THE TYPOLOGY OF PARTS OF SPEECH SYSTEMS

The Markedness of Adjectives

David Beck

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Introduction

Ask a layperson what they know about grammar and you are likely to get an answer that has something to do with parts of speech; ask a linguist what they know about parts of speech and the answer is quite likely to be much less enlightening. Parts of speech systems or, as I will refer to them here, lexical classes are among the most frequently overlooked aspects of linguistic analysis, yet they are at the same time among the most fundamental elements of language. Lexical classes play a key role in most—if not all—syntactic theories, they are the cornerstones of lexicography and lexical semantics, and they are crucial elements in morphological analysis, yet precise and rigorous definitions of these classes have never been successfully formulated. More often than not, lexical classes are treated merely as primitives, either in terms of input to rules, determinants of underlying phrase structure, governors of inflectional patterns, or as sources of valency and subcategorization frames. Thus, class-designations such as "verb," "adjective," and "noun" are the linchpins of semantic, syntactic, and morphological structure, but the terms themselves are rarely defined and their properties, both formal and functional, are often taken for granted. While it is certainly possible to carry out linguistic analysis without a clear definition of the basic units involved (as long as the identity of these units can be agreed upon), any theory which proceeds without a full understanding of its own primitives rests on uncertain foundations.

Another serious drawback to building theoretical models based on tacit assumptions about the properties and definitions of parts of speech is that, as modern linguistics expands its horizons and turns more and more to data from "exotic" and previously undescribed languages, many of these assumptions are being challenged. Most current linguistic theories—whose main proponents are speakers of and researchers in European languages—are built on the model of what Sapir referred to as the "Standard Average European" language type with its familiar three-way division of the lexicon into major open classes of verb,

noun, and adjective. Cross-linguistic investigation has shown, however, that not all languages fit this pattern and at one time or another claims have been made that certain languages lack distinctions between adjectives and verbs, adjectives and nouns, or even between nouns and verbs (*e.g.* Kinkade 1983; Schachter 1985; Sasse 1993; Bhat 1994; Broschart 1997). When confronted with the neutralization of parts-of-speech contrasts, any theory which relies on the three major classes as primitives—or which, at least, has no clear idea of their origin—will have little success in dealing with this variation or of providing an adequate explanation of its provenance.

In terms of cross-linguistic variability in parts of speech systems, perhaps the most salient and widely-remarked upon point of divergence is the frequent absence of the class of adjective. While nouns and verbs appear to be more or less universal, languages that have no or only a few adjectives are a typological commonplace. This seems to imply that there is something marked about the adjectival category, and an investigation of its properties should shed some light on the issues of typological variation in lexical classification and define lexical classes in such a way as to motivate and constrain this variation. It is the aim of the present work to deal with precisely these topics. The discussion will proceed as follows: in Chapter 2, I will outline some previous, unary approaches to defining lexical classes. Traditionally, these have taken three basic tacks—the semantic characterization of parts of speech (Chapter 3), the development of morphological diagnostics (mistakenly taken to be criterial definitions of the lexical classes themselves) (2.2), and definitions based on simple syntactic distribution (2.3). All of these approaches give more or less congruous results when applied to the most typical members of each class and to languages that have Indo-European style three-class parts of speech systems. When confronted with marginal cases and data from other types of language, however, none of them proves adequate in terms of providing rigorous, criterial definitions.

More recent attempts to define parts of speech have tried to deal with variation in terms of syntactic markedness (2.4), a term that is discussed in some detail in Section 2.4.1. One particularly good approach based on markedness is that put forward by Hengeveld (1992a, 1992b) which formulates definitions of parts of speech based on those syntactic roles that different lexical classes can fill without further morphological or syntactic measures being taken. As discussed in Section 2.4.2, when reformulated in terms of contrastive markedness, Hengeveld's "without further measures" turns out to be a useful tool for identifying the marked and unmarked roles of different parts of speech. Languages differ from one another with respect to which lexical classes require further morphosyntactic measures in order to occupy a given syntactic role, and languages that lack a specialized class of adjectives are divided by Hengeveld into "rigid" and "flexible" types depending on the presence or absence of such meas-

ures (Section 2.4.3). Further measures include, among other things, recategorization (the acquisition by a word of the typical properties of another part of speech) and decategorization (the loss of properties typical of a word's own lexical class). These processes are described in Section 2.4.4. The major difficulty with syntactic approaches based solely on distributional markedness, however, is that they in no way account for the common semantic core of meanings that are consistently expressed by the same part of speech across so many languages. Section 2.4.5 looks at this issue in the light of work by Croft (1991), which proposes that there are cross-linguistically unmarked mappings between the semantic class and "pragmatic" roles typical of particular parts of speech.

Although Croft's proposal falls short of providing criterial definitions of lexical classes and fails to properly constrain typological variation in parts of speech systems, it does put forward the idea of leaving behind unary definitions based on only one of semantics, syntax, or morphology. Instead, Croft's work suggests a binary approach to the problem and looks at the mapping between the typical properties of lexical classes at two levels of representation. The obvious levels to choose for this are the syntactic and the semantic. The typical syntactic properties of the three major parts of speech having already been discussed (Sections 2.3 and 2.4), Section 2.5 goes on to examine their prototypical semantic properties and shows how cross-linguistic variation in this domain can be dealt with by a theory of semantic prototypes (2.5.1). This theory not only allows the formulation of class prototypes for nouns (2.5.2), verbs (2.5.3), and adjectives (2.5.4), *it also predicts the most likely areas for cross-linguistic variation in class membership*, meanings lying on the peripheries of the relevant semantic categories being the most variable. Words referring to HUMAN CHARACTERISTICS represent a particularly variable class of meanings and are discussed in detail in Section 2.5.5. Following this some technical issues are discussed (Sections 2.5.6 and 2.5.7) before moving on to the next chapter.

The most important points contained in Section 2.5 are proposals for two criterial semantic properties of nouns and verbs: nouns are said to be prototypically the expressions of semantic NAMEs (2.5.2) and verbs the expressions of semantic predicates (2.5.3). Chapter 3 takes these two semantic criteria, combines them with the unmarked syntactic roles of nouns and verbs identified by Hengeveld (1992a, 1992b), and uses them to develop definitions of the two most basic lexical classes. These definitions are spelled out in Section 3.1, which also provides some terminology and outlines some elementary formalisms borrowed from Meaning-Text Theory (Žolkovskij & Mel'čuk 1967; Mel'čuk 1988). Section 3.2 sketches the role played by the lexicon, or lexical inventory, in the building of syntactic structures and illustrates where it is that lexical classes originate (the lexicon) and how they interact with the rules mapping between the semantic, syntactic, and morphological representations of sentences. Section 3.3

then demonstrates how the new definitions of verb and noun point to a clear and criterial definition of the class of adjective. This definition accounts for the cross-linguistic variability of the adjectival class (that is, for the fact that if a language has only two major lexical classes, it has nouns and verbs and not adjectives) in terms of the non-iconicity of the modificative relation, the unmarked syntactic role of the adjective. The remainder of Chapter 3 deals with a number of subsidiary issues, including the analysis of possessive and attributive constructions (Section 3.4)—both of which are shown to be distinct from modification—and the potential application of the approach being developed here to the definitions of two minor lexical classes (adverbs and adpositions—Section 3.5).

The next chapter, Chapter 4, examines the implications that these definitions of lexical classes have for the typology of parts of speech systems, taking as a starting point a common four-member typology current in the literature (*e.g.* Schachter 1985; Bhat 1994). This typology proposes that, in terms of the three major lexical classes, there are four possible types of lexical inventory: full NAV inventories that distinguish three lexical classes, N[AV] languages where words that are adjectives in three-class languages are verbs, [NA]V languages where such words are nouns, and [NAV] languages which make no major-class distinctions whatsoever. As it turns out, this typology is easily generated by a feature system using the two criterial features, one syntactic and the other semantic, that make up the definitions of parts of speech put forward in Chapter 3. Thus, full inventory languages are said to be sensitive to both the syntactic and the semantic parameters, the [NAV] inventories are sensitive to neither, the N[AV] inventory is organized along purely semantic lines, and [NA]V inventory would then be subdivided on syntactic grounds alone. The last type of inventory, however, appears to present a problem in that, because the class of nouns inevitably includes the expressions of all prototypical semantic NAMEs, it is impossible to completely avoid semantic characteristics when considering the way in which meanings are organized in the lexicon.

N[AV] inventories, however, are less problematic and two concrete examples of these are illustrated in Section 4.1, beginning with a discussion of lexical classes in the Salishan family of languages (4.1.1). Salishan languages have actually been cited in the literature as making no major lexical class distinctions (*e.g.* Kuipers 1968; Kinkade 1983), although based on the definitions for parts of speech proposed here they can be shown to make the basic distinction between nouns and verbs. What most Salishan languages do not do, however, is make a distinction between adjectives and verbs, all semantic predicates in these languages being both unmarked syntactic predicates and unmarked modifiers. Thus, the Salishan family (with the possible exception of Bella Coola, discussed in Section 4.1.1.4) organizes its lexica on purely semantic grounds and does not accord any special treatment to words expressing semantic predicates when they

are used as modifiers. This is a very different situation from that found in Cora (Section 4.1.2), which—like Salish—conflates adjectives and verbs but requires that all modifiers of nouns appear inside relative clauses. Nonetheless, although they differ syntactically, Cora and Salish are essentially identical in terms of their parts of speech systems. As discussed in Section 4.1.2.3, the distinction between the two arises from differences in the syntactic treatment of parts of speech, not from any fundamental distinction in the number or type of lexical classes distinguished in the lexicon.

Section 4.2 returns to the problem of [NA]V inventories. Such inventories are quite common in the literature, the most frequent pattern being that represented by Quechua, where nouns and adjectives seem not to differ morphosyntactically in either the role of modifier or the role of actant. Closer examination of Quechua (4.2.1), however, reveals that both the use of nouns as "modifiers" and the use of adjectives as actants are, in fact, marked uses when examined at the semantics ⇔ syntax interface. In the former case, noun–noun "modifier" structures can be shown to be attributive constructions as defined in Section 3.4. Attributives are marked and non-iconic in that they involve the elision of an underlying semantic predicate that is not realized in the syntax. Similarly, adjectives used as actants appear to be elliptical constructions making anaphoric reference to a nominal head whose identity is recoverable from discourse. This implies that adjectival actants used out of context are ungrammatical, a hypothesis that was put to the test in my fieldwork on Upper Necaxa Totonac, another reputed [NA]V language of the Quechua type (Section 4.2.2). In addition, the discussion of Upper Necaxa examines a number of other diagnostics for the noun–adjective distinction. The analysis here demonstrates both the use of primary diagnostics for markedness in criterial syntactic roles and the application of two secondary diagnostics, quantification and pluralization (Section 4.2.2.5). These exemplify the ways in which such tests can be used to sort out lexical class distinctions, as well as ways in which they can lead the investigator astray.

As a result of the discussions in Sections 4.2.1 and 4.2.2, languages of the Quechua–Totonac type are shown not to be eligible for classification as [NA]V languages because of the types of elision that occur both in noun–noun attributive constructions and when adjectives are used as actants. This leaves as the only possible type of [NA]V language a language like Hausa (4.2.3) which does not allow unmarked attributive constructions and avoids ellipsis by giving abstract nominal readings to "adjectives" when these appear in actantial position. Unfortunately, because of this last characteristic and one or two other features of the syntax, it turns out that "adjectives" in Hausa are considered by speakers to be the expressions of semantic NAMEs and are, therefore, abstract nouns. This forces the reconsideration of the existence of the [NA]V inventory, which—as shown in Section 4.2.4—turns out to be a logically impossible type of language.

This issue is discussed at some length in Chapter 5, which argues that the constraints on typological variation uncovered in the preceding chapter can be easily accounted for by replacing the free recombination of semantic and syntactic features proposed at the beginning of Chapter 4 with an algorithm for the subdivision of the lexical inventory that gives primacy to semantics over syntax. The result is a sufficiently constrained theory of typological variation in parts of speech systems based on rigorous and criterial definitions of each of the three major lexical classes.

Before launching into this discussion, it is probably a good idea to say a few words about the methodology applied here and some of the self-imposed limitations of this study. While this investigation does aspire to being an essay in typology, it is of a substantially different nature than the broad-based typologies inspired by Greenberg (1963) and others which attempt to take data from dozens or even hundreds of languages and distill from them universal patterns and statistical tendencies (a particularly outstanding study of this type is that of Nichols 1992). While this is a feasible task when dealing with highly salient or superficial features of a language such as unmarked word-order or inflectional patterns (although even features like these present a good number of problems), coming to terms with the parts of speech system of an unfamiliar language is a far more complicated task. As will be seen in some of the case-studies below, defining the lexical classes of an individual language involves an understanding of a wide variety of its semantic patterns, syntactic structures, and morphological features and, in the most difficult cases, requires the investigator to go well beyond the type of information included in most ordinary descriptive grammars. Given the degree of familiarity required to sort out the parts of speech systems (at least in problematic languages, which—after all—are the most interesting ones for this type of study) and the type of information available, examining the lexical inventories of hundreds of languages is the work of a lifetime. Instead, I have chosen to let others do much of the inductive work and, based on their findings, have identified four types of lexical inventory that seem to enjoy a great deal of currency in the literature. From these, I examine a small number of languages belonging to two of them.[1] The down side of this is, of course, that there may be among the hundred of languages that I did not examine numerous exceptions or even types that I have not anticipated. However, by focusing on a small number of languages (five, if the Salishan family counts as one), it is possible to speak

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[1] Of the other two types, the full inventory language is well-known and all-too-familiar, and so really needs no special attention (naturally, it is discussed *in passim* at various points in the dissertation). The fourth type, the [NAV] inventory is deliberately passed over, given that the focus here is primarily the variation in the class of adjective. Some thoughts on [NAV] inventories are found in Chapter 5.

with a little more assurance and be confident that some measure of justice is done both to the data and to its interpretation.

Also in aid of constraining the task at hand, I will limit the present discussion to the three major classes of noun, verb, and adjective, and I will only be concerned with the classification of "lexical meanings"—that is, with meanings that refer to items or describe real-world qualities and events rather than expressing grammatical categories. Of course, this distinction is not always easy to draw and theoretical approaches often vary widely in the criteria used to make it (if they have any at all), but it will have to be adhered to here as a convenient fiction. Another such fiction, one that is very common in the typological literature, is the notion of absolute language types. Hausa, for instance, is characterized in this introduction and throughout most of the discussion below as a potential [NA]V language, implying that it has no adjectives, when in reality it has a very small class of about a dozen of these. Similarly, Mandarin is characterized for heuristic purposes as having no adjectives in Section 2.4.2 (it actually does have a few) and Tuscarora is said in Chapter 5 to completely lack underived nouns, although it apparently does have a small number of nominal roots. It is important to remember that when dealing with human language there are no absolute types, and that its inherent variability and creativity will always defeat those who want to speak in absolute terms on typological issues. This is especially true of discussions of the lexicon which is, by definition, the repository of the unsystematic, contradictory, and idiosyncratic. Thus, like so many other linguistic classifications, these types must be taken as potentially gradient categories and the languages discussed here treated as idealized versions of the real thing. This is a necessary step in order to make generalizations, but should not be allowed to obscure the fact that many languages may occupy intermediate positions between the postulated types, or that they may conform to a type when it comes to regularities but also have a lexicon chock-full of exceptions.

Another deliberate omission here has been discussion of the proper morphosyntactic domain of lexical classification—that is, if lexical class distinctions apply to lexical items or lexemes, what constitutes a lexeme? This problem is especially perplexing in polysynthetic languages where it is often unclear what a word is (on both the syntactic and phonological levels). In such languages, it frequently appears either that parts of words belong to lexical classes, or that entire phrases or even clauses can be legitimately treated as one or the other of the major parts of speech. Resolving this problem (or even motivating a coherent position on the issue) is, of course, the topic of a dissertation in itself and I will make absolutely no attempt at it here. For the purposes of this investigation, lexical class distinctions will be assumed to apply to words (whatever those are) and, potentially, to set phrases and expressions in the lexicon. On this last point, it should be kept in mind that the lexicon, at least until it is modeled by the lin-

guist, is not a dictionary and so is not constrained by lexicographic conventions. Speakers have knowledge not only of words but of frequent combinations of words and the conventionalized meanings these have, just as they have knowledge of the conventionalized meanings of particular combinations of roots and affixes. This last issue, that of conventionalization of meaning, will play only a minor role in this discussion until it is addressed directly in the last chapter.

A final point that might need some clarification, particularly given the current sociology of the field of linguistics, is the theoretical orientation of the present work. This dissertation is intended as a typological study of the variation in parts of speech systems and seeks to work out accurate and generally-applicable definitions of parts of speech; it is hoped that these definitions and the approach outlined here will be useful and accessible to as broad a cross-section of the field as possible. Wherever feasible I have couched my definitions and arguments in widely-accepted and generalizable terms that can be used (or at least understood) by adherents of numerous theoretical approaches, and at several places in the discussion I have spelled out how certain theoretical points might be expressed in the conventions of different models. Although I do draw on the formalisms of Meaning-Text Theory, I do so because it is my feeling that these formalisms are straightforward and easily accessible, and that they elegantly illustrate the larger points that I am making—however, it is not my belief that anything I am arguing for depends crucially on the assumptions and conventions of this particular theoretical framework. While the insights that I am trying to capture here are often expressed in formal terms and, in the end, are considered successful to the extent that they are accurately formalized, I draw very heavily on the cognitive-functional literature, and the work as a whole is informed by the belief, made explicit at various points in this work, that language is a system for the expression of meaning, and that it is impossible to get to the heart of many linguistic phenomena without taking into account how this meaning finds expression in the morphosyntactic structures of natural language. Equally, I believe that it is useful to formalize such observations so as to allow the generalizations they imply to be applied and tested in a rigorous manner in a variety of situations and languages. It is precisely this that I have set out to do here and it is left to the reader to judge whether this has been successful and, hopefully, to find something of use, whatever her/his theoretical persuasion.

CHAPTER 2
Definitions of lexical classes

Lexical classes, or parts of speech, are the cornerstone of linguistic models at a variety of levels of investigation. They are key elements in research on lexicography, lexical semantics, syntactic theory, and morphological analysis, and they traditionally play an essential role in the grammatical description of languages both familiar and exotic. At the same time, they are some of the least clearly defined and least understood concepts in linguistics. While most people have an intuitive sense of what constitutes a noun, a verb, or an adjective, based largely on the characterizations of these classes in familiar Indo-European languages, to date no one has been able to satisfactorily define these classes in a rigorous and criterial manner. To be truly useful and appropriate tools for linguistic inquiry, definitions of lexical classes must necessarily perform two tasks. They must accurately and unequivocally spell out what it means for a word to belong to a particular lexical class and predict the properties (at whatever level of description one chooses to formulate this definition) that all members of a given lexical class will have. Such definitions must be universal in scope (that is, they must apply to all words assigned to a given class in all languages), but they must also be able to deal with the typological variation attested in the parts of speech systems of the world's languages.

The definitions of lexical classes that have been in wide use to date have tended to founder on both points. On the one hand, they have succeeded in defining the core or focal areas of the classes, but have been notoriously unable to deal with exceptional cases, leaving large numbers of words classified as belonging to a particular class but possessing none of the properties proposed as criterial for that class. Typologically, on the other hand, such definitions are either unable to deal with the differences languages show in the classification of particular meanings—that is, why a word that is an adjective in language A is a verb in language B—or they have given highly undesirable results which conflict with other generalizations drawn about a given class's behaviour or proper-

ties. This is clearly an untenable situation. Given that so much in linguistic theory depends on lexical classes, it seems wise for us to take a look at some of these earlier definitions to see why they went wrong and, at the same time, draw on the insights contained in them in order to set out a newer, more rigorous set of definitions. Traditionally, definitions of lexical classes can be divided into three types—semantic, morphological, and syntactic, each of which will be discussed in turn in the following sections, after which I will turn to some more recent developments in the syntactic and semantic characterizations of parts of speech.

2.1 Semantic characterizations

The most familiar and intuitively appealing of the three traditional approaches to defining parts of speech is the semantic characterization, which groups words into the three major classes—nouns, verbs, and adjectives—based on their denotational or "contentive" meaning. Generally, in such an approach nouns are said to be those lexical items denoting "people, places, and things," verbs are those which denote "actions and states," and adjectives are those which denote "properties and qualities." This last group of meanings is also frequently referred to as "property concepts" (Thompson 1988), defined as words falling into one of the following seven categories identified by Dixon (1982):

(1)   Classes of property concepts (with English examples)

DIMENSION — *big, little, long, wide...*
PHYSICAL PROPERTIES — *hard, heavy, smooth...*
COLOUR
HUMAN PROPENSITY — *jealous, happy, clever, generous, proud...*
AGE — *new, young, old...*
VALUE — *good, bad, pure, delicious...*
SPEED — *fast, slow, quick...*

(Thompson 1988: 168)

Of the three semantic characterizations of parts of speech, property concepts are the most problematic: semantically, nouns and verbs are highly consistent across languages (although, as seen in Section 2.5, there is some cross-linguistic variation even here). However, adjectives—or, more accurately, the expressions of property concepts—show a great deal of intra-linguistic and cross-linguistic variation, making a purely semantic definition very problematic.

On the cross-linguistic front, simple semantic definitions fail in that it is not always possible to predict the lexical classification of a word in a given lan-

guage from its meaning. For instance, in Hausa, the DIMENSION word 'wide' is expressed as a noun *fadi*, though it is clearly a property concept, whereas in Bemba the HUMAN PROPENSITIES 'strong', 'brave', and 'wise' are expressed by the verbs *ashipa*, *akosa*, and *aceenjela* respectively (Schachter 1985). The PHYSICAL PROPERTY 'hard' surfaces as a noun, *tauɽi:*, in Hausa, as an adjective, *duro*, in Spanish, and as a verb, *χtadis*, in Lushootseed, despite the fact that 'hard' is a property-concept and, hence, by a naïve semantic definition, should always be an adjective.

This problem is particularly obvious in languages that have a small, closed class of adjectives and divide the remaining property concepts between nouns and verbs. Such languages may have as few as half a dozen true adjectives and, while all of these are typically expressions of property concepts, the remaining members of this semantic class are not realized as adjectives. In the Bantu language Venda, for instance, there are only twenty adjectives, listed in (2):

(2)   Venda

hulu 'big'	swa 'young, new'	rema 'black'
ṱuku 'small'	lala 'old'	tshena 'white'
vhi 'bad'	tete 'soft'	tswu 'black'
lapfu 'long'	khwivhilu 'red'	hulwane 'important'
denya 'thick'	sekene 'thin'	ṋu 'wet'
vhisi 'raw, green'	pfufhi 'short'	seṱha 'yellow'
vhuya 'good-natured'	tswuku 'red'	

(Dixon 1982: 4–5)

Dixon (1982) observes that in this type of language, the meanings of the reduced class of adjectives seem to cluster consistently around notions relating to his DIMENSION, AGE, VALUE, and COLOUR (DAVC) categories. Of the remaining property concepts, PHYSICAL PROPERTIES in reduced-class languages tend to be expressed by verbs and HUMAN PROPENSITIES tend to be expressed by nouns.

As useful as these observations are, they fall short of a criterial semantic definition. In spite of the fact that adjectives in closed-class languages do tend to express DAVC meanings, the number of adjectives in such languages can range from dozens down to a mere handful. For example, Venda chooses—out of the potentially much larger set of DAVC meanings—only twenty to be expressed as adjectives. Igbo, on the other hand, realizes only a subset of seven of these meanings (plus 'good', which is not an adjective in Venda) as adjectives:

(3)   Igbo

| úkwú 'large' | ǫ́hụ́'rụ́ 'new' | ójí'í 'black' | ǫ́ma 'good' |
| ńtà 'small' | ócyè 'old' | ǫ́cá 'white' | ǫ́jǫ́'ó 'bad' |

(Dixon 1982: 4; Schachter 1985: 15)

The remainder of the set of DAVC meanings in (2) that are not expressed as adjectives in (3) are thus presumably divided up in the Igbo lexicon between the lexical classes of verb and noun. It seems impossible for any purely semantic definition of adjective to be able to single out only the seven words shown in (3) for Igbo and not include all twenty Venda words in (2), let alone for it to include 'good' in one of these languages and exclude it in the other. While it is true that *semantic characterizations of parts of speech help to identify likely candidates for inclusion in particular lexical classes*, work such as Dixon's shows that semantics is not the whole story, particularly in the realm of adjectives. Semantic characterizations of nouns and verbs seem to be reasonably, although not entirely, accurate across languages, but even here they fail to achieve the rigour required of a linguistic definition. As a result, may investigators have turned away from semantic definitions of parts of speech altogether, while others have tried to modify this approach by treating semantic domains as prototypes for lexical classes, an idea to be examined in more detail in Section 2.5 below.

2.2 Morphological diagnostics

The second type of definition that has enjoyed wide currency is an essentially morphological one that seeks to define parts of speech in terms of the grammatical categories for which they are marked. The simplest approach along these lines posits certain basic morphological categories that are purported to be diagnostic of particular parts of speech, both within and across languages. Thus, nouns are defined as those lexical items that have grammatical gender (Sp. *perro* 'dog$_{MASC}$' : *casa* 'house$_{FEM}$') and are inflected for number (Eng. *dog : dogs*) and case (Rus. *mašina* 'car$_{NOM}$' : *mašinu* 'car$_{ACC}$'); verbs are inflected for tense (Eng. *he runs; he ran*), aspect (Rus. *kričat'* 'shout$_{IMPF}$' : *kriknut'* 'shout$_{PERF}$'), voice (Bella Coola *txis* 'he cut it' : *txim* 'it was cut$_{PASS}$' : *txa* 'he cut$_{AP}$'), and mood (Sp. *dices* 'you speak' : *diga* 'speak!'); and adjectives are inflected for comparison (Eng. *big : bigger : biggest*) and in many languages they show agreement for number, gender, and/or case (Rus. *novyj$_{MASC:SG:NOM}$ muzej$_{MASC:SG:NOM}$* 'new museum'; *novye$_{MASC:PL:NOM}$ muzei$_{MASC:PL:NOM}$* 'new museums'; *novaja$_{FEM:SG:NOM}$ kniga$_{FEM:SG:NOM}$* 'new book'; *v novoj$_{FEM:SG:PREP}$ knige$_{FEM:SG:PREP}$* 'in the new book').

Cross-linguistically, however, there is considerable variation with respect to the inflectional categories encoded on lexical items belonging to all three classes. For instance, nouns in Totonac and most Salish languages are not inflected for number, and recent research has suggested that, cross-linguistically, plurality is a category potentially applicable to both nouns and verbs (Dolinina & Beck 1998). Interior Salish languages and Totonac both lack nominal gender, while the coastal Salish languages have gender but generally lack case, as do Mandarin and (outside the pronominal paradigms) English and Spanish. Verbs in Salish, Mandarin, and many other languages do not inflect for tense, and verbs in Hebrew in all tenses are inflected for gender, as they are in the Russian past tense. In Lushootseed, meanings corresponding to Indo-European tenses, aspects, and moods can be applied to nouns, as in:

Lushootseed

(4)   (a)   tu+q'iyaƛ'əd   ti   tu+sč'istxʷ+s
            PST+slug   D   PST+husband+3PO
            'Slug had been her former (*i.e.* deceased) husband'

                                                            (Hess 1993: 84)

      (b)   xʷi?   kʷi   gʷə+pišpiš
            NEG   D   SBJ+cat
            'there are no cats'

                                                            (Hess 1993: 123)

      (c)   ƛ'u+lət'+əd   ti   ƛ'u+t'isəd   ʔə   ti   šəbad
            HAB+flip+ICS D   HAB+arrow   PR   D   enemy
            'he would flip the habitual arrows of the enemy away'

                                                            (Hess 1993: 83)

In (4a) the meaning 'past'—a tense in many languages—is applied to two different nouns, the predicate nominal *q'iyaƛ'əd* 'slug' and the syntactic subject *sč'istxʷ* 'husband', whereas in (4b) the subjunctive, generally classified as a mood, is applied to *pišpiš* 'cat' to indicate its non-existence (*cf.* the use of the subjunctive in negated subordinate clauses in Spanish: *no conozco a nadie quien sepa usarla* 'I don't know anyone who knows$_{SBJ}$ how to use it'). (4c) illustrates the application of what is usually glossed as the marker of habitual aspect to a noun, *t'isəd* 'arrow', the same marker that appears affixed to the verb *lət'* 'flip'.

Although there are no cross-linguistically universal morphological categories that can be used to define parts of speech, a more promising approach is to define a set of grammatical categories that are cross-linguistically typical of one or the other parts of speech and then to decide, on a language by language basis,

which of these is diagnostic of lexical classes in a given grammatical system. While there is some difficulty with languages like Mandarin and Vietnamese which have little or no morphology, definitions along these lines generally single out the same core classes of meanings as do semantic and syntactic definitions. This, however, is in itself an indication of the fundamental shortcoming of a purely morphological definition of parts of speech: such definitions offer no account of their own success. This success can, in fact, be attributed to a tacit reliance on semantic and syntactic assumptions about the meanings and distributions of parts of speech. Tense in Salish, for instance, might be dismissed as a diagnostic for verbhood given its appearance on the nouns q'iyaƛ'əd 'slug' and sčîstx* 'husband' in (4a), but this presupposes the semantically-driven assumption that these two words are, in fact, nouns.[2] In less problematic cases, say, gender-marking of both verbs and adjectives in Russian, it may be possible to devise more rigorous morphological criteria—i.e., there is a set of words which always bear gender-marking and are marked for the case of their syntactic heads (adjectives), while there is another set which bears marking for tense and aspect (verbs) but can only be marked for gender in the past tense. However, even if such morphological definitions can be crafted on a language specific-basis, on the cross-linguistic front they do nothing to explain why it is that the bulk of those words singled out as adjectives in Russian morphology express the same meanings and have virtually the same syntactic distribution as those words singled out by the language-specific tests for adjectives in Hebrew, English, Totonac, and Japanese.

More telling against a purely morphological definition of lexical classes is the fact that, even intralinguistically, lexical-class boundaries drawn on purely inflectional bases often give problematic results. Most languages, for instance, have lexical items considered to be a member of a given class which do not have all of the inflections that might be considered criterial for membership in that class. Thus, the English word *significance*—which patterns syntactically and semantically with nouns and does not share any inflectional categories with verbs or adjectives—can be neither a plural (*significances*) nor a possessor (*significance's*), whereas plurality and possessive inflections are commonly cited as morphological indicators of nounhood in English (Lyons 1977: 426). In Russian, a number of words such as *pirožnoe* 'pastry' are declined as if they were adjectives showing agreement with a neuter noun and thus pattern morphologically with more run of the mill adjectives such as *bol'šoj* 'big' and *xorošij* 'good', as shown in (5):

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[2] Alternatively, it could be argued that *tu-* is not a past tense marker because it appears on both verbs and nouns—but again, this presupposes that words like q'iyaƛ'əd 'slug' and sčîstx* 'husband' are nouns and so preclude the application of a true tense marker.

(5)   Declension of Russian *pirožnoe* 'pastry'

	pirožnoe 'pastry$_{NEU}$'	bol'šoe 'big$_{NEU}$'	xorošee 'good$_{NEU}$'
NOM	pirožn+oe	bol'š+oe	xoroš+ee
ACC	pirožn+oe	bol'š+oe	xoroš+ee
GEN	pirožn+ogo	bol'š+ogo	xoroš+ego
DAT	pirožn+omu	bol'š+omu	xoroš+emu
INST	pirožn+ym	bol'š+im	xoroš+im
PREP	pirožn+om	bol'š+om	xoroš+em

Semantically, however, *pirožnoe* is more closely related to morphological nouns such as *pirog* 'pie' and *tort* 'cake'. Syntactically, *pirožnoe* patterns as a noun as well, undergoing quantification by numerals (*pjat' pirožnyx* 'five pastries'), serving as subject or object (*Oni s"eli pirožnye* 'they ate the pastries'), the complement of a preposition (*Ja ne mogu žit' bez pirožnyx* 'I can't live without pastries'), or the head of a relative construction (*pirožnoe, kotoroe ja kupil* 'the pastry that I bought'). What's more, unlike true adjectives but like nouns, *pirožnoe* can not serve as a modifier (*pirožnoe testo* 'pastry dough'), nor does it have comparative (*pirožnee*) or superlative (*samoe pirožnoe*) forms. Given that, first and foremost, lexical classes serve as input to syntactic rules—that is, they characterize lexical items for the purpose of the rules used in the organization of syntactic structures—classifying *pirožnoe* as an adjective is at best inconvenient, insofar as is it recognized by the syntax as a noun, as shown by its functions and distribution.

Thus, while morphology often supplies important clues as to lexical class membership, morphological definitions—like semantic characterizations—tend to falter when confronted with cross-linguistic variation in lexical class membership and intra-linguistic idiosyncrasies. As will become clearer in the course of the discussion below, morphological properties, particularly inflectional categories, may reflect a word's underlying semantic and syntactic properties and so, indirectly, may be an indicator of that word's lexical class. Given the existence of a class of nouns in a language, for instance, it may turn out that all nouns in that language must be inflected for singular or plural number, and so inflectional marking for number can be used by the linguist as a indicator that a word may belong to the class of nouns. This type of indicator, however, is not a definition but a diagnostic, and is purely language-specific: as seen above, number is not a universal inflectional category for nouns and in some languages it is an inflectional category for other parts of speech as well. Indeed, the fact that number is frequently marked on nouns follows from the semantics of the prototypical noun—i.e. that nouns are prototypically discrete, countable objects—while the fact that number may also be an inflectional category of verbs and adjectives

follows from their syntactics (noun–verb or noun–adjective agreement). Morphology in this sense becomes a superficial phenomenon, depending not so much on the universal characteristics of lexical classes as on how these classes are treated by the morphosyntax of a given language.

2.3 Syntactic distribution

As noted in the previous section for words like Eng. *significance* and Rus. *pirožnoe* 'pastry', syntactic distribution is often more closely related to lexical class membership than are inflectional patterns; this observation has led to a number of attempts at defining parts of speech (often called "syntactic categories" in such definitions) in purely distributional terms. The most elementary of these approaches defines each part of speech strictly on the basis of the syntactic roles in which it is permitted to appear: nouns are defined as lexical items that can be the subjects of a sentence, verbs can be syntactic predicates, and adjectives are attributive modifiers (*cf.* Chomsky 1965). Such definitions falter, however, when confronted with lexical items appearing in their non-prototypical or extended uses. English nouns, for instance, can comfortably serve as attributives of other nouns, as in *jazz musician* or *gas stove*, while certain adjectives can act as syntactic subjects (*e.g. The rich fear the poor; Louder is better*).

By the same token, syntactic roles singled out as definitive of lexical classes can be filled by complex, multi-word expressions such as non-finite VPs and subordinate clauses. Thus, in *the cat yowling in the backyard*, the element which fits the definition of adjective given above, "attributive modifier," is not a lexical adjective but a participial phrase, *yowling in the backyard*, and in the sentence *That she found him so quickly was a great surprise*, the syntactic subject is a finite clause, *that she found him so quickly*, rather than a noun. Even in simpler sentences like *The red squirrel sits in the park*, as Lyons (1977: 429) observes, "it is not nouns, but nominals, that function as subjects..." and, by extension, it is not necessarily adjectives, but members of the "expression class" adjectival, which act as modifiers. On a micro-level this problem could be overcome by simply adding the *proviso* "lexical item" to the syntactic definitions of parts of speech given above (*i.e.* "an X is a *lexical item* whose syntactic distribution is Y"), but solutions of this type gloss over the larger question of the relation between lexical classes and the corresponding expression class—namely, what is it about nouns and nominals that accounts for their parallel distribution, and how best to capture the semantic relationship between simplex (lexical) and complex elements that fill the same syntactic role? From a cross-linguistic perspective, these questions seem even more pressing when it becomes evident that the distributional parallels between simplex and complex elements found in languages

like English (*i.e.* nouns have similar distributional patterns to finite complement clauses, adjectives pattern with participles and relative clauses, etc.) are found in a wide range of the world's languages.

An additional cross-linguistic difficulty with distributional definitions of parts of speech comes from languages with reduced lexical inventories—that is, languages which appear, on a distributional basis, to lack one or more lexical class distinctions. Consider, for instance, the examples in (6) from the Salishan language Lushootseed, which show the distributional overlap between verbs and nouns ((6a) and (b)), and between verbs and adjectives ((6c) and (d)):

Lushootseed
(6) (a) ʔu+ʔɬəd tiʔiɬ pišpiš ʔə tiʔəʔ sʔuladxʷ
          PNT+eat D   cat   PR D   salmon
          'that cat ate a salmon'

     (b) pišpiš tiʔiɬ ʔu+ʔɬəd ʔə tiʔəʔ sʔuladxʷ
          cat   D   PNT+eat PR D   salmon
          'that one eating the salmon [is] a cat'
                                        (based on Hess 1993: 133)

     (c) ƛ'u+ləkʷ+ɬəd tiʔəʔ haʔɬ sʔɬəd
          HAB+eat+ICS   D   good food
          '[he/she] would eat the good food'

     (d) haʔɬ tiʔəʔ sʔɬəd ƛ'u+ləkʷ+ɬəd
          good D   food   HAB+eat+ICS
          'the food [he/she] would eat [is/was] good'
                                        (based on Bates *et al.* 1994: 105)

The example in (6a) illustrates a sentence whose predicate is the verb *ʔɬəd* 'eat$_{INTR}$' and whose syntactic subject is *tiʔiɬ pišpiš* 'that cat'; in (6b) the same word, *pišpiš* 'cat', serves as the syntactic predicate. In (6d) the syntactic predicate is the word *haʔɬ* 'good', which is shown acting as a modifier in (6c). A naïve distributional definition of a verb as "a lexical item that can act as a syntactic predicate" would not only pick out the syntactic predicates of (6a)—*ʔɬəd* 'to eat$_{INTR}$'—and (6c)—*ləkʷəd* 'eat$_{TRANS}$'—as verbs, but would pick out the syntactic predicates of (6b)—*pišpiš* 'cat'—and (6d)—*haʔɬ* 'good'—as well. This type of argument can and has been used as evidence that Lushootseed, and Salish in general, lacks an underlying lexical distinction between verbs, nouns, and adjectives (*e.g.* Kuipers 1968; Kinkade 1983). As discussed in detail in Section 4.1.1 below, however, in the case of the noun–verb distinction this type of

methodology gives the wrong results. And, if Salish does indeed differentiate between nouns and verbs, then clearly something other than straightforward distribution has to be used in the definition of lexical classes.

Just as with semantics and morphology, then, syntactic distribution in and of itself fails as an adequate means of defining parts of speech. Intralinguistically, words of a given lexical class are frequently capable of appearing in syntactic roles which are typical of, or even diagnostic of, other parts of speech; cross-linguistically, there is frequently variation with respect to the syntactic roles open to different parts of speech, as illustrated by the Lushootseed examples in (6). Nevertheless, it is true that there are certain widespread commonalities in the syntactic behaviour of lexical classes, just as there are prototypical semantic domains and inflectional categories associated with them. This type of observation has lead some researchers to treat syntactic variation in the distribution of parts of speech in terms of the markedness of a given syntactic role for members of a particular lexical class: in essence, such approaches—like the naïve syntactic definitions examined so far—identify certain syntactic roles as being typical or unmarked for a given part of speech and then allow, in one way or another, for the appearance of that part of speech in other, marked, roles in the sentence. Thus, the appearance of the normally adjectival *red* as a syntactic subject in *Red is my favorite colour* could be argued to be an example of a marked or extended use of *red* in a basically nominal syntactic role. However, to do this without recourse to purely stipulative definitions of parts of speech it is necessary to show that the behaviour of an element in an extended position is in some way marked (and that the criteria for markedness are not in some way *post-hoc* or stipulative). These are complex issues to be taken up in more detail in the section that follows.

2.4 Extended roles and syntactic markedness

As show above, neither semantic characterizations (Section 2.1) nor syntactic distribution (Section 2.3) are sufficient in and of themselves to allow for a criterial definition of lexical classes. Morphological properties of words turn out to be useful as diagnostics for lexical-class membership on a language-specific basis, but fail both as universal and intralinguistically comprehensive definitions (Section 2.2). Of the three levels of linguistic description, it is the morphological which shows the greatest cross-linguistic variation in terms of its correlation with lexical class distinctions and so ultimately seems to be the least useful in terms of finding a working definition. This leaves the semantic and the syntactic levels, both of which have been the focus of more recent attempts to define parts of speech. Different authors have dealt with the variation described in the sec-

tions above in different ways, but two main types of definition have become predominant in the literature. Semantic approaches have by and large moved in the direction of treating variation in lexical classification in terms of *prototypicality* and graded class membership. This will be discussed in detail in Section 2.5. As noted above, more recent syntactic approaches have dealt with distributional variability in terms of syntactic *markedness*—that is, they have sought to define parts of speech in terms of their unmarked syntactic distribution. This will be the focus of the remainder of Section 2.4, which begins with a discussion of what markedness means and how it will be measured throughout the course of this discussion (Section 2.4.1). Section 2.4.2 will introduce and slightly redefine a term, WFM ("without further measures"), first proposed by Hengeveld (1992a, 1992b). Following this I discuss another aspect of Hengeveld's work that will play a major role in subsequent chapters, the distinction between rigid and flexible languages (Section 2.4.3), after which I outline two important diagnostics of syntactic markedness, recategorization and decategorization (Section 2.4.4). Finally, in Section 2.4.5 I introduce the notion of markedness as the measure of the prototypicality of certain types of mapping between semantic class and "pragmatic" role as put forward by Croft (1991). While Croft's proposal has some weaknesses, it does point in the direction of what seems to be the correct approach to forming definitions of lexical classes that both account for similarities in parts of speech systems and predict the attested variation in these systems in the world's languages.

2.4.1 Criteria for markedness

Before undertaking a review of syntactic definitions of parts of speech based on markedness, it is worth taking a little time to clarify what it is precisely that is meant by markedness and what kinds of criteria will (and will not) be allowed in the remainder of this discussion. Markedness is one of the most widely, and wildly, used terms in linguistics, and its senses range from a very narrow, structure-based notion of relative complexity to an extremely open sense of "unusual" or "unnatural." A recent definition of markedness located somewhere in the middle of the continuum is put forward by Givón (1995), who writes that

> three main criteria can be used to distinguish the marked from the unmarked category in a binary grammatical contrast:

> (a) **Structural complexity**: The marked structure tends to be more complex (or larger) than the corresponding unmarked one.

(b) **Frequency distribution**: The marked category (figure) tends to be less frequent, thus cognitively more salient, than the corresponding unmarked category (ground).

(c) **Cognitive complexity**: The marked category tends to be cognitively more complex—in terms of mental effort, attention demands or processing time—than the unmarked one. (Givón 1995: 28)

Of these three criteria, (a) is the least controversial and the most universally accepted: given the contrast between two (comparable) elements A and B, the more complex of the two is the marked one. The second and third items on Givón's list, however, are much less straightforward. Frequency is a very commonly cited criterion for markedness, due largely to the intuitive feeling that the unmarked is the most usual or standard form. While this may often be the case, it is not always so, and Trubetskoy (1969: 262*ff*) argues explicitly against frequency as a reliable indicator of markedness, offering a number of examples of phonological segments which are marked (in terms of their complexity, etc.) but are statistically more frequent than their unmarked counterparts. The unreliability of frequency as a measure of markedness also becomes obvious if examined in concrete terms. In phonology, for instance, the appearance of a marked phoneme in a high-frequency word (say, a function word, a common morpheme, or a usual expression) could potentially make the instances of that phoneme more frequent than those of its unmarked counterpart. In the domain of lexical classes, it turns out that in English the predicative use of adjectives is textually more frequent than the attributive use (Thompson 1984)—yet clearly, judged in terms of structural complexity (adjectival predicates require a copula), the former is the more marked of the two constructions. Thus, while frequency in a textual sense may tend to correlate with markedness, it is neither a necessary nor a sufficient criterion for markedness and so will not be used in the course of this discussion.

There is, however, a type of markedness that will be used here that is, at least intuitively, related to the notion of frequency. Consider the following situation: in a particular language, words belonging to the lexical class X appear in six structural environments $\{E_1, E_2, ... E_6\}$. In three of the six environments, X displays a set of properties $\{P_1, P_2, ... P_7\}$ (*e.g.* inflectional categories, referential meaning, etc.), but in E_3 and E_5 X displays a reduced set of these properties $\{P_1, P_3, P_7\}$ and in E_6 it has only one of these $\{P_2\}$. Environments E_3, E_5, and E_6, then, can be considered marked structural configurations for X with respect to the remainder of environments $\{E_1, E_2, E_4\}$ in which X displays the greatest range and most consistent set of properties. The markedness of a given environment, then, can be determined by a reduction in number of typical properties of X, which are those which X displays in the largest number of environments.

This is referred to as *decategorization*. Markedness can also result from the acquisition of a new property, P_8, in one or more of the environments open to X, provided that either a) the number of environments in which X has the set of properties $\{P_1, P_2, ... P_7\}$ is greater than the number of environments where X has the set of properties $\{P_1, P_2, ... P_8\}$ or b) X has, in addition to P_8, only a restricted subset of the other properties $\{P_1, P_2, ... P_7\}$ in the marked environment. This is frequently referred to in the literature as *recategorization*.[3] This measure of markedness seems like a kind of frequency in that it is determined based on the "frequency" with which a certain set of properties is associated with the members of the set of environments $\{E_1, E_2, ... E_6\}$ open to X. Because of the dangers inherent in the term "frequency," however, it is safer to refer to this type of markedness as *contextual markedness*, a term which has the added advantage of reminding us (as noted by Givón above) that the markedness of a given item must not only be determined relative to some other item of a comparable nature, but also must be determined for a specific context. Both types of contextual markedness will be discussed in more concrete terms under the headings of de- and recategorization in Section 2.4.4.

Givón's third criterion, cognitive complexity, is also somewhat problematic, although if used judiciously it turns out to be a useful one. Terms such as "mental effort, attention demands or processing time" are frequently used in a hand-waving fashion without regard to the fact that—as real-world, neurological events—they are subject to empirical verification. Failing psycholinguistic measurement of complexity based on the criteria proposed by Givón, then, it is important to be very clear what is meant by "cognitive complexity" and to provide plausible reasons to think that this complexity would indeed correspond to increased effort, attention, or processing time. To this end, I wish to propose one, specific type of cognitive complexity that will play a role in the discussion below, something that I will refer to as *non-iconicity*. According to this criterion, a linguistic sign a ‹'a', A› (that is, the sign a having the signified 'a' and the signifier A) is more marked than a sign b ‹'b', B› if A is a less direct reflection of 'a' than B is of 'b'. On its own, of course (like all uses of the term "iconicity") this can be very open-ended. In the context of this discussion, it will be put to a single, highly constrained and specific use in Section 3.3 below (to which the reader is referred for a specific example). The rationale for this criterion is simply that a non-iconic sign will be harder to process than an iconic sign, and

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[3] On its own, recategorization is trickier to establish than decategorization, particularly for lexical items that have a very limited number of syntactic roles. Generally, it is only invoked in cases where P_8 is felt to be marked in its application to X for other reasons (*e.g.*, that P_8 is typical of another lexical class, Y, or the construction is marked in terms of complexity with respect to some other environment in which X appears).

hence is cognitively more complex. Straying from the field of linguistics, an illustration of this might be the mental effort required to recognize a picture of a familiar object (a direct representation matched to visual information) versus recognizing it from a description (which requires lexical access and linguistic processing). In terms of writing systems, an ideographic system is more difficult to learn in that the representations of words contain no information about their phonological shape, whereas an alphabetic system allows learners to match written representations to spoken words. This last example probably gives as good a formulation of the notion of "direct representation" as we are going to get: the more direct a representation is (that is, the more iconic it is) the more information it contains about the underlying meaning it represents. Thus, if the signifier B contains more information about 'b' than A does about 'a', *b* can be said to be less marked (and more iconic) than *a*.

The *criteria* for markedness that will be used here, then, differ somewhat from those put forward by Givón (although, unlike Givón, I have in no way tried to be comprehensive in my formulations). This dissertation makes use (implicitly and explicitly) of three criteria for syntactic markedness:

(7) (a) **Structural complexity**: An element X is marked with respect to another element Y if X is more complex, morphologically or syntactically, than Y
     (b) **Contextual markedness**: An environment E is a marked one for an element X if E is *not* a member of the *largest* subset of environments of X where X displays the greatest number of common properties
     (c) **Cognitive complexity**: An element X is marked with respect to another element Y if the representation of X is a less direct expression of X's meaning than the representation of Y is of Y's meaning

An important point to be made about all of these criteria is that they are formulated in terms of contrast—that is, it is not enough to say that X is marked, it is necessary to specify what it is that X is marked in contrast to. Thus, it is essential to keep in mind that markedness is always *contrastive*, an issue which is central to the discussion in the section that follows.

2.4.2 *WFM and markedness*

Definitions of parts of speech in terms of unmarked syntactic roles typically start from a position similar to the naïve syntactic definitions of lexical classes examined in Section 2.3. The unmarked syntactic role of nouns is thus claimed to be that of syntactic actant (subject or object) of a verb, verbs are said to be

unmarked syntactic predicates, and adjectives are unmarked modifiers of nouns.[4] All of these lexical classes, however, are said to have additional—marked or "extended" (Dik 1978)—uses which overlap with the unmarked distribution of the other classes. The task of the linguist then becomes sorting out—in an unambiguous, non-tautological manner—which uses of a given lexical item constitute extended uses and which are unmarked, and, hence indicative of that item's lexical class membership. In one of the best examples of this methodology to date, Hengeveld (1992a, 1992b) makes reference to the "additional" grammatical machinery required to allow a lexical item to appear in an extended syntactic role. Hengeveld refers to such mechanisms as "further measures" and uses this notion to arrive at the definitions of the major parts of speech in (8):[5]

(8) *verb*—a lexical item which, without further measures being taken (WFM), has predicative use only
     noun—a lexical item which WFM can be used as the actant of a syntactic predicate
     adjective—a lexical item which WFM can be used as the modifier of a noun

For Hengeveld, "further measures" are defined as those morphosyntactic means which "derive" Functional Grammar predicates from constituents that are not already predicates (1992a: 58). Hengeveld (1992a: 58) illustrates this with the following set of English attributive constructions:

English
(9) (a) the *intelligent* detective
     (b) the *singing* detective
     (c) the detective *who is singing*

All of the italicized words in (9) are, in syntactic terms, modifiers of *detective*—however, only the first one, *intelligent*, is used "without further measures being taken" and so fits into the category of adjective. The modifier in (9b) is a verb, *sing*, suffixed with the participial/gerundive suffix -*ing* (a morphological

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[4] In Meaning-Text Theory (Žolkovskij & Mel'čuk 1967; Mel'čuk 1988) and various other dependency-based grammars, an *actant* is the equivalent of a *syntactic argument* in generative phrase-structure grammars. I will continue to use this term throughout in order to avoid confusion with the term "argument," which I will restrict to the semantic sphere.

[5] Note that I have re-formulated Hengeveld's (1992a: 58) definitions—which in the original are couched in the terms of Functional Grammar (Dik 1978)—to make them more accessible to those unfamiliar with the framework.