

# Lexical Rules Cross-Cutting Inflection and Derivation

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## 1 Introduction

In this paper, I will discuss the relation of INFLECTION and DERIVATION as traditional concepts to the concept of LEXICAL RULES as they have been developed in the last 30 years.

The theoretical distinction between INFLECTION and DERIVATION is rooted in a linguistic tradition, namely, the European philological tradition, which regards morphology and syntax as equally important parts of grammar. This tradition and the typological make-up of Indo-European languages, on which this tradition was based, had strongly contributed to the still common assumption that distinguishing "word formation" ("Wortbildung") from "word-form formation" ("Formenbildung") is generally, i.e., both theoretically and cross-linguistically, a matter of morphology rather than a matter of the entire grammar or, of lexicon-grammar interaction. INFLECTION in Indo-European, i.e., in "inflectional" languages, has served as the model case of INFLECTION, later understood as the construction of complex word-forms in general. The difference between two functionally different types of formation of complex forms observed in Indo-European languages had been generalized in the "morphological typology" of the last century, which was, of course, no longer a classification of languages on the basis of their word-structure, but, rather, on the basis of their dominant patterns relating lexicon to morphology and/or syntax.<sup>1</sup> Nevertheless, the traditional idea has been maintained that the field of morphology is divided into the subfields of INFLECTION and word formation (including DERIVATION and compounding) and that, conversely, investigation of INFLECTION or DERIVATION means studying morphology. Almost all introductory textbooks on linguistics

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<sup>1</sup> It is worth noting though that Gabelentz (1891/1984) had already pointed out, 30 years before the publication of Sapir's famous work (1921/1972), that differences between morphological types concern cross-linguistic differences in the default association of dominant formal means for building complex structures with, on the one hand, the classical INFLECTIONAL domain, and, on the other hand, the classical domain of lexical enrichment, with Indo-European languages taken as tertium comparationis. This, in turn, may result in difficulties in distinguishing between "Formenbildung" and "Wortbildung" in languages of a different morphological type. He cites Semitic languages as an example, where internal modification of roots crosscuts the traditional domain of INFLECTION and DERIVATION. Interestingly, Gabelentz remarks in the same chapter on "Wörterbuch" that a paradigmatic view on all complex formations, which suggests itself in Semitic languages, is also possible in Indo-European languages such as German. He also observes that, from a paradigmatic perspective, the difference between these two constructional types tends to be blurred, since "'Bau, Gebäude, baulich" stehen dem Verbum "bauen" nicht ferner, als dem Infinitive das Imperfectum "ich baute", oder das Participium "gebaut".' (1891/1984: 122).

and on morphology repeat this traditional wisdom (cf. Fromkin/Rodman 1988; Dürr/Schlobinski 1990; Matthews 1974: 38; Bauer 1988; Carstairs-McCarthy 1992).<sup>2</sup>

The concept of LEXICAL RULES, in contrast, is rooted in a linguistic tradition in which classical morphological issues are distributed over phonology and syntax. LEXICAL RULES were first developed in opposition to syntactic rules in order to relieve the apparent load of the latter and to also allow for the existence of regular processes in the lexicon (cf. Hoekstra/Moortgat 1980; Spencer 1991; Atkins/Levin/Zampolli 1994, Anderson 1988). However, it was clear from the very outset that LEXICAL RULES<sup>3</sup> crosscut the traditional domain of morphology and syntax.<sup>4</sup> Here, the obvious question arises whether or not LEXICAL RULES, as more powerful rules than those restricted to the domain of the phonological word, could or should substitute traditional morphological rules.

Meanwhile, that is, since the early seventies, which was the beginning of a growing interest in the study of the lexicon, lexicology and especially lexical semantics have developed into a central field of linguistic study (cf. Cruse 1986; Talmy 1985; Hüllen/Schulze 1988; Lehrer/Kittay 1992; Pustejovsky 1989; Boguraev/Pustejovsky 1990). At the same time, morphology has become a new focus of attention (cf. Hammond/Noonan 1988; Dressler et al. 1987; Dressler et al 1990; Aronoff 1992; Stump 1993). Finally, there is increasing interest in modeling lexicon-grammar interaction as a necessary prerequisite for language-specific generalizations and as a more adequate basis for cross-linguistic comparison than separate subcomponents such as lexicon, morphology, etc. (cf. the concept of "lexicon-grammar" in Gross 1994 and Halliday 1992).

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<sup>2</sup> Introductory textbooks on linguistics often do not at all mention that the issue of INFLECTION and DERIVATION has to be studied in morphology, but simply have corresponding subsections of a section "morphology" (cf. Dürr/Schlobinski 1990; Fromkin/Rodman 1988). In contrast, textbooks on morphology, of course, contain more sophisticated discussions about the relation of INFLECTION/DERIVATION to other subfields of linguistics.

<sup>3</sup> Here, I mean the concept of "lexical rules" used, for instance, in the sense of Dowty (1979, 1991), rather than the concept of "morpholexical rules" employed for dealing with "arbitrary, lexically governed, non-meaning changing, non-category changing variation in stems" (cf. Lieber 1981: 164). Dowty (1991: 588, footnote 31) assumes that LEXICAL RULES "include not only word-derivation cases (*decision* from *decide*) and zero-derivation (noun *walk* from verb *walk*) but also 'lexical' phrases (*egg on* or *hammer flat*) and changes in valence, including detransitivizations and the changes in argument configurations...".

<sup>4</sup> Cf. "However, taking only partial productivity and semantic unpredictability as the essential properties of lexical rules will have the interesting and I think correct result that the distinction between syntactic and lexical rules may cut across the traditional distinction between morphology and syntax." (Dowty 1979: 301)

## 2 What Do LEXICAL RULES Have To Do With INFLECTION and DERIVATION?

These new conditions force us to again discuss the conceptual relation of morphology to lexicon and syntax, and of INFLECTION/DERIVATION to productive lexical processes in general. I will suggest that we cannot expect only one correct answer to the question of whether or not INFLECTION and DERIVATION can be unequivocally distinguished when this question is raised from the background of such different linguistic activities and interests as theory-making on a highly abstract level, the study of language universals, and the representation of language-specific lexicons and grammars. In my opinion, the interdependence between the answers given in the past to this question, on the one hand, and the scientific interest and the languages studied or simply known, on the other hand, is much higher than sometimes assumed. Thus, they are not necessarily contradictory but are (probably) all correct under the conditions given in each case. Nevertheless, we can try to develop a theory-neutral framework which would both incorporate existing linguistic knowledge about language diversity as well as satisfy some elementary representational requirements. My suggestion is that an extended concept of LEXICAL RULES should play an important role in designing such a framework. This could also help in overcoming some difficulties in distinguishing INFLECTION and DERIVATION.

Concerning the relation of LEXICAL RULES to INFLECTIONAL and DERIVATIONAL rules, the most common assumption is that LEXICAL RULES share their domain of application with rules for morphological DERIVATION.<sup>5</sup> In addition, LEXICAL RULES often include two further types of lexically restricted semi-productive processes, which are not subject to an overt morphological operation: (a) processes formerly treated via syntactic rules (for instance, dative alternation (cf. (1)), small clauses, diathesis alternations such as passive, etc.) and (b) processes which do affect syntactic behavior and semantic interpretation but are commonly analyzed as "meaning shift" or systematic polysemy rather than as "zero-derivation" (for instance, argument changing alternations such as transitivity alternations (cf. (2)).<sup>6</sup>

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<sup>5</sup> Compare, for instance, Anderson (1992: 38): "The class of morphological operations within the lexicon is roughly coextensive with what is traditionally called derivation, as opposed to inflection. Most of what is said in this section about lexical operations is thus applicable only to derivational morphology."

<sup>6</sup> This is not to say that the three linguistic analyses were applied complementarily. The very same semi-productive process or alternation could be analyzed via syntactic rules, via morphological "zero-derivation" and as a simple polysemy depending on the spirit of the model in question. The best way to study the different treatments of these closely related phenomena proposed in the past is to read Levin's (1993) instructive book "English Verb Classes and Alternations".

- (1) a. *Peter sent a package to Claire.*  
 b. *Peter sent Claire a package.*
- (2) a. *Peter opened the door.*  
       *The door opened.*

LEXICAL RULES thus provide a favorable generalization of (in some respect) different types of lexical processes, with the effect that the distinction between "morphology" and "syntax" as defined by the boundary of the phonological word can now appear as a subclassifying parameter resulting in (a) LEXICAL RULES which affect the morphological (i.e. word-internal) make-up of lexical forms and in (b) LEXICAL RULES which require a modification of the syntactic (i.e. word-external) environment.<sup>7</sup>

Here, one is tempted to ask how far one wishes to extend the scope of LEXICAL RULES. First, LEXICAL RULES could be extended in such a way that they will cover all kinds of systematic sense relations connected with a single lexical form. Second, we could think of LEXICAL RULES also accounting for processes which have traditionally been analyzed as INFLECTION. We will discuss these questions in a more detailed fashion in sections 3.2 and 3.3, where we will deal with the contribution of lexical semantics to the problem of distinguishing between DERIVATION and INFLECTION.

### **3 What Does Morphology Have To Do With INFLECTION and DERIVATION?**

#### **3.1 The Role of Inflection and Derivation in Morphological Models**

Several proposals have been made to account for the highly interactive character of morphology and for locating it - as a subdiscipline or as a subcomponent - between

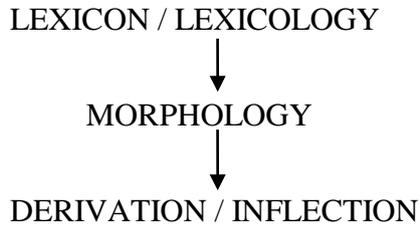
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<sup>7</sup> Dowty (1979: 301) crossclassifies lexical and syntactic rules with the type of "operations" available to be used in them, i.e., morphological operations and syntactic operations. This yields a subclassification of LEXICAL RULES into rule types with morphological operations and with syntactic operations. Since only the "primitive operations" are disjunctively defined in this model, it is also allowed that a single rule (a syntactic or lexical rule) involves both a syntactic and a morphological operation. This leads to an additional subtype of syntactic respectively LEXICAL RULES.

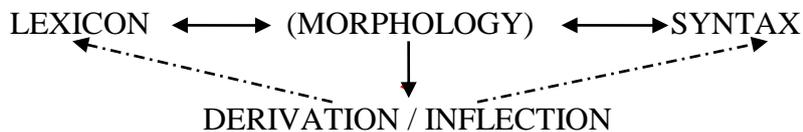
lexicology/lexicon, syntax and phonology.<sup>8</sup> Under (3), we can see a simplified representation of three basic proposals, with the phonology-morphology interaction being disregarded here.

(3)

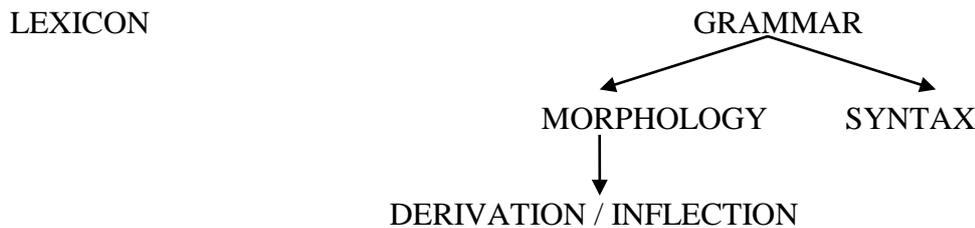
a.



b.



c.



According to (3) a., morphology is seen as a subdiscipline of lexicology or as a subcomponent of lexicon (cf. Reinhard 1990, Bybee 1988, Di Sciullo/Williams 1987). In (3) b., morphology is located between lexicology/lexicon and syntax. As such, it is understood either as an autonomous field/component which has to be studied for its own sake or as an intermediate field/component. In both cases, morphology is subdivided into an INFLECTIONAL part and a DERIVATIONAL part, which are themselves associated with syntax and lexicology/lexicon, respectively. This was the dominating model in the non-generative linguistics of the last 40 years and also the basis of the "split-morphology" concept (cf. Anderson 1988, 1992). In (3) c., morphology is assigned to grammar, where it is distinguished from syntax by its scope of

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<sup>8</sup> Note the ambiguity of the terms "syntax", "morphology" and "phonology" between the senses "discipline" and "object of discipline", in contrast to "lexicon". Thus, if both senses are addressed, I will make use of the terms "lexicology" and "lexicon", separated by a slash.

applicability, i.e., morphology is responsible for "word-internal", syntax for "word-external" regularities (cf. Bergenholtz/Mugdan 1979; Selkirk 1982).<sup>9</sup>

In spite of differences in the lexicon-grammar architecture, it is taken for granted in all approaches that the INFLECTIONAL/DERIVATIONAL distinction has to be treated exclusively as a matter of morphology. That is, lack of evidence for significant word-internal differences between INFLECTION and DERIVATION and the denial of the INFLECTIONAL/DERIVATIONAL distinction in morphology is generally interpreted as the denial of this distinction at all. And, vice versa, arguments for a clear-cut or prototypical distinction in the domain of the phonological word are not generalized as a property of the entire lexicon-grammar. It is characteristic of even those who advocate the location of all types of complex forms in the lexicon, as for instance Bybee (1988), to deal with the separability of INFLECTION and DERIVATION as a **morphological** rather than a lexicological question (cf. Bybee 1985). Even the traditional functionally motivated association of INFLECTION with syntax and DERIVATION with lexicon is, generally, conceived of as a special property of morphology. Anderson's approach is still called "split **morphology**" although it states that INFLECTIONAL operations are to be treated in the syntax and DERIVATIONAL operations in the lexicon. This division is not paralleled, to my knowledge, by an analogous concept of "split syntax" (i.e. "split S-syntax"; cf. footnote 9). Rules systematically forming new lexical units of more than one "phonological word" are sometimes called "syntactic derivation" (cf. Corbett 1981; Fortescue 1979). In the spirit of "split morphology", which advocates the separation of rules having a morphosyntactic function from those which extend the lexicon, we would expect a similar basic division between (a) constructions or constructional rules serving the morphosyntax and (b) lexical phrases or LEXICAL RULES with syntactic operations such as the classifier-noun constructions in Vietnamese, the verb-particle construction in English or the "factitive"/"resultative" constructions in English as shown in (4) b. vs. (4) a.

- (4) a. *Martin hammered the metal.*  
 b. *Martin hammered the metal flat.*

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<sup>9</sup> The diagrams under (3) are not indicative of the question as to whether or not the respective models actually draw a principal distinction between INFLECTION and DERIVATION. They only indicate that the issue of INFLECTION and DERIVATION is addressed within "morphology". Only (3) b. is likely to assume a fundamental difference between the two, as represented by the broken line. Under both (3) a. and (3) c. we find proponents and opponents of a clear-cut distinction (cf. Di Sciullo/Williams 1987; Selkirk 1982; for a detailed discussion see Scalise 1986 and Müller 1992). "Grammar" under (3) c. is sometimes called "syntax" and distinguished from "syntax" on the second hierarchical level (cf. Selkirk's "W-syntax" (morphology), contrasted with "S-syntax" and subordinated to "syntax" generally). The three schematic models may also differ with respect to the status of compounding. This, however, is not relevant for our purpose here.

The intermediate character of morphology is also reflected in the widely accepted division into the two areas: morphotactics and morphophonology, and morphosyntax. The former has to capture syntagmatic regularities in "word structure", i.e., to establish morphotactic and morphophonological constraints on different types of morphologically complex entities (lexemes, word-forms) in the scope of the phonological word. The latter has to capture paradigmatic regularities among complex phonological words of a certain subtype, namely, among word-forms of morphosyntactic categories. The consequence of this is that morphotactics/morphophonology and morphosyntax are not commonly considered symmetrical with respect to their relation to INFLECTION and DERIVATION. Whereas morphotactics/morphophonology is seen as not limited to INFLECTION nor to DERIVATION, there is a strong historical association between paradigmatic perspective, morphosyntax and INFLECTION. Although there are paradigm-based theories for word formation (cf. Aronoff 1976; van Marle 1983, 1985) and successful implementations of DERIVATIONAL morphology in a paradigm-based representation language (in DATR, cf. Kilbury 1992; Evans ms) also exist, the necessity of paradigmatic considerations and representations for the DERIVATIONAL domain has not yet been generally accepted.<sup>10</sup> This may have two different reasons. First, it could be the case that the INFLECTIONAL domain tends to be universally organized in a paradigmatic fashion, whereas paradigmatic structuring is not typical for the DERIVATIONAL domain. This is, at least, one of the criterial features proposed in the literature for distinguishing INFLECTION and DERIVATION. Second, the stronger interest of a paradigmatic representation in the INFLECTIONAL domain may simply follow from the historical development of linguistics. This asymmetry in the treatment of INFLECTION and DERIVATION continues in that the study of word classes/lexical categories and lexical semantics are, in contrast to morphosyntax, generally not regarded as relevant subfields of morphological investigation (cf. Müller 1992; Carstairs-McCarthy 1992).<sup>11</sup>

### 3.2 Lexical Semantics and Lexically Established Systematic Alternations

It is undeniable that some of the distinguishing criteria for INFLECTION and DERIVATION immediately concern questions of lexicology rather than questions of structural morphology, namely, the criteria concerning productivity, category change and lexeme identity. Ambiguity

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<sup>10</sup> Although, ZERO-DERIVATION, for instance, is a concept clearly based on paradigmatic considerations. It is subject to the same analogical reasoning which gives rise to the assumption of zero-morphs in INFLECTION (Sanders 1988: 156).

<sup>11</sup> Cf. "The interface between derivational morphology and lexical semantics has not received much attention in recent years, so there is little to report here; but I argue in chapters 2 and 6 that this is a serious deficiency" (Carstairs-McCarthy 1992: 7).

types, including so-called "meaning shifts", and the identity of lexemes and "lexical units" (cf. Cruse 1986) are determined, both in the area of morphologically simplex and complex entities, by the global lexical organization of a language. The same holds true for the lexical vs. phrasal status of categories, for the hierarchical organization of lexical categories and for compositionality. It is lexicology which investigates such issues, which are highly relevant for the INFLECTIONAL/DERIVATIONAL distinction. Thus, as long as the results obtained here are not exploited, meaning change as a criterial feature remains a wild card.

The discrepancy between lexical semantic approaches and traditional morphological approaches interested in morphotactics, morphophonology, and morphosyntax, but not in lexical semantics, becomes particularly apparent in the area of systematic sense relations such as those listed under (5).

(5)

- a. systematic sense relations correlating with differences in lexical category (i.e., conversion (*box, file, shell, mother, copy, telephone, machine*, etc.); cf. (6))
- b. systematic sense relations correlating with different argument structures and argument selection such as the causative-inchoative alternation (*break, cool, melt, open, move*) (cf. (2), (7))
- c. systematic sense-relations correlating with types of transitivity alternations other than the causative-inchoative alternations, for instance, those expressed by the presence and absence of an overt direct object (i.e., alternations signaling unspecified objects (*eat, bake, draw*), impersonal objects (*amuse, shock, bore*), the dispositional property of the selected (agentive or instrumental) subjects (*bite, drink, cut, cook*))
- d. systematic metonymical relations such as those described by Lakoff/Johnson (1980) (see the metonymical relation "institution/people responsible, institution/place", etc.)
- e. systematic sense relations correlating with differences of subcategorial status in the nominal domain<sup>12</sup> (i.e., with mass/count environment; see the sense relations "material/artifact made of the same material (*glass*)", "animal/meat of the same animal used as food (*lamb, fish*)", "property/person having property (*beauty*)")<sup>13</sup>
- f. systematic sense relations such as found between senses of nominalizations and participles in European languages (i.e., between EVENT, RESULT, AGENT, INSTRUMENT, LOCATION senses; see *building*, German *Durchgang* ('going through',

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<sup>12</sup> The metonymical pattern "institution/place" also correlates (at least partly) with the mass/count distinction (cf. Behrens (forthcoming), where this issue is discussed in detail).

<sup>13</sup> With respect to the alternations listed under (5), see Dowty (1979), Wilensky (1990), Atkins/Kegl/Levin (1988), Levin (1993), Pustejovsky (1991), Behrens (1994).

'passage(way)'), Hungarian *szárító* ('dryer, i.e. drying person', 'dryer, i.e. dryer for clothes', 'drying room').

In principle, all these systematic sense relations can be represented with LEXICAL RULES, although only (5) a., b., and c. are the classical objects of LEXICAL RULES. Most of the systematic sense relations listed under (5) may have translation equivalents in other languages related by an overt morphological operation<sup>14</sup> and may be analyzed, with great probability, as instances of a DERIVATIONAL rule. In contrast to this, not all systematic sense relations in English are equally good candidates for an analysis resulting in ZERO-DERIVATION, provided of course that one actually works with ZERO-DERIVATION instead of using LEXICAL RULES or other strategies. Systematic sense relations correlating with differences between major lexical categories ((5) a) have the best chance, also supported by the dominant lexicographic praxis, of being treated as different lexemes and as instances of ZERO-DERIVATION (cf. (6) a. vs. b.). There is a lower probability for a ZERO-DERIVATION analysis in the case of sense alternations correlating with subcategorial differences in the verbal domain (transitivity alternations) ((5) b.), which are not commonly seen as distinct lexemes but as distinct "word-senses" of a lexeme (cf. (7) a. vs. b.). Systematic sense-relations correlating with subcategorial differences in the nominal domain (mass/count alternations) and other sorts of semi-productive (metonymical) sense relations, which are not systematically marked in dictionaries for human users, had never been regarded as an object of research of DERIVATIONAL morphology (cf. (5) d. and e., (8) a. vs. b., (9) a. vs. b.). In the case of (5) e., it is usually only the morphological change of a basic lexical form which is treated as an instance of a DERIVATIONAL process rather than the derivation of new senses from a default sense (for instance an EVENT or AGENT sense) of the complex form. Why are cases of conversion more likely to be regarded as ZERO-DERIVATION than transitivity alternations? The degree of semantic distinctness cannot alone be responsible for these varying "morphological strategies". Here, the fact that competing affixational strategies exist only for conversion (i.e. *move*, *moving*, *movement*) may play a certain role. The decisive factor, however, in assigning identical lexical forms to two lexemes in one case but not in the other is, in my opinion, the prominent role of "major lexical categories" in current linguistic and lexicographic description.

Lexical semanticists, focusing on the importance of recurrent semantic contrasts, may achieve different results regarding the lexeme status of the lexical forms cited in (5) and (6). Cruse (1986: 79-80), for instance, argues against current linguistic and lexicographic practice which

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<sup>14</sup> This is well-known in the case of (5) a. and b., but also in the case of the other systematic polysemies, languages may exhibit morphologically differing forms. Tagalog, for instance, uses a morphological device for signaling (conceptually) unspecified objects ((5) c.) and for indicating differences between the translation equivalents of EVENT and RESULT nominalizations, *nomina instrumenti*, *nomina loci*, etc. (cf. p. 19).

regards differences in major lexical category as "justifying a separate main entry, irrespective of the presence or absence or recurrent relationships" (cf. 1986: 80). He considers, as I do, the "lexical unit", i.e., the union of a single, lexically (pre)established sense with a lexical form, as the primary operational unit of the lexicon instead of the lexeme. Furthermore, he takes semantic recurrence as the primary criterion for the hierarchical organization of lexical units. Since all distinct lexical units occurring in the a.- and b.-sentences in the examples (6)-(9) are subject to the "principle of recurrent relationships", they should **not** be assigned to different lexemes according to Cruse.

- (6) a. *Put them in a **can**.*  
 b. ***Can** them.*
- (7) a. *John **moved** the rock.*  
 b. *The rock **moved**.*
- (8) a. *Have some **apple**.*  
 b. *Have an **apple**.*
- (9) a. *His new **novel** will be published next spring.*  
 b. *Why is your desk always piled high with **novels**?*  
 (Cruse 1986: 69, 80)

Cruse proposes a further, secondary criterion for the association of "grammatically different" lexical units. To not be treated as two different lexemes, the recurrent sense relation should systematically correlate with a constant grammatical environment. This is exactly the basic principle of alternations, as based on "semantic-syntactic" interdependencies (see above; cf. Atkins/Kegl/Levin 1988; Kilgariff 1993). Of course, we may find - in addition to the grammatical correlates discussed above - further differences among the alternations under (6)-(9). Nevertheless, an unified treatment of all these alternations is clearly favorable from a semantic and from a cross-linguistic perspective. It is obvious that the concept of LEXICAL RULES is more suitable for such a purpose than the narrower concept of DERIVATIONAL rules rooted in morphology. Extending LEXICAL RULES to also cover systematic sense-relations which correlate with more subtle grammatical and/or collocational differences seems to me to be the next logical follow-through for a typologically adequate treatment of lexicon-grammar interaction.

### 3.3 Lexical Semantics and INFLECTION

Linguistic models often show differences in which types of systematic alternations are represented with LEXICAL RULES (cf. Behrens 1994). This does not necessarily mean, however, that different types are deliberately excluded from a treatment with LEXICAL RULES in different

approaches. Rather, some alternations simply fall outside the object of research in certain approaches. In contrast to this, productive processes considered as INFLECTIONAL are often explicitly excluded from the application of LEXICAL RULES (cf. Dowty 1979: 301ff.).<sup>15</sup> This, of course, presupposes that we can always decide whether two forms have to be considered as two word-forms (INFLECTIONAL relation) or as two lexical forms (subject to LEXICAL RULES). Here, the good old problem of distinguishing between INFLECTION and DERIVATION crops up again.

Research in lexical semantics proceeds from a similar assumption, namely, that INFLECTIONAL processes fall outside the domain of the investigation of systematic lexical-semantic relations. The primary operational units of the lexicon ("lexical units") are, for instance, explicitly defined in Cruse's (1986: 76ff.) approach as abstracted from INFLECTIONAL variation. His arguments are very similar to that of morphologists for INFLECTION as opposed to DERIVATION: The varying forms do not reach a certain threshold of semantic distinctness. Logically, Cruse uses the very same argument for assessing occurrences of a major lexical category in distinct syntactic environments which jointly characterize the lexical category in question in one case (for instance, the predicative and attributive uses of the adjective *open*) as lexically non-distinct occurrences of a single lexical unit, and in another case (for instance, the uses of the verb *open* in a transitive and an intransitive environment) as distinct lexical units of the same lexeme.<sup>16</sup> There is, however, a high interdependence between semantic distinctness and semantic identity of lexical units and lexemes on the one hand, and the grammatically determined hierarchy of lexical categories and the classification of productive processes as INFLECTIONAL and DERIVATIONAL on the other. Thus, without an appreciation of the intricate question of distinguishing INFLECTION from DERIVATION, the study of lexical semantics is bound to fail.

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<sup>15</sup> All that is said about "lexical rules" here is only valid for meaning changing LEXICAL RULES (i.e. not for "morpholexical rules") as linguists commonly use and understand this term. In computational linguistics, there are actually approaches to model INFLECTION using (collections of) LEXICAL RULES. Krieger and Nerbonne (1993) discuss such approaches and also point out differences between theoretical linguists' and computational linguists' understanding of "lexical rules".

<sup>16</sup> In other words, the argument runs as follows: Occurrences of the English *open* used as an attributive and predicative adjective constitute variants of a single lexical unit in spite of apparent syntactic differences and due to insufficient semantic distinctness. Occurrences of *open* used as an intransitive and a transitive verb constitute distinct lexical units of the same lexeme due to sufficient semantic distinctness and recurrence. One should emphasize that insufficient semantic distinctness in this case should not be equated with "generality" and "contextual modulation". The latter is a possible property of lexical forms which have already been abstracted from INFLECTIONAL and syntactic variations.

## 4 Inflection and Derivation as Entities of Lexicon-Grammar

I claim that INFLECTION and DERIVATION are entities which characterize the lexicon-grammar interaction of languages rather than the morphology. Consequently, we must simultaneously take into account lexicological (especially lexical semantic) and grammatical considerations for studying INFLECTION and DERIVATION. Proceeding from this point, I will now discuss three cases which pose particular difficulties for separating INFLECTION from DERIVATION.

First, I will discuss adjectives and adverbs in European languages which provide an excellent example for the interaction among the hierarchical organization of lexical categories, the identity of lexical items, and the classification of productive processes. I will compare alternative strategies for dealing with this interaction in languages with an overt morphological marker for adverbials (English, French, Hungarian, etc.) and those without (German). Second, I will deal with some interesting cases of the overlapping of formal means with respect to the basic functions of INFLECTION and DERIVATION, namely, morphosyntactic (grammatical) instantiation and lexical extension, observed in English and German. Finally, I will present some data from Tagalog, which is a language well-known for its difficulties in distinguishing between INFLECTION and DERIVATION.

### 4.1 Lexical Categories, Identity of Lexical Items, and Productive Processes: The Case of Adjectives and Adverbs

It is common practice in linguistics to generalize lexical categories in such a way that they are canonically associated with more than one truly different syntactic distribution as long as their hypothetical members regularly occur in all of these distributions: Adjectives, for instance, are regularly associated with the attributive position and the predicative position. Idiosyncratic restrictions of the category member with respect to such a set of environments are commonly treated as lexical defectivity, which establish subcategories. Accordingly, adjectives are often characterized as having the following subcategories: (a) used only attributively (cf. German *väterlich* ('paternal'), *Schweizer* ('Swiss')) and (b) used only predicatively (cf. German *entzwei* ('in two', 'apart')). It is also common linguistic practice to allow a lexical stem belonging to a category with more than one canonical syntactic environments to be inflected in one environment and unchanged in the other. This is the normal analysis of German adjectives, which are seen as "inflected" in the attributive position (cf. (10) a.) and as "uninflected" (?) (cf. (10) b.) in the predicative position.

- (10) a. *Die **ausgezeichnete** Beschreibung der Zeugin hat zur Aufklärung des Verbrechens geführt.*  
 'The witness' excellent description helped to clear up the crime.'
- b. *Die Beschreibung des Mörders war **ausgezeichnet**.*  
 'The description of the killer was excellent.'
- c. *Die Zeugin hat den Täter **ausgezeichnet** beschrieben.*  
 'The witness described the killer excellently.'

What about adverbs?<sup>17</sup> Although lexical stems are not overtly marked in adverbial position, a separate lexical category - "adverb" - is often established in German on the same hierarchical level of lexical categories as "adjective". From the lexical point of view, we could also establish one single category with three environments (attributive, predicative, and adverbial position). One could rightly argue that the lexical stem *ausgezeichnet* is semantically not specified with respect to the grammatical distinction existing between the attributive ((10) a.), predicative ((10) b.), and adverbial ((10) c.) phrases, or that the semantic distinction correlating with the attributive and predicative position is not "smaller" than, for instance, that correlating with the attributive and adverbial position. This is a point in favor of a one-category solution; lexicalized adverbs such as *gern* ('with pleasure', 'to like to do sth.') could be treated in this case as defective members (used only as adverbials) of a lexical category associated with three environments. If the distinctness, between adverbial phrases on the one hand, and attributively and predicatively used adjective phrases on the other, should be maintained from a grammatical point of view, one could relax the mapping principle between lexical and syntactic categories by allowing adverbial phrases which take adjectives rather than adverbs as their head. Deciding in favor of two lexical categories of equal rank, in turn, allows for two principal strategies:

- (a) double categorization of the majority of the relevant lexical stems both as adjectives and as adverbs;
- (b) automatically applying ZERO-DERIVATION of the majority of lexical adjective stems in the lexicon, resulting in lexical adverbs.

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<sup>17</sup> Only adverbs of manner and corresponding adverbial phrases are at issue here. This opens up another important question concerning the shared and distinct properties of manner adverbial phrases and other sorts of adverbial phrases (locative adverbials, time adverbials, etc.). Unfortunately, limited space here prevents further discussion of this interesting point.

In languages systematically marking lexical stems in adverbial position with an affix (cf. (11) c. vs. (11) a. and b.), the one-category and two-category solutions are likewise possible.

- (11) a. *He astonished us by **rapid** movements.*<sup>18</sup>  
 b. *His movements were astonishingly **rapid**.*  
 c. *He astonished us by moving **rapidly**.*

If we decide in favor of one single lexical category, the adverbial affixation can be treated as an INFLECTION restricted to a specific syntactic position, just as the INFLECTION of German adjectives is restricted to the attributive position. If we decide in favor of two lexical categories (i.e. adjectives and adverbs), we again have the choice between the following two strategies:

- (a) double categorization of the majority of the relevant lexical stems both as adjectives and as adverbs with subsequently applied INFLECTION of stems categorized as adverbs;  
 (b) automatically applying DERIVATION (affixation) of the majority of lexical adjective stems in the lexicon, resulting in lexical adverbs.

It is almost unnecessary to mention that the strategy of multiple static categories is not very popular among linguists. However, the (b)-strategy of lexical DERIVATION, which is only motivated by the syntax is not very elegant either, especially not in languages without overt adverbial markers. In any case, it must be clear that the DERIVATIONAL results are not identical to the entities occurring in adverbial positions in actual sentences, since DERIVATION produces ex hypothesi new lexical items (lexical units or lexemes) and actual sentences contain "grammatical forms" selected on the basis of lexical items. That is, just as the entity occurring in predicate position in German and English is no longer a lexical stem having the category of adjective, so the entities occurring in adverbial position are not identical to the adverbs generated by a DERIVATIONAL process in the lexicon. They are all subject to a process which maps lexical items onto appropriate grammatical forms. If INFLECTION is understood as such a mapping process, an "invisible" INFLECTIONAL process must also then be assumed both for ZERO-DERIVATED adverbs in German and affixational adverbs in English when analyzed as results of a DERIVATIONAL process. That is, it must be explicitly stated that there is no phonological/morphological difference between the forms representing lexical items (lexical adverbs) and the forms actually used, or it must be universally stipulated that lexical adverbs are not subject to an INFLECTIONAL process.

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<sup>18</sup> The sentences in (11) are taken from Jespersen (1924/1968: 91).

We may conclude that both the INFLECTIONAL and the DERIVATIONAL analyses of "adverbs" show serious drawbacks in the languages discussed here.

#### 4.2 Overlapping of Formal Means for Inflection and Derivation: The Case of the English *-ing*-form and the German Plural

Now we will turn to a reversed case where, single formations can simultaneously be associated with INFLECTION and DERIVATION since they are systematically used both (a) as word-forms of established morphosyntactic categories or as part of corresponding periphrastic constructions<sup>19</sup> and (b) as means of lexical extension.<sup>20</sup>

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<sup>19</sup> It is significant that there is no widely accepted term for periphrastic expressions as exponents of paradigmatic values. We encounter a number of terms for expressions which are semantically simplex (i.e., constitute one "semantic constituent" in Cruse's (1986) words) and consist of more than one lexical item, which appear as separate phonological words when used in actual sentences: "multi-words", "complex lexemes", etc. However, in the linguistic community, as far as I know, there is no such term as "multi-word form" or "complex word-form", replacing X in the following proportional series: word (lexeme) : multi-word :: word-form : X. The main question here is, of course, what constitutes a grammatical and INFLECTIONAL paradigm. The tradition of grammar book writing is not very helpful and is inconsistent on this point, as already pointed out by Matthews (1974). If the identity of INFLECTION is established from a morphosyntactic point of view, i.e., by the existence of a paradigmatic patterning of grammatical meaning, then the difference between formal means for the expression of grammatical meaning (i.e., "function words", affixes, reduplication, tonal modification, external agreement, etc.) can only be of secondary importance. One of the main advantages of an "Item and Paradigm Model" for the traditional INFLECTIONAL domain rests not so much in its technique for dealing with tonal modification, suppletion, etc., but in its basic capacity for capturing the following fact: Languages mix and organize different formal means for grammatical categories (affixation and function words (TENSE in English and French), affixation and external agreement NUMBER in English), prefixation and suffixation (PERSON in Kanuri), prefixation, suffixation, infixation, and reduplication (ASPECT/PARTICIPANT ROLE in Tagalog) in a paradigmatic fashion, and do not necessarily prefer only one type. Consequently, I cannot understand Matthews' (1974) argumentation. He advocates, as is well-known, a Word and Paradigm Model for INFLECTION in the scope of the phonological word. He further remarks that a unified treatment of periphrastic and non-periphrastic forms is necessary from a "semantic perspective". "Just as the student of meaning would be unwise to treat inflected and periphrastic separately, so for our present purpose it would be unhelpful not to do so." (1974: 172-173). This is either an early proposal for a kind of "split morphology" or a suggestion that morphology can be studied without considering semantic factors, which would contradict Matthew's own arguments for the Word and Paradigm Model.

<sup>20</sup> I am not concerned here with cases of genuine homonymy of grammatical affixes such as the German *-er* (PLURAL affix and noun of agent affix) but rather, with the systematic overlapping of morphological means in the classical domains of INFLECTION and DERIVATION.

A familiar example is the English *-ing*-form, which is part of the ASPECT/TENSE paradigm and shows a strong tendency toward lexicalization (cf. *calculating* etc.). According to a common analysis, the *-ing*-form receives a verbal status in the progressive construction ((12) a.) and an adjectival status following adjectival modifiers such as *very* ((12) b.).

- (12) a. *John is insulting me.*  
 b. *John is very insulting.*  
 c. *John is insulting.*

Quirk et al. (1972: 244) remark that the status of the *-ing*-form is "indeterminate" in the absence of any explicit grammatical indicator such as direct object or *very* (cf. (12) c.). Strictly speaking, they characterize the two possible interpretations (dispositional and actual) of sentences like (12) c. as "adjectival interpretation" and "verbal interpretation", and explicitly assume categorial ambiguity only if the *-ing*-form is strongly conventionalized (for instance, in the case of *calculating*). If we are looking for verbs which may occur in neutral contexts, we primarily find verbs participating in "impersonal object alternation"<sup>21</sup>, that is psych-verbs, for instance, which imply a dispositional interpretation without an object in present tense as well:

- (13) *That movie always shocks.*

This, however, means that the dispositional interpretation alone does not tell us anything about the category of the *-ing*-form. We must ask whether the purely morphological formation (i.e. the affixation) of participles can be described in terms of INFLECTION and DERIVATION. In modern linguistics, participles are not seen as lexical categories, i.e., as categorial features assigned to lexical items. Thus, building of participles does not count a priori as a category-changing (DERIVATIONAL) operation and the periphrastic progressive construction is normally not analyzed as involving a derived element. Only the productive occurrences of the *-ing*-form in an adjectival environment and the lexicalized results are possible candidates for DERIVATION. Taking the view that the building of progressive is a complex INFLECTIONAL process, which involves the primitive morphological operation of concatenating the affix *-ing*, implies an indirect association of the *-ing*-form with INFLECTION. This does not mean that the purely morphological formation of *-ing*-forms is ambiguous between an INFLECTIONAL and DERIVATIONAL interpretation — potentially and actually in sentences such as (12) c. My suggestion is that there is only one single morphological process neutral with respect to INFLECTION and DERIVATION, the result of which is systematically used both in inflectional

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<sup>21</sup> Levin (1993: 37) calls this alternation "PRO-*arb* Object Alternation".

(i.e. morphosyntactically relevant) and non-inflectional constructions and may be becoming conventionalized with a new category. Separating the purely morphological aspects from the functional aspects is also advantageous for dealing with further constructions containing an *-ing*-form, particularly for dealing with so-called "hybrid-constructions" (cf. Baker 1985) such as shown in (14).

(14) *John's singing the aria amazed me.*

German abstract nouns (including nouns of "sensation", cultural uniques, etc.) show another example for the overlapping of morphosyntactic (grammatical) instantiation and lexical extension. One subset of these nouns lacks morphological PLURAL entirely and its members are typically regarded as mass nouns. The members of another subset show PLURAL forms which are regularly used for "instance" and "sort" senses. These senses, in turn, are subject to a recurrent lexicalization process resulting in new morphologically defective "lexical units", as shown in (15) b. and (16). b.

- (15) *Freude*    a.    SG: 'joy', 'pleasure'  
                   b.    PL: 'pleasures' (as in *worldly pleasures*)
- (16) *Freiheit* a.    SG: 'freedom', 'liberty'  
                   b.    PL: 'liberties' (as in *take liberties with s.o.*)

It is easy to identify this systematic pattern in dictionaries by the following configuration: One sense is often marked as *singulare tantum* and another sense (the extended sense) as *plurale tantum*. Is the plural formation in *Freuden* or *Freiheiten* an instance of INFLECTION or DERIVATION? A primarily INFLECTIONAL means is systematically used here in a prototypically DERIVATIONAL function. The distribution of defectivity over different "word senses" (i.e. lexical units) nicely demonstrates how strategies for extending the lexicon may also affect morphosyntactic paradigms. One should add that we typically observe such phenomena in those morphosyntactic categories which exhibit a high degree of interdependence between lexical-semantics and semantic interpretation of grammatical values in the sentence, i.e., with NUMBER and ASPECT rather than with PERSON.

#### 4.3 The Case of Tagalog

The conflation of INFLECTION and DERIVATION in Tagalog is not an exceptional phenomenon; rather, it characterizes the entire lexico-grammatical make-up of the language. The same morphological formations are regularly discussed in grammatical descriptions under both "derivation" and "inflection" (cf. Schachter/Otanes 1977).

A typical word-form in Tagalog contains two types of information: (a) a "thematic" information indicating a certain argument of a situation, whereby this argument is interpreted as co-referential to the referent of the topic phrase if the word-form predicates the situation, and as referential or attributive if the word-form occupies a non-predicative position;<sup>22</sup> (b) an "aspectual" information. The word formation involves an ordered series of primitive operations, namely (a) the concatenation of thematic affixes (prefixes, infixes, and suffixes) and (b) the phonological modification of thematic affixes and/or the phonological modification of stems (reduplication) according to four aspectual features. Example (17) shows the word-forms of the lexical stem *sulat* ('write/writing') specified for the thematic roles actor, theme, and benefactive and the aspectual categories basic, future, perfective and imperfective.

(17)

	ACTOR	THEME	BENEFACTIVE
BASIC	sumulat	sulatin	isulat
FUTUR	susulat	susulatin	isusulat
PERFECTIVE	sumulat	sinulat	isinulat
IMPERFECTIVE	sumusulat	sinusulat	isinusulat

Most lexical stems can be instantiated both by such a complex word-form and a word-form which is identical to the stem and denotes an argument (commonly, the theme argument) of the situation expressed by the set of complex word-forms (see the stem *kita*, glossed as 'salary' (simplex word-form) and as 'earn' (complex word-form). Lexical stems (i.e. "content words") are not subcategorized with respect to the major phrasal categories. Any lexical stem, that is, any (simplex or complex) word-form of any lexical stem, is (in principle) allowed to occur in any syntactic position (cf. (18)).

- (18) a. *Manunulat ang titser.*<sup>23</sup>  
 WRITE:IMP:ACTOR<sup>24</sup> REF TEACHER  
 'The teacher writes (professionally).'
- b. *Titser ang manunulat.*  
 'The writer is a teacher.'

<sup>22</sup> The word-forms are usually translated into English or German as verbs when in the predicative position and as nouns when in a non-predicative position (cf. (18)).

<sup>23</sup> Tagalog has neither morphological PERSON markers nor copula.

<sup>24</sup> There are more than one actor affixes; *manunulat* contains the (assimilated) affix *mang-*.

Although the Tagalog lexicon lacks real differences in syntactic subcategorization, lexical categories of European style (nouns, verbs) are assigned to lexical stems according to ontological criteria and the ability of stems to take "thematic" affixes. Lexical stems building complex forms are categorized as verbs, based on unjustified priority given to predicative occurrences, and lexical stems occurring without affixes are categorized as nouns.<sup>25</sup> This results in an extensive multiple categorization of dictionary entries, both in commercial dictionaries and in linguistically motivated lexicons (cf. English 1986/1990; Santos 1982; Panganiban 1972; Ramos 1971). In Tagalog lexicography and linguistics we encounter three basic analyses of complex word-forms with respect to INFLECTION and DERIVATION<sup>26</sup>:

(19)

- a. the entire word formation (i.e. both the thematic affixation and the aspectual modification) is INFLECTIONAL (De Guzman 1991);
- b. the entire word formation is DERIVATIONAL (Starosta 1986);
- c. the thematic affixation is DERIVATIONAL, the aspectual modification is INFLECTIONAL (Santos 1982).

In addition, we find ZERO-DERIVATIONAL analysis on two levels, namely, on the level of stems and on the level of word-forms: The semantic relation of the "noun" and "verb" senses which are derived from each other on the stem level is similar to the relation of English nouns and verbs usually described as conversion. ZERO-DERIVATIONAL rules on the word-form level account either for all entirely regular uses of a word-form such as *manunulat* in the topic/complement position (i.e. for sentences like (18) b. in general) or only for the conventionalized uses of word-forms corresponding to English *nomen agentis*, *nomen loci* (see actor specification of *awit* ('song'/sing(ing)) > *mang-aawit* ('singer'), locative specification of *tarangka* ('latch or bar for fastening a door'/fasten(ing) a door') > *tarangkahan* ('gate')).

All three analyses in (19) have their special merits and drawbacks. Advocates of analyses with an INFLECTIONAL component ((19) a. and c.) have to cope with the problem that the output of the INFLECTIONAL analyses may be identical to a form which they would also like to analyze as the output of a DERIVATIONAL process. Thus, they are obliged to assume either a ZERO-DERIVATIONAL process which has an INFLECTIONAL output as its input or two parallel morphological processes (INFLECTIONAL and DERIVATIONAL) which operate with

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<sup>25</sup> Here, adjectives, particles, etc. are not taken into consideration (cf. Behrens 1994).

<sup>26</sup> The INFLECTION/DERIVATION distinction in Tagalog is a very controversial topic and cannot be discussed in detail here. I have dealt with this topic in greater detail in Behrens (1994), which addresses lexicographic and grammatical practice on the one hand, and systematic alternations, lexical and syntactic categories on the other.

homophonous affixes and result in homophonous outputs (cf. Macklachlan 1989:74). De Guzman (1991) opts for the first alternative and presents "this convincing piece of evidence for an inflected form of the verb being inextricably linked to a corresponding derived form" (p. 38) in favor of "placing inflectional and derivational morphology under the same component" (p. 40). Advocates of DERIVATIONAL analyses ((19) b. and c.) refer to the fact that the thematic specification is not entirely productive. Claiming thematic specification a DERIVATIONAL process and also assuming lexical categories for stems such as noun and verb implies, however, that the lexicon has no simplex stems with the category verb. Santos (1982), for instance, actually glosses stems taking affixes as event or manner nouns (i.e., he glosses *sulat* as "act or manner of writing", *awit* as "act or manner of singing", etc.).<sup>27</sup> The only merit of a split analysis ((19) c.) is that it accounts for the high predictability of aspectual modification based on the knowledge that a particular thematic affix is allowed for a particular lexical stem, which is in contrast to the semi-productivity of thematic specification. However, this analysis does not lead very far once formal morphological aspects are taken into consideration. The exponents of thematic and aspectual properties are fused and optimally organized as paradigmatic templates. Thus, we find several features of "inflecting morphology" which have been presented in the literature in favor of a paradigm model (cf. Matthews 1974). It is especially worth noting that the order of operations necessary for building a word-form may vary under certain morphophonological conditions: the reduplication of stems (i.e. aspectual specification) may both precede and follow the affixation of thematic markers<sup>28</sup> (see *mang* (actor) + REDUP + *basa* ('read(ing)') > *mambabasa*, *mang* (actor) + REDUP + *bili* ('buy(ing)') > *mamimili*). Permitting fusion and varying order of INFLECTIONAL and DERIVATIONAL means is probably a very high price for maintaining the distinction between INFLECTION and DERIVATION.

The problems of INFLECTIONAL and DERIVATIONAL overlapping in Tagalog are, in some respects, similar to that found with English *-ing*-forms. However, whereas the entire lexical organization (subcategorizational differences in the lexicon) and grammatical patterning (copula, finite verb forms, lexically restricted grammatical distributions) justifies, to a certain extent, category-changing DERIVATIONS in English, this is not the case in Tagalog at all. Tagalog is a striking example of a language in which LEXICAL RULES in the extended sense used here (cf. p. 10) are able to cover the entire area described as INFLECTIONAL and/or DERIVATIONAL in the literature. They provide a homogenous and adequate account for systematic alternations on the level of stems, on the level of word-forms, i.e., both between

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<sup>27</sup> Cf. "It is important to remember that, grammatically, Tagalog or Pilipino has no root verbs..." (Santos 1982: xviii).

<sup>28</sup> Both orders are, for instance, permitted for stems beginning with a labial consonant, although the order in single lexical stems is usually fixed.

different morphological formations and between different senses of identical word-forms, without making extensive use of ZERO-DERIVATION and/or of ambiguous morphological rules.

## 5 On Which Basis Shall We Distinguish Between INFLECTION and DERIVATION?

As previously mentioned, there is a high interdependence between

- (a) research interests, particularly, the concept of lexicon and syntax advocated and the languages studied and
- (b) proposals pro and contra the separability of INFLECTION and DERIVATION.

Although up to twenty criteria are sometimes proposed in the literature (cf. Dressler 1989), they can basically be reduced to the following five groups of strongly related criteria (with respect to the criteria, see also Bybee 1985; Scalise 1988):

- (20) relation to syntax and lexicon
  - productivity
  - category change
  - ordering constraints
  - recursivity/ability to form paradigms

In this chapter, we will only deal with the first complex of criteria concerning the traditional way of assigning INFLECTION and DERIVATION to syntax and lexicon, respectively. This is not so much a set of operational criteria but, rather, a general characterization of linguistic entities (affixes, rules, series of rules, abstract processes, etc.) in terms of their semiotic function; to put it in Scalise's (1988: 560) words: "DRs [DERIVATIONAL rules; LB] and IRs [INFLECTIONAL rules; LB] 'do' different things.". It is worth paying attention to the subtle differences used for stating this well-known functional difference. Compare, for instance, the following statements:

- **DERIVATIONS** "change meaning"/"change conceptual meaning"/"change genuine semantic meaning"/"build new lexemes"/"have the function of lexical enrichment"/"are (more) concrete", etc.
- **INFLECTIONS** are "sensitive to syntax"/"have the function of serving syntax"/"are required by the syntax", etc.

It is obvious that "changing meaning" and "having the function of lexical enrichment" are not identical and make rather different predictions. At first glance, all statements about INFLECTION seem to center around a broad concept of obligatoriness. What about adverbials marked with an affix in English and French? They are certainly "sensitive" to syntax. But are they also "required by the syntax"? The answer is "no" when we think of "syntactic requirement" in terms of morphosyntactic categories, the values of which must be instantiated in a sentence. We may also say that gerunds are "sensitive to syntax" (see Baker's (1985) analysis of gerunds as "syntactic affixation"); they are, however, not "required by the syntax", at least not in the usual sense. Thus, we cannot escape asking for which type of syntax INFLECTIONS are or should be sensitive/relevant/necessary.

We can detect at least five concepts of "syntax" which often but not necessarily coincide in linguistic approaches. Usually, one use and interpretation of the term "syntax" is more salient than the others.

- Syntax/1 is seen as structural combinatorics for items equal to or greater than phonological words; this concept is fundamentally based on linear configurations and on distributional criteria; it is an extension of the structuralist concept of morphology to word-forms and phrases.
- Syntax/2 is defined by properties relevant for the identity of phrases, i.e., by "phrasal" properties in opposition to "word" properties; this concept is delimited, like syntax/1, by the boundary of the phonological word; "agreement", in a broad sense, is its genuine domain (cf. Anderson (1988: 167ff.; 1992: 82ff.).
- Syntax/3 is the "rule-governed" counterpart of the "idiosyncratic" lexicon as commonly cited according to Bloomfield (cf. the comments of Di Sciullo/Williams (1987: 1-2) on this syntax concept); this concept is, in principle, neutral with respect to the boundary of the phonological word.
- Syntax/4 is founded on grammatical categories (or "functional categories"); this concept presupposes the existence of a small universal set of semantically defined grammatical categories; it is favored in typologically-oriented linguistics (cf. Comrie 1983) and it is also neutral with respect to the boundary of the phonological word.
- Syntax/5 is recognized as a general and abstract principle of natural language concerning the building of propositions out of lexical material and defining basic relations between lexical elements; it is favored in semantic theories and it was also one of the traditional/prestructuralist concepts of syntax shared by Sapir (1921/1972), Bühler (1934/1982) and the young Bloomfield (1914: 62).<sup>29</sup>

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<sup>29</sup> This concept is the source of the well-known idea that "in every language we can find syntactic properties in the lexicon and lexical properties in the syntax". Cf. "Das sind, darstellungstheoretisch gesehen, zwei durchaus zu

Two of these five concepts are limited to the "non-word" domain. Although the first two syntax concepts are generally combined, the salience of linearity in the first and the salience of constructional units marked by agreement in the second may lead to conflicting results. The last two concepts are developed from a semantic and/or universalistic view on language structure. Nevertheless, they differ in their degree of abstractness and the strength of assumptions they make about universal structures. Syntax/3 is generally recognized as a logically distinct concept, though it is sometimes confused with syntax/1 and syntax/2, and theories of grammaticalization make use of the empirical correlation between it and syntax/4.

One may wonder whether or not there is a correlation among these concepts of syntax, the different research interests such as representational techniques and cross-linguistic generalization, and the diverging answers given to the question "Should INFLECTION and DERIVATION be considered similar or different?". Let us examine four possible and frequent answers cited after Scalise (1988: 561-562):

- (a) INFLECTION and DERIVATION are **not different**. "They can be handled by the **same set of rules**"<sup>30</sup> (see, for instance, Halle 1973).
- (b) INFLECTION and DERIVATION are **different**. The "difference is to be seen in the **formal properties** of the rules that handle DERIVATIONAL and INFLECTIONAL processes". They "can be located in the same subcomponent of the grammar", for example, in the lexicon (see, for instance, Scalise 1988).
- (c) INFLECTION and DERIVATION are **different**, but only in an **abstract** sense. They constitute opposite poles of a "**continuum**" or "**scale**" without sharp boundaries. For several phenomena, "it is difficult to decide whether these belong to the domain of DERIVATION or to the domain of INFLECTION" (see, for instance, Bybee 1985).
- (d) INFLECTION and DERIVATION are **different**. The difference consists "in the kind of **relationship** they have with **syntax**". "INFLECTION and DERIVATION are located in different subcomponents of the grammar" (see, for instance, Anderson 1988, 1992).

**Approach (a)** strongly correlates with "IA-morphology" and the corresponding concept of syntax, namely syntax/1 (i.e. structural combinatorics in the scope of the phonological word). Here, the question as to whether INFLECTION and DERIVATION are different or similar concerns segmental affixes rather than other types of linguistic entities (processes, complex rules, etc.).

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trennende Schritte und Weisen des Vorgehens. .... Man kann grob gesprochen wohl in jeder Sprache ursprünglich Syntaktisches in den Wortschatz und Lexikalisches in die syntaktische Klasse von Sprachgebilden übergehen lassen." (Bühler 1934/1982: 73/74)

<sup>30</sup> Bold face and small caps in the quotations are mine (L.B.).

In other words, the starting point here is the traditional wisdom "Affixes can be of two kinds, inflectional or derivational" (cf. Bauer 1988: 12). Furthermore, one asks whether affixes which have traditionally been considered as INFLECTIONAL or as DERIVATIONAL in a particular language show significant differences relevant for their representation. This is the basis on which Halle's (1973) arguments are founded: There is "no reason why the list of morphemes should not include also the inflectional affixes" (1973: 6) and there is no necessity in developing fundamentally different strategies for dealing with defectivity in the application of "inflectional affixes" from those which are used with "derivational affixes". This is, of course, correct, but it does not contradict the possibility and/or necessity of subclassifying affixes. And, the subclassification will basically depend on which criteria one takes and in which order. As well-known, in SPE (cf. Chomsky/Halle 1968), two main types of affixes ("#-boundary affixes" and "+-boundary affixes") had been established on the basis of stress behavior, which crosscut the traditional boundary of INFLECTIONAL affixes and DERIVATIONAL affixes.<sup>31</sup> The same holds true for the levels in Lexical Phonology (cf. Kiparsky 1982: 132ff.) which are founded on the SPE-distinction between "#-boundary affixes" and "+-boundary affixes" and define formal types of rules.

Provided that a subclassification of affixes according to certain criteria results in exactly two classes, one can ask in addition whether these correlate with the well-known functional distinction between INFLECTION and DERIVATION. Exactly this is done in **approach (b)**, which is also primarily associated with syntax/1 and presupposes a certain amount of pretheoretical and functionally motivated knowledge about the status of the affixes investigated as well. Scalise (1988), an advocate of this approach, argues that the standard distinguishing criteria altogether (see (20)) confirm this presupposed division of affixes if one also takes subtle types of restrictions (for instance, different productivity conditions) into account. He makes, however, a very important restriction noting that the validity of arguments in favor of a fundamental distinction between INFLECTION and DERIVATION is probably confined to "the so-called "European" (predominantly concatenative) type of morphology" (1988: 564).

The dominating syntax concept in **approach (c)** (cf. Bybee 1985; Allen 1988) is syntax/4 (i.e. morphosyntax). This approach presupposes linguistic knowledge of universal morphosyntactic categories rather than knowledge of the INFLECTIONAL/DERIVATIONAL status of complex forms in single languages. It regards the standard distinguishing criteria as discovery tools for assigning those phonological/morphological means which are possible exponents of morphosyntactic categories to INFLECTION or DERIVATION in any language. Here, the main

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<sup>31</sup> "#-boundary affixes" contain both affixes traditionally considered INFLECTIONAL (PAST TENSE affix) and affixes traditionally considered DERIVATIONAL (the adjective forming affixes *-ish*, *-able*, or the noun forming affixes *-hood*, *-ness*), whereas "+-boundary affixes" belong to affixes commonly analyzed as DERIVATIONAL.

research interest (cross-linguistic generalization) rules out a restriction to a certain morphological type. The clue of this approach, as presented by Bybee (1985), is the connection of two not unrelated, but different, phenomena:

- (a) cross-linguistic regularities of grammaticalization displaying a continuous development from lexemes to "inflectional" (i.e. bound) morphemes (with an intermediate stage of "derivational" morphemes) as developing from Sapir's (1921/1972) first class ("material content") to his fourth class ("relational content");<sup>32</sup>
- (b) difficulties in identifying certain morphologically complex formations in single languages due to conflicting results obtained from the application of the standard distinguishing criteria.

However, the concept of "continuum" does not provide an equally good explanation for diachronic/cross-linguistic and synchronic/language-specific phenomena. Essentially, it refers only to two types of distinguishing criteria which may synchronically and diachronically reflect a one-dimensional continuous development: productivity and syntactic requirement/obligatoriness.

How can syntactic requirement and obligatoriness be interpreted in an approach which is connected with syntax/4, i.e., proceeds from substantive morphosyntactic categories? There is a narrow morphological interpretation of obligatoriness: For each grammatical value of a category, distinct word-forms have to be selected (for instance, nouns must appear in distinct CASE forms). Obligatoriness, in this sense, does not really work in languages in which certain grammatical forms are allowed to be identical to the lexical stems and can potentially be interpreted either as an unmarked INFLECTIONAL form or as the lack of a DERIVATIONAL affix.<sup>33</sup> According to another interpretation of obligatoriness, which is commonly refused but nevertheless employed in practical work, obligatoriness is understood on a semantic and comparative basis. A good example is the following argument: Language X does not obligatorily use a PLURAL marker in contexts in which we would expect it; thus, it has no fully developed INFLECTIONAL PLURAL category.

As opposed to productivity, category change is a non-gradable property and has nothing to do with the continuous grammaticalization of free forms resulting in INFLECTIONAL bound morphemes. Category change depends - as we have demonstrated with the case studies on

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<sup>32</sup> The development from "derivational" to "inflectional" morphology can be seen as a development from Sapir's third to his fourth class.

<sup>33</sup> The problem usually arises in the absence of evidence by further criteria, such as agreement or outmost position in a word-form.

adjectives/adverbs, *-ing*-forms and Tagalog forms - on the global lexical organization by which major and minor lexical categories, lexical ambiguity, and compositionality are determined. Thus, it comes as no surprise that, applying the whole range of the standard distinguishing criteria in a single language, we normally obtain different kinds of deviation (for instance, fully productive and predictable formation with category change, obligatoriness with a high degree of formal and semantic idiosyncrasy, etc.) from "good" INFLECTION and "good" DERIVATION which cannot be ordered on a continuum or scale. It makes no sense to say that, for instance, adverbial affixation in English is "more" DERIVATIONAL than the affixation of participles or vice versa. This is not a principal drawback of so-called prototype approaches. Although they generally do not make any suggestion as to how "non-prototypical cases" in particular languages are to be represented, they are compatible with the idea (cf. Geeraerts 1989 with respect to the "good-member" concept and the "cluster" concept in prototype theory) that the "non-prototypical cases" may form significant clusters resulting from values in more than one distinct criterial dimension in individual languages.

**Approach (d)**, as represented by Anderson (1988; 1992), is both connected to syntax/2 (phrasal domain characterized by agreement) and syntax/4 (morphosyntax). Morphologically complex entities which are first identified as being relevant for phrasal rules such as agreement rules are ultimately interpreted in terms of morphosyntax. Agreement phenomena are better indicators of syntactic requirement than the obligatory realization of a grammatical form characterizing "inflecting languages" or semantically motivated obligatoriness and may be considered as a sufficient criterion for INFLECTION in single languages. Unfortunately, not every language exhibits morphological markers for exclusively phrasal properties such as agreement. Should we conclude that such languages do not have INFLECTION at all, even if they have fully productive morphological means for traditional morphosyntactic categories? It is not surprising that linguists working on languages with no formal agreement are inclined to abandon "syntactic necessity" as a criterion for distinguishing between INFLECTION and DERIVATION.<sup>34</sup>

We can summarize by saying that approaches proceeding from the syntax concepts syntax/1 and syntax/2 have difficulties in typological extension, that is, in covering languages which show an unusual mapping between lexicon and grammar and, particularly, an unusual configuration of formal means which can be associated with lexical enrichment and/or morphosyntax. In contrast, approaches starting from syntax/3 or syntax/4 are commonly deficient in representational issues; in particular, they make no strong suggestion as to what

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<sup>34</sup> Cf. Chelliah (1992: 293) about distinguishing between INFLECTION and DERIVATION in Manipuri (a Tibeto-Burman language): "Note that IM cannot be differentiated from DM on the basis that IM is carried out in the syntax and DM in the lexicon; since there are no agreement features encoded by IM, there is nothing about IM, as opposed to DM, which makes it relevant to the syntax."

representational consequences for individual languages the cross-linguistic studies have. Thus, Spencer's critique (1991: 9) is still relevant:

"...it is not difficult to see why people might believe that inflectional morphology is the result of applying processes to words, while derivational morphology is the result of concatenating morphemes. As we shall see, things are not that simple, and it turns out to be extremely difficult to draw the line between inflection and derivation in such a way that it gives simple answers for all languages."

This also forms the background to the prototype approach. This account implicitly reflects the popular linguistic idea that there is one type of lexicon-grammar interaction which is prototypical for natural languages: A language with a prototypical lexicon-grammar interaction shows well-defined (i.e. formally distinguished) lexical categories, concatenative morphology, one-to-one correspondence between functional and formal properties (i.e. between formal classes of morphological entities and the functions "lexical extension" and "morphosyntactic instantiation"), paradigmatic organization of morphosyntactic exponents, "word-based" (i.e. "lexeme-based") lexical extension, etc. It is this prototype which gives rise to the standard criteria for distinguishing INFLECTION and DERIVATION. In languages with a non-prototypical lexicon-grammar interaction (such as Tagalog), some of them are not applicable at all. On the other hand, languages with a prototypical lexicon-grammar interaction certainly may show a relatively clear distinction between what is commonly called a DERIVATIONAL and an INFLECTIONAL linguistic entity.

## 6 Conclusion

In this paper, I claimed that INFLECTION and DERIVATION are linguistic concepts which characterize the lexicon-grammar interaction of languages rather than the morphology alone. This means that we must simultaneously take into account lexicological (especially lexical semantic) and grammatical considerations for studying INFLECTION and DERIVATION.

I argued for a unified treatment of lexically established semi-productive and productive processes, including systematic sense alternations correlating with different syntactic environments, systematic sense alternations correlating with a phonological/morphological modification of the lexical stem in question, and systematic polysemies. Since a substantial part of these processes falls outside the scope of "morphology proper" responsible for word-internal properties, they should not be incorporated via ZERO-DERIVATION into a morphology theory. Rather, traditional morphological issues considered under the paradigmatic aspect should be generalized within a theory of lexical alternations and lexical extension. I tried to show that the concept of LEXICAL RULES is a more flexible and powerful representational

device for such a theory than the narrower concept of DERIVATIONAL rules rooted in morphology.

The systematic overlapping of formal means pertaining to the basic functions of INFLECTION and DERIVATION, namely, morphosyntactic (grammatical) instantiation and lexical extension, is a serious problem for most of the treatments of INFLECTION and DERIVATION proposed until now. I presented evidence for this phenomenon from European languages and from Tagalog, a language with a non-prototypical lexicon-grammar interaction. Whereas the conflation of INFLECTION and DERIVATION is rather an exceptional phenomenon in European languages, it characterizes the entire lexico-grammatical make-up of Tagalog. Nevertheless, in both cases, we find arguments against an approach in which this functional ambiguity has to be treated by multiple morphological operations generating the same outputs twice and/or by using extensively ZERO-DERIVATIONS. Instead, I argued for separating primitive morphological operations (which apply only once) from higher order morphosyntactic and LEXICAL RULES which can themselves combine different sorts of primitive formal operations. In this view, LEXICAL RULES can take productively generated complex forms as their inputs as well. Tagalog turns out to be a language where LEXICAL RULES may cover even the whole area described as INFLECTIONAL and/or DERIVATIONAL in the literature.

Finally, I tried to show that the diverging answers to the question of whether or not INFLECTION and DERIVATION can be unequivocally distinguished are not necessarily contradictory since they are all connected to different linguistic interests. In spite of their differences, they share an underlying concept of prototypical lexicon-grammar interaction.

## REFERENCES

- Allen, Andrew S. (1988), *The Lexical Derivational and Inflectional Continuum in Verb Morphology*. In: Georgetown University Round Table on Languages and Linguistics, 1-7.
- Anderson, Stephen R. (1988), *Morphological Theory*. In: Newmeyer, F.J. (ed.), *Linguistics: The Cambridge Survey*. Vol. I: Linguistic Theory: Foundations, 146-191.
- Anderson, Stephen R. (1992), *A-Morphous Morphology*. Cambridge: Cambridge University Press.
- Aronoff, Mark (1976), *Word formation in Generative Grammar*. Cambridge, MA / London, England: The MIT Press.
- Aronoff, Mark (ed.) (1992), *Morphology Now*. Albany: State University of New York Press.
- Atkins, B.T. Sue / Kegl, Judy / Levin, Beth (1988), *Anatomy of a Verb Entry: from Linguistic Theory to Lexicographic Practice*. In: *International Journal of Lexicography* 1/2, 84-126.

- Atkins, B.T. Sue / Levin, Beth / Zampolli, Antonio (1994), *Computational Approaches to the Lexicon: An Overview*. In: Atkins, B.T.S. / Zampolli, A. (eds.), *Computational Approaches to the Lexicon*. New York: Oxford University Press, 17-45.
- Baker, Mark (1985), *Syntactic affixation and English gerunds*. In: Goldberg, Jeffrey / MacKaye Susannah / Wescoat, Michael T. (eds.), *Proceedings of the West Coast Conference on Formal Linguistics*, Vol. 4. Stanford California: The Stanford Linguistic Association, 1-11.
- Bauer, Laurie (1988), *Introducing Linguistic Morphology*. Edinburgh: Edinburgh University Press.
- Behrens, Leila (1994), *Alternationen - ein Schlüssel für die Universalienforschung*. In: *Zeitschrift für Sprachwissenschaft* 13/2, 149-200.
- Behrens, Leila (forthcoming), *Categorizing Between Lexicon and Grammar. The MASS/COUNT Distinction In a Cross-Linguistic Perspective*. In: *Lexicology* 1.
- Bergenholtz, Hennig / Mugdan, Joachim (1979), *Einführung in die Morphologie*. Stuttgart et al.: W. Kohlhammer.
- Bloomfield, Leonard (1914), *Introduction to the Study of Language*. London: Bell / New York: Holt.
- Boguraev, Branimir / Pustejovsky, James (1990), *Lexical Ambiguity and The Role of Knowledge Representation in Lexicon Design*. In: *Proceedings of COLING-90*, Vol. 2. Helsinki 1990, 36-41.
- Bühler, Karl (1934 / 1982), *Sprachtheorie. Die Darstellungsfunktion der Sprache*. UTB. Stuttgart / New York: Gustav Fischer Verlag.
- Bybee, Joan L. (1985), *Morphology. A study of the relation between meaning and form*. Amsterdam / Philadelphia: John Benjamins.
- Bybee, Joan L. (1988), *Morphology as Lexical Organization*. In: Hammond, M. / Noonan, M. (eds.) (1988), 119-141.
- Carstairs-McCarthy, Andrew (1992), *Current Morphology*. London / New York: Routledge.
- Chelliah, Shobhana L. (1992), *Pretty Derivational Morphemes All in a Row*. In: *Proceedings of the Eighteenth Annual Meeting of the BLS*, 1992, 287-297.
- Chomsky, Noam / Halle, Morris (1968), *The Sound Pattern of English*. New York et al.: Harper & Row.
- Comrie, Bernard (1983), *Syntactic-morphological discrepancies in Maltese sentence structure*. In: Tasmowski / Willems (eds.), *Problems in Syntax*. New York/London, 3-28.
- Corbett, Greville G. (1981), *Syntactically Derived Words: Evidence from Sorbian*. In: *Melbourne Slavonic Studies* 15, 13-17
- Cruse, D. Alan (1986), *Lexical Semantics*. Cambridge: Cambridge University Press.
- De Guzman, Videia P. (1991), *Inflectional Morphology in the Lexicon: Evidence from Tagalog*. In: *Oceanic Linguistics* 30/1, 33-48.
- Di Sciullo, Anna-Maria / Williams, Edwin (1987), *On the Definition of Word*. Cambridge, Ma / London, England: The MIT Press.
- Dowty, David R. (1979), *Word Meaning and Montague Grammar*. Dordrecht: D. Reidel.
- Dowty, David R. (1991), *Thematic Proto-Roles and Argument Selection*. In: *Language* 67 / 3, 547-619.
- Dressler, W.U. / Luschützky, H.C. / Pfeiffer, O.E. / Rennison, J.R. (eds.) (1990), *Contemporary Morphology*. Berlin: Mouton de Gruyter.

- Dressler, W.U. / Mayerthaler, W. / Panagl, O. / Wurzel, W.U. (eds.) (1987), *Leitmotifs in Natural Morphology*. Amsterdam / Philadelphia: John Benjamins.
- Dressler, Wolfgang Ulrich (1989), *Prototypical Differences between Inflection and Derivation*. In: *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 42(1), 3-10.
- Dürr, Michael / Schablonski, Peter (1990), *Einführung in die deskriptive Linguistik*. Opladen: Westdeutscher Verlag.
- English, Leo J. (1986/1990), *Tagalog-English Dictionary*. Manila: National Bookstore.
- Evans, Roger, *Derivational Morphology in DATR*. Unpublished ms.
- Fortescue, Michael David (1979), The Relationship of Derivation to External Syntax in West Greenlandic. In: Pettersson, Thore (ed.), *Papers from the Fifth Scandinavian Conference of Linguistics, Frostavallen, April 27-29 1979, Part II: General Sessions. Acta Univ. Ludensis, Sect. I: Theologica, Juridica, Humaniora* 31. Stockholm: Almqvist & Wiksell, 23-38
- Fromkin, Victoria / Rodman, Robert (1988), *An Introduction to Language*. Fourth Edition. New York et al.: Holt, Rinehart and Winston, Inc.
- Geeraerts, Dirk (1989), *Introduction: Prospects and problems of prototype theory*. In: *Linguistics* 27, 587-612.
- Gross, Maurice (1994), *Constructing Lexicon-Grammars*. In: Atkins, B.T.S. / Zampolli, A. (eds.), *Computational Approaches to the Lexicon*. New York: Oxford University Press, 213-263.
- Halle, Morris (1973), *Prolegomena to a theory of word formation*. In: *Linguistic Inquiry* 4, 3-14.
- Halliday, Michael A.K. (1992), *Language as system and language as instance: The corpus as a theoretical construct*. In: Svartvik, J. (ed.), *Directions in Corpus Linguistics. Proceedings of Nobel Symposium 82, Stockholm, 4-8 August 1991*. Berlin / New York: Mouton / Walter de Gruyter, 61-77.
- Hammond, Michael / Noonan, Michael (eds.) (1988), *Theoretical Morphology*. San Diego et al.: Academic Press.
- Hoekstra, Teun / van der Hulst, Harry / Moortgat, Michael (1980), *Introduction*. In: Hoekstra, T. / van der Hulst, H. / Moortgat, M. (eds.), *Lexical Grammar*. Dordrecht: Foris, 1-48.
- Hüllen, Werner / Schulze, Rainer (eds.) (1988), *Understanding the Lexicon: Meaning, Sense and World Knowledge in Lexical Semantics*. Tübingen: Niemeyer.
- Jespersen, Otto (1924/1968), *The Philosophy of Grammar*. London: George Allen & Unwin LTD.
- Kilbury, James (1992), *Paradigm-Based Derivational Morphology*. In: *Arbeiten des Sonderforschungsbereichs 282 "Theorie des Lexikons"*. Düsseldorf: Heinrich-Heine-Universität Düsseldorf.
- Kilgariff, Adam (1993), *Inheriting Verb Alternations*. In: *Proceedings of the Sixth Conference of the European Chapter of the Association for Computational Linguistics. Utrecht 1993*, 213-221.
- Kiparsky, Paul (1982), *From Cyclic Phonology to Lexical Phonology*. In: van der Hulst, H. / Smith, N. (eds.), *The structure of phonological representations (Part I)*, 131-175.
- Krieger, Hans-Ulrich / Nerbonne, John (1993), *Feature-Based Inheritance Networks for Computational Lexicons*. In: Briscoe, Ted / Copestake, Ann / de Paiva, Valeria (eds.), *Default Inheritance in Unification Based Approaches to the Lexicon*. Cambridge: Cambridge University Press, 90-136.
- Lakoff, George / Johnson, Mark (1980), *Metaphors We Live By*. Chicago/London: Chicago University Press.

- Lehrer, Adrienne / Kittay, Eva F. (eds.) (1992), *Frames, Fields, and Contrasts. New Essays in Semantic and Lexical Organization*. Hillsdale, N.J. et al.: Lawrence Erlbaum.
- Levin, Beth (1993), *English Verb Classes and Alternations. A Preliminary Investigation*. Chicago / London: The University of Chicago Press.
- Lieber, Rochelle (1981), *Morphological Conversion within a Restrictive Theory of the Lexicon*. In: Moortgat, Michael / van der Hulst, Harry / Hoekstra, Teun (eds.), *The Scope of Lexical Rules*. Dordrecht: Foris Publications, 161-200
- Maclachlan, Anna (1989), *Morphosyntax of Tagalog Verbs: The Inflectional System and Its Interaction with Derivational Morphology*. In: McGill Working Papers in Linguistics/Cahiers Linguistiques de McGill 6(1), 65-84.
- Matthews, Peter H. (1974), *Morphology. An Introduction to the Theory of Word-Structure*. Cambridge et al.: Cambridge University Press.
- Müller, Sonja (1992), *Zur Systematik morphologischer Paradigmen*. In: IWBS Report 217, Heidelberg: IBM Wissenschaftliches Zentrum.
- Panganiban, Jose V. (1972) *Diksyunaryo-Tesaurus Pilipino-Ingles*. Lungsod, Quezon: Manlapaz Publishing Co.
- Pustejovsky, James (1989), *Current Issues in Computational Lexical Semantics*. In: Proceedings of the 4th European ACL. Manchester 1989, XVII-XXV.
- Pustejovsky, James (1991), *The Generative Lexicon*. In: Computational Linguistics 17 / 4, 409-441.
- Quirk, Randolph / Greenbaum, Sidney / Leech, Geoffrey / Svartvik, Jan (1972), *A Grammar of Contemporary English*. London: Longman.
- Ramos, Teresita V. (1971), *Tagalog Dictionary*. Honolulu: The University Press of Hawaii.
- Reinhard, Sabine (1990), *Adäquatheitsprobleme automatenbasierter Morphologiemodelle am Beispiel der deutschen Umlautung*. Magisterarbeit. Trier.
- Sanders, Gerald (1988), *Zero Derivation and the Overt Analogue Criterion*. In: Hammond, M. / Noonan, M. (eds.) (1988), 155-175.
- Santos, Vito C. (1982), *Vicassan's Pilipino-English Dictionary*. Manila: National Bookstore.
- Sapir, Edward (1921 / 1972), *Die Sprache. Eine Einführung in das Wesen der Sprache*. München: Max Hueber Verlag.
- Scalise, Sergio (1986), *Generative Morphology*. Dordrecht / Riverton: Foris.
- Scalise, Sergio (1988), *Inflection and Derivation*. In: Linguistics 26 / 4 (296): 560-581.
- Schachter, Paul / Otones, Fee (1977), *Tagalog Reference Grammar*. Berkely et al.: California University.
- Selkirk, Elisabeth O. (1982), *The Syntax of Words*. Cambridge, MA / London: The MIT Press.
- Spencer, Andrew (1991), *Morphological Theory. An Introduction to Word Structure in Generative Grammar*. Cambridge, Ma: Basil Blackwell.
- Starosta, S. (1986), *Focus as recentralisation*. In: Geraghty, P./Carrington, L./ Wurm, S.A. (eds.): FOCAL I: Papers from the Fourth International Conference on Austronesian Linguistics. Pacific Linguistics, PL, C 93, Canberra, 73-95.
- Stump, Gregory T. (1993), *How peculiar is evaluative morphology?* In: Journal of Linguistics 29, 1-36.

- Talmy, Leonard (1985), *Lexicalization Patterns: Semantic Structure in Lexical Form*. In: Shopen, T. (ed.), *Language Typology and Syntactic Description 3*. Cambridge: Cambridge University Press, 57-149.
- van Marle, Jaap (1983), *Some Notes on the Paradigmatic Dimension of Morphological Productivity*. In: Hattori, S. / Inoue, K. (eds.), *Proceedings of the XIIIth International Congress of Linguists*. Tokyo 1982, 576-581.
- van Marle, Jaap (1985), *On the Paradigmatic Dimension of Morphological Creativity*. Dordrecht / Cinnaminson: Foris.
- von der Gabelentz, Georg (1891 / 1984), *Die Sprachwissenschaft. Ihre Aufgaben, Methoden und bisherigen Ergebnisse*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Wilensky, Robert (1990), *Extending the Lexicon by Exploiting Subregularities*. In: *Proceedings of COLING-90*, Vol. 2. Helsinki 1990, 407-412.