessary but not a sufficient property of marks of derivation. It's not sufficient, because there is no logical reason why a single mark of inflection-class membership couldn't persist throughout an entire paradigm.

On this view of criteria (2)–(4), criterion (2) is simply irrelevant to deciding the status of the *-aya* suffix: because it is at most a necessary criterion for derivational markers, a marker which recurrently coincided with a particular sort of semantic contrast between lexemes could, by this criterion, be either a derivational marker or a mark of inflection-class membership.

On the other hand, criteria (3) and (4) both entail that *-aya* is a mark of inflection-class membership: by criterion (3) *-aya* is a mark of inflection-class membership because it is paradigmatically opposed to the morphology of the reduplicating aorist; by criterion (4) *-aya* is a mark of inflection-class membership because it doesn't appear uniformly throughout the paradigm of a causative verb. Moreover, the criterion (1) of distributional parallelism is compatible with this entailment if it is seen as a sufficient but not a necessary property of inflection-class membership. My proposal is that this is indeed its status; if so, then the paradox to which these criteria seemingly give rise is an illusory one.

7. Analyzing *-aya* as *-ay-a*

So far, I have been treating *-aya* as a single suffix; here I briefly consider the consequences of pursuing the assumption that *-aya* is in fact a sequence of two suffixes: *-ay-a*. On this assumption, the second suffix *-a* can simply be identified with the marker of the first present-system class; this accounts for the fact that its use (unlike that of *-ay*) does not extend beyond the boundaries of the present system. But what of *-ay*? Is this a derivational marker or a mark of inflection-class membership?

In fact, criteria (1)–(4) entail the same consequence for *-ay* as for *-aya*: that it is a mark of inflection-class membership. If the criterion (1) of distributional parallelism is seen as a sufficient but not a necessary property of inflection-class membership, then it has no implications for the status of *-ay*, since *-ay* isn't

distributionally parallel to any other affix in Sanskrit. If the criterion (2) of semantic contrast is a “weakly necessary” property of marks of derivation, then it too leaves open the possibility that *-ay* could be either a mark of derivation or a mark of inflection-class membership. If the criterion (3) of paradigmatic opposition is a sufficient property of marks of inflection-class membership, then it entails that *-ay* is a mark of inflection-class membership, since it is paradigmatically opposed to the morphology of the reduplicating aorist. And if the criterion (4) of uniformity is a necessary property of marks of derivation, then it entails that *-ay* is a mark of inflection-class membership because it doesn’t appear uniformly throughout the paradigm of a causative verb.

Notes

1. Although the focus here is on *-aya*, one might equally well ask whether the suffix *-p* and the various root modifications in Table 2 are marks of derivation or of inflection-class membership. Logically, there is no reason why their status should be the same as that of *-aya*; indeed, I shall suggest in §5 that their status is not the same.
2. The possibility of treating *-aya* as a two-suffix sequence *-ay-a* (an idea supported by the fact that in certain morphological contexts, the *-ay* appears without the *-a*, as in *vādayiṣyati* ‘s/he will cause to speak’) complicates the use of criterion (1) in determining the status of *-aya*. For instance, although the *i* in *veṣita-* ‘caused to enter’ can be identified with the “union vowel” appearing in several of the other participles in Table 4, the *-ay-a* hypothesis allows it instead to be regarded as the zero-grade form of *-ay*, in which case the morphology of *veṣita-* is not parallel to that of the other forms in Table 4 after all. I shall examine the consequences of the *-ay-a* hypothesis for the task of distinguishing marks of derivation from marks of inflection-class membership in §7.
3. Despite their superficial similarity, denominatives such as those in Table 5 are to be distinguished synchronically from denominatives such as *devayati* ‘cultivates the gods, is pious’ [*< deva-* m. ‘god’]: first, the former exhibit the same accentuation as causatives in *-aya* while the latter do not (e.g. *kārayati* ‘causes to make’, *arthāyati* ‘seeks’, but *devayāti* ‘is pious’); second, the two sorts of denominative differ in structure, since the latter result from the addition of *-yá* (rather than *-aya*) to a nominal stem (e.g. *bhiṣaj-* m. ‘physician’ > *bhiṣajyāti* ‘heals’). See Whitney (1889: §1056) and Macdonell (1910: §562) for discussion.
4. The systems depicted in Table 8 are those of Epic and Classical Sanskrit; note that in these later forms of Sanskrit, the injunctive is only sparsely attested and clearly moribund, while the synthetic future forms are increasingly supplemented by an innovative periphrastic future. The earliest, Vedic systems are somewhat more complicated: in Vedic, the perfect system incorporates a pluperfect, and the present, perfect, and aorist systems display a richer array of mood contrasts, distinguishing not only the indicative, injunctive, optative, and imperative moods, but a subjunctive as well. See Whitney (1889) and Macdonell (1910) for discussion.

5. If *-aya* is regarded as a sequence of two suffixes (see Footnote 2), then the past passive participle *gamita-* could be regarded as exhibiting *-ay* in its zero-grade form *-i*.
6. Specifically, the mark of the reduplicated aorist conjugation is parallel to those of the *-s*, *-iṣ*, and *-sa* aorist conjugations. Generally, members of any of the remaining aorist conjugations (the root, thematic, or *-siṣ* aorist conjugation) follow that conjugation only in the active voice, and instead follow either the *-s* or the *-iṣ* aorist conjugation in the medio-passive voice.

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