

INFLECTIONAL AND LEXICAL MORPHOLOGY — A LINGUISTIC CONTINUUM

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Lexical and inflectional morphology form a scaled continuum with respect to grammaticalization. Examination of the principal linguistic categories pertaining to the major lexical classes of nouns, adjectives, and verbs shows that languages differ in the degree to which they grammaticalize such categories and that within one and the same language 'inflectional' phenomena do indeed occupy quite different positions on the scale of grammaticalization and may even fade into the lexical domain. Continuous linguistic phenomena can only be adequately described if their differential behavior on a set of parameters is taken into consideration.

1. The Word in Morphology and Syntax

The word is the linguistic unit *par excellence* in the speakers' understanding of their language as well as in traditional linguistic description. The two traditional disciplines, morphology and syntax, are concerned with the structure of words and with the rules by which they are combined in sentences, respectively.¹

The role of morphology in the grammatical analysis of languages is dependent upon the relative complexity of the word. Languages differ typologically in this respect. Whereas in an ideal isolating language there would be a one-to-one correspondence of words and morphemes, in more synthetic languages the word on the average consists of more than one morpheme. On the index of synthesis the two extremes are isolating and polysynthetic.² Vietnamese and Chinese are examples of languages approaching the isolating type, while many North-American Indian languages are polysynthetic. In such languages it may be difficult to tell word and phrase apart; morphological and syntactic

¹ According to Lyons (1968:194) "the very terms 'morphology' and 'syntax', and the way in which they are applied, imply the primacy of the word. Typologically speaking, 'morphology' is simply 'the study of forms' and 'syntax' the theory of 'putting together': it was taken for granted by traditional grammarians that the 'forms' treated in grammar are the forms of words and that words are the units which are 'put together', or combined in sentences."

² On morphological typology cf. Comrie (1981:39ff).

structure strongly overlap.³

Words are combined to form sentences, the chief function of which is to predicate. Sentences characteristically consist of a verb, belonging to the word-class with primarily predicative function, and nouns, a word-class with primarily referential function.⁴ Languages use a variety of strategies to mark the constituents of sentences and to express how they are related to each other. One of these strategies is inflection, the use of different word-forms. Thus, in Latin the subject and object functions of the nouns in example (1) are signalled by their nominative and accusative case forms, respectively.

- (1) (a) *puella puerum laudat.*
 (b) *puellam puer laudat.*

A language like Mod. English with less noun morphology makes use of a different type of strategy in such cases, namely the position of the noun phrases relative to the verb (example 2).

- (2) (a) the girl praises the boy.
 (b) the boy praises the girl.

2. Morphology

The study of morphology comprises two subjects, inflection and derivation. Inflection is concerned with the study of word-forms and the processes by which they are formed. Derivation studies the structure of lexemes, of words in the sense of lexical units, and of lexical, as opposed to inflectional processes, *i.e.* the rules by which languages form new words. These domains of morphological study have therefore been called inflectional and lexical morphology.

2.1. Lexical Morphology

Languages are constantly faced with the necessity of adapting their lexical stock to new communicative needs. New words serve the purpose of naming new concepts, thus more or less stabilizing them and making them available for linguistic communication as a kind of 'prefabricated' unit.⁵ Although languages differ in the way domains of cognitive categories are lexicalized as well as in the detail to which this is done, this must not be confused with their general ability to 'name' categories.⁶ In any language a speaker has

³ Cf. Nida (1949:104ff).

⁴ Cf. Sapir (1921:119) and Lyons (1977:429f).

⁵ Cf. Bolinger (1975:108ff) and Motsch (1977:183).

⁶ This point is stressed by Brown (1958:234f).

the possibility of naming different kinds of snow, although maybe not by separate ready-made lexical items as e.g. in Eskimo, but by phrases he may construct for this very purpose.

Word-classes open to new lexical formations are above all the major categories of nouns, adjectives, verbs, and adverbs;⁷ much less so the more grammaticalized lexical categories, such as auxiliaries, adpositions, pronouns, and determiners. It is precisely this difference between open and closed lexical classes which is observed by Lewis Carroll in his *Jabberwocky*:

- (3) 'Twas *brillig*, and the *slithy toves*
 Did *gyre* and *gimble* in the *wabe*:
 All *mimsy* were the *borogoves*,
 And the *mome raths outgrabe*.

The invented words all belong to the classes of nouns, adjectives, or verbs.

The main process of word-formation is derivation, the formation of new words on the basis of existing ones.⁸ This is done either by compounding words (or rather roots or stems) or by adding a derivational affix to a root or stem serving as its derivational base.⁹ In the German noun *Einführungsvorlesung* 'introductory lecture' both kinds of derivational processes, composition and derivation (in the restricted sense of the term), occur (figure 1).

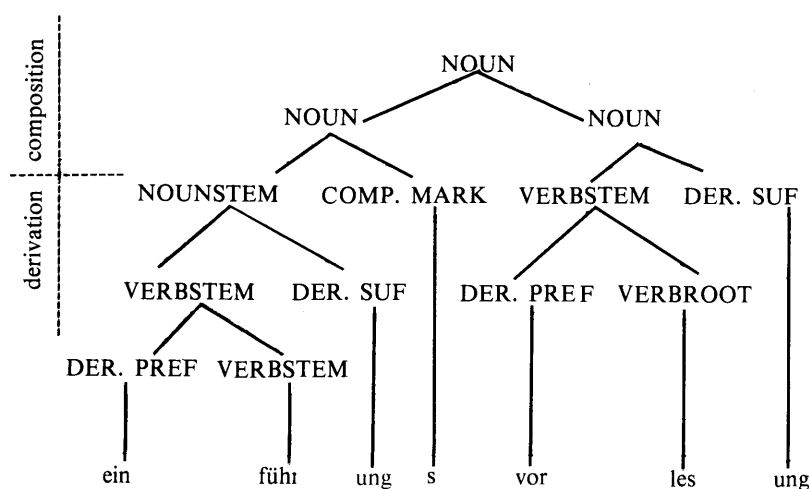


Fig. 1. Word formation.

⁷ Cf. Bolinger (1975:110).

⁸ Cf. Bolinger (1975:108) and Aronoff (1976:21).

⁹ Although affixation is by far the most important derivational technique besides compounding, it is not the only one. Other derivational processes comprise *ablaut* and conversion (zero-derivation).

Compounds are complex lexical items containing more than one root; derivatives are derived from roots or stems by means of lexical formatives.¹⁰ The boundary between composition and derivation is not clear-cut, however. Thus, it is not easy to decide if lexically complex verbs like German *übersetzen* 'to translate' or *vorlesen* 'to read (s.th. to s.o.)' should be considered as derivations or compounds.¹¹ There is a general tendency for descriptive terms to become less descriptive in the history of languages¹² and, correspondingly, for free morphemes to become bound. Thus, the Mod. High German derivational suffixes *-heit*, *-schaft*, and *-tum*, as in *Menschheit* 'mankind', *Mannschaft* 'team', *Christentum* 'Christianity', were nouns in Middle or Old High German.¹³

Composition and derivation, as defined above, represent only two positions on a continuous scale of lexical formations, extending from entire sentences to unanalyzable labels. Languages differ in the way they choose from this gamut of lexical techniques.¹⁴ While German and English only exceptionally use sentences for naming purposes (example 4a), fossilized clauses quite frequently serve this function in Maasai, an Eastern Nilotic language, especially as far as names of animals are concerned (example 4b).¹⁵

- (4) (a) Vergißmeinnicht 'forget-me-not'
 (b) e- na- ibor- tuli
 CL.PREF-REL.PRON-be.white-buttock
 'Thomson's gazelle'

Mod. Greek makes use of genitive phrases without any determiners of the modifier noun to name 'things' (example 5a),¹⁶ while German prefers the lexical technique of composition in such cases (example 5b).

- (5) (a) γάλα ajeláda-s 'cow's milk'
 milk cow- GEN.SG
 (b) Kuhmilch 'cow's milk'

Languages may change their preferred ways of forming new lexical items in the course of their history. Nominal composition has been gaining enormously in importance in contemporary French,¹⁷ while in former historical stages it was derivation that predominated.

¹⁰ On composition and derivation cf. Matthews (1974:38ff).

¹¹ Cf. Malkiel (1978:127ff).

¹² Cf. Seiler (1975:41).

¹³ Cf. Fleischer (1975:150, 160ff).

¹⁴ Cf. Seiler (1979/80).

¹⁵ Example (4b) is taken from Tucker/Mpaayei (1955:309). The information on Maasai naming procedures and the analysis of the example are due to Dr. Vossen (Institut für Afrikanistik, University of Cologne).

¹⁶ Cf. Katsinavakis (in prep.).

¹⁷ Cf. Benveniste (1966).

2.2. Lexical versus Inflectional Morphology

In order to fulfil their functions as man's chief means of communication, languages need lexical as well as grammatical, *i.e.* inflectional and/or syntactic, devices. Since grammatical entities (inflectional formatives, function words) may have lexical meaning besides their grammatical function and lexical entities (derivational formatives, content words) may be inherently relational, the grammatical and lexical domains — and hence also inflectional and lexical morphology — are not strictly separated in the structure of language.

Languages make use of the same kinds of techniques both for inflectional and lexical formations. Thus, the Mod. Greek adjective *ksílinos* 'wooden' adopts different inflectional forms depending on the syntactic constructions in which it occurs (example 6).

- (6) (a) ayórase éna ksílin -o γραφί-o.
 bought:3.SG a:ACC.SG.N wooden-ACC.SG.N desk- ACC.SG.N
 'She bought a wooden desk.'
- (b) protimái ksílin -a γραφί-a.
 prefer:3.SG wooden- ACC.PL.N desk- ACC.PL.N
 'She prefers wooden desks.'

These are formed by adding different inflectional suffixes to the stem *ksilin-*, which is itself derived from the root *ksil-* 'wood' by suffixation of the derivational morpheme *-in-*. German *Flug* 'flight' as well as *flog* 'flew' are related to *fliegen* 'to fly' by *ablaut*. But whereas *Flug* and *fliegen* are different lexemes, *flog* and *fliegen* are different forms of one and the same lexeme.

In spite of this parallelism of inflectional and lexical techniques there are, however, important differences between the two domains of morphology. In example (6) the specific inflectional forms adopted by the adjective are prescribed by grammatical rule. Forms like *ksílinu* GEN.SG.N or *ksílini* ACC.SG.F would be ungrammatical in the given contexts. There is on the other hand no grammatical rule which forces the speaker to use an adjective derived by *-inos* rather than one in *-enios* (such as *ksilénios* 'wooden') or an adjective not formed by any lexical process at all, such as *oréos* 'beautiful'. Thus, while inflectional formations are determined by syntactic rule and therefore can not be substituted by forms not carrying the appropriate syntactic information (such as a certain case, number, and gender), such restrictions do not govern the distribution of complex vs. simple lexical items of a given word-class.

Other well-known differences between inflectional and lexical morphology concern the more peripheral position of inflectional as opposed to lexical formatives in the structure of the word, the highly restricted productivity of lexical as compared to inflectional rules, the ability of lexical, but not of inflectional processes to effect changes in word-class membership.¹⁸ Furthermore, the choice between different formal means not determined by

¹⁸ For a comparison of inflectional and lexical morphology cf. Bloomfield (1933:222ff), Nida (1949:99f), Matthews (1974:ch.III), and Plank (1981:8ff).

syntactic rule and a corresponding tendency to exploit formal differences for semantic purposes are more typical of lexical morphology, while pairs of inflectionally related forms are characterized by correlations of grammatical features and a constant proportionality of expression and content.¹⁹

The differences between inflectional and lexical morphology could be summarized by stating that the inflectional domain of morphology is grammaticalized while the lexical domain is not.²⁰ But as observed above, the boundaries between inflectional and lexical phenomena are not clear-cut. It should therefore come as no surprise that languages differ as to which linguistic categories they grammaticalize and in the degree to which they do this. In sections 3 to 5 we shall examine the lexical categories of nouns, adjectives, and verbs and show that linguistic categories which belong to inflectional morphology in the Indo-European languages may be much less grammaticalized in languages of different genetic affiliations and that within one and the same language 'inflectional' phenomena do indeed occupy quite different positions on the scale of grammaticalization and may eventually fade into the lexical domain. The final section will be devoted to the description of such linguistic continua.

3. Case, Number, and Gender in the Noun

3.1. Case

As shown above (example 1), in a language like Latin, which has the grammatical technique of inflection, nouns adopt different case forms according to their functions in syntactic constructions. For this reason case forms cannot be exchanged at will. Sentences (1a) and (1b) — repeated here as (7a) and (7b) — differ in meaning, while (7c), with a second nominative instead of the accusative object required by the verb *laudare*, is ungrammatical.

- (7) (a) *puella puerum laudat.*
 (b) *puellam puer laudat.*
 (c) **puella puer laudat.*

Due to the fact that it incorporates both the Indo-European instrumental and locative cases, the Latin ablative fulfils a variety of functions, such as denoting origin, place, and time, as exemplified by examples (8a) to (8c).

- (8) (a) *puer nobili genere natus fuit.*
 (b) *puer rure natus fuit.*
 (c) *puer Kalendis Ianuariis natus fuit.*

Unlike direct and indirect objects, adverbial phrases do not usually belong to the argu-

¹⁹ For these features of the inflectional paradigm cf. Seiler (1966) and (1967) and the following sections.

²⁰ On grammaticalization cf. Lyons (1977:234f) and Lehmann (in prep.)

ment structure of the verb.²¹ While (9a) is ungrammatical, because the verb *laudare* requires a direct object, sentence (9b) is perfectly correct without any of the adverbial phrases of (8), at least if the subject noun phrase is interpreted as indefinite.

- (9) (a) *puer laudat.
 (b) puer natus fuit.

At the same time, all three adverbial phrases of (8) may be combined in one and the same sentence (example 10a), while it is impossible to simply juxtapose two direct objects in a sentence like (10b).

- (10) (a) puer *nobilī genere rure Kalendīs Ianuariīs* natus fuit.
 (b) *puer puellam canem laudat.

The compatibility of the three adverbial phrases in (10a) points to their difference in function.

Contrary to the nominative and the accusative, the ablative is in some of its functions replaceable by a non-inflected form (example 11):

- (11) (a) puer *rure/ibi* natus fuit.
 (b) puer *Kalendīs Ianuariīs/tum* natus fuit.

All this shows that the ablative case behaves rather differently from the more 'grammatical' cases nominative, accusative, and genitive and that it plays a less central role in the system of Latin syntactic functions.²² In spite of this, the ablative is rightly considered as part of the Latin inflectional system, however, for it belongs to the declensional paradigm of the noun. All Latin nouns have an ablative case-form, and the same type of techniques are used for forming the ablative as well as the other case forms. The ablative obeys the systematic correlations typical of the paradigm, in which there is a regular correspondence of certain formal differences to certain meaning differences, as exemplified by (12).²³

- (12) puerum: puerō = puellam: puellā = genus: genere = turrim: turri = ...

As is typical of Latin cases, the ablative is used to signal syntactic functions, such as those in (8), and to mark the relatedness of sentence constituents. Thus, in sentence (8a) the adjective *nobilis* agrees with its head noun in case, number, and gender. The morphological formative carrying among others the ablative case function constitutes the ending of the word. It does not allow any further suffixes after it. This is typical of inflections formed by suffixation.

²¹ Certain verbs, like Mod. Greek *méno* in the sense of 'to dwell' or German *wohnen* 'to dwell', do require a locative phrase, however.

²² Cf. Kuryłowicz (1949) and Seiler (1967:50f).

²³ Cf. Seiler (1966) and (1967).

3.2. Number

In the inflectional endings of Latin nouns the category of case is fused with the category of number and thus expressed obligatorily as well. In Indo-European languages the category of number is usually grammaticalized, for in these languages the discrete way of conceptualizing substantive meanings predominates.²⁴ In languages like Mod. Greek, German, English, and French word-forms such as *spíti/Haus/house/maison* or *pséma/Lüge/lie/mensonge* are singular and may be put into the plural. There are relatively few nouns in these languages with non-discrete conceptual meanings, such as *musikí/Musik/music/musique* or *yála/Milch/milk/lait*. Although the latter are formally in the singular, the unmarked number, they are actually neutral relative to number. Contrary to true singulars, they may occur in plural contexts (example 13).

- (13) (a) *diáfora íði musikís/yáktos/ *spitiú/ *pséματος*
 (b) *verschiedene Arten von Musik/Milch/ *Haus/ *Lüge*
 (c) *different kinds of music/milk/ *house/ *lie*
 (d) *différentes sortes de musique/lait/ *maison/ *mensonge*

In Indo-European languages the plural is formed by inflectional techniques, the most frequent of which is suffixation, *i.e.* the addition of a bound morpheme after a stem. The most important proof of the inflectional and thus grammaticalized nature of the category of number is, however, provided by the fact that it is used for syntactic purposes.²⁵ In languages like Latin, Class. and Mod. Greek, German, and also French and English, number is used for signalling the relatedness of the elements in the sentence. Thus, in Mod. Greek the inflectible elements of the noun phrase agree in number, and the same is true of subject and finite verb (example 14).

- (14) (a) *to meýálo skilí kimáte.*
 the:NOM.SG.N big:NOM.SG.N dog:NOM.SG.N sleep:3.SG.PRS
 'The big dog is sleeping.'
 (b) *ta meýála skiliá kimúnde.*
 the:NOM.PL.N big:NOM.PL.N dog:NOM.PL.N sleep:3.OL.PRS
 'The big dogs are sleeping.'

Elements of the sentence agreeing with each other refer to each other. Languages differ in the degree to which this "referential system"²⁶ is made use of. In German, just as in Mod. Greek, there is agreement in gender, case, and number among the inflectible elements of the noun phrase as well as in number between subject and finite verb (example 15).

- (15) (a) *der große Hund schläft.*
 the:NOM.SG.M big:NOM.SG.M dog:NOM.SG.M sleep:3.SG.PRS

²⁴ Cf. Biermann (1982).

²⁵ Cf. Sapir (1921:94f).

²⁶ *Grundzüge*, p.568.

- 'The big dog is sleeping.
 (b) die großen Hunde schlafen.
 the:NOM.PL.M big:NOM.PL.M dog:NOM.PL.M sleep:3.PL.PRS
 'The big dogs are sleeping.'

But whereas in Mod. Greek the adjective agrees with its noun in attributive as well as in predicative use, agreement in German is restricted to the attributive adjective (examples 16 and 17).

- (16) (a) to skili éjine meýálo.
 the:NOM.SG.N dog:NOM.SG.N became:3.SG big:NOM.SG.N
 'The dog grew big.'
 (b) ta skiliá éjinan meýála.
 the:NOM.PL.N dog:NOM.PL.N became:3.PL big:NOM.PL.N
 'The dogs grew big.'
- (17) (a) der Hund wurde groß.
 the:NOM.SG.M dog:NOM.SG.M became:3.SG big
 (b) die Hunde wurden groß.
 the:NOM.PL.M dog:NOM.PL.M became:3.PL big

Outside the Indo-European family there are languages in which number is less strongly grammaticalized. Thus, in Nootka, an American Indian language spoken on Vancouver Island, expression of the category of number is optional.²⁷ Consequently, number is not used for agreement in this language. Much as in Indo-European languages, though, plural is signalled by morphological means. The plural morpheme is a bound morpheme added to the noun stem by suffixation (example 18).

- (18) inikw-ihl- ?minih- ?is- ?i²⁸
 fire- in.the.house-PLURAL- DIM- ART
 'the little fires in the house'

A comparison of the relative positions of the plural and diminutive suffixes in Nootka and Mod. Greek (example 19) shows that in Nootka the plural suffix is placed closer to the root than the diminutive morpheme, while in Mod. Greek they are in reverse order.

- (19) fot-áki-a 'little fires'
 fire-DIM-PL

The relative proximity of the plural morpheme to the root reflects its degree of grammaticalization. There is a general tendency for derivational morphemes to occupy less peripheral positions in the structure of the word than those of the inflectional ones. This is

²⁷ Cf. Sapir (1921:28f).

²⁸ Example (20) is taken from Sapir (1921:134).

due to the function of derivational morphemes to constitute lexemes, whereas inflections are outwardly oriented toward the other elements of the sentence and change according to the syntactic context. In Nootka plural is thus a less abstract category than in Mod. Greek, for example. The plural and the diminutive suffixes as well as the locative suffix tend to be derivational rather than inflectional in this American Indian language.

A non-discrete way of conceptualizing nominal content also dominates in Classical Tibetan. In example (20a) the noun *mi* 'man' is neither singular nor plural but simply neutral as to number. The speaker is not concerned with differentiating between one or more referents of the object noun, and the grammatical system of his language does not compel him to express this distinction. If he wished to do so, however, he could introduce the word *rnams* 'plural' as a syntactic modifier of *mi* (example 20b).

- (20) (a) nga-s mi mthong.²⁹ 'I see a man/men.'
 I- ERG man see
 (b) nga-s mi rnams mthong. 'I see men.'
 I- ERG man plural see

The Class. Tibetan word for 'plural' functions as an attribute and is thus on a par with other attributive elements, such as adjectives. The fact that the concept of plurality is expressed by a free morpheme shows that it is even less grammaticalized here than in Nootka.

While in Indo-European languages number is part of inflectional morphology and is syntactically used for agreement, in certain American Indian Languages the category of plural has a tendency toward lexical morphology. It is not used for agreement. In Class. Tibetan plural is not even expressed morphologically, but syntactically. Lexical and syntactic means of expressing the concept of plurality are not, however, completely alien to languages with a strongly grammaticalized category of number. In German transnumeral nouns, such as *Regen* 'rain', *Fleisch* 'meat', *Musik* 'music', may be pluralized by taking recourse to lexical morphology, namely composition, as in *Regenfälle* 'rains', *Fleischsorten* 'kinds of meat', *Musikstücke* 'pieces of music'.³⁰ Numeral adjectives, such as *zwei* 'two', *mehrere* 'several', *viele* 'many', offer syntactic means of expressing plurality. Number being grammaticalized in German, these extra-inflectional procedures are obligatorily accompanied by the inflectional expression of plural. As these few examples indicate, languages differ gradually rather than radically in the grammaticalization of number.

3.3. Gender

As stated above, in fusional languages like Latin or Greek each inflectional formative

²⁹ Example (22) is taken from Sapir (1921:106).

³⁰ This type of example was brought to my attention by Elisabeth Löbel (Institut für Sprachwissenschaft, University of Cologne).

typically combines several types of grammatical information. In the noun these are case, number, and gender. Nouns may change their number and case-form, and for this reason these categories have traditionally been considered as 'accidence'. The same is not true of gender, which in those Indo-European languages making gender distinctions inheres to the noun. The Latin stem of *puella* is feminine and is therefore exclusively compatible with the endings of the *a*-declension containing predominantly feminine nouns. Forms like **puellus* or **puellum* are not possible Latin words of word-forms. Another characteristic of gender in Indo-European languages is that with the exception of certain nominal subcategories it is not semantically based. It thus comes as no surprise that the word for 'table' is neuter in Mod. Greek (*to trapézi*) while being feminine in French (*la table*) and masculine in German (*der Tisch*). There are some important exceptions to the semantically arbitrary distribution of gender. Thus, in French the names of trees are nearly all masculine, while in Russian and German they are predominantly feminine. Another exception are nouns denoting human beings, where grammatical gender usually corresponds to the sex of the referent. But even here there are exceptions. While in French we have *le garçon* (M) 'the boy' and *la fille* (F) 'the girl', in German we find *der Junge* (M) but *das Mädchen* (N), whereas in Mod. Greek it is *to kopéli* (N) and *i kopéla* (F). Although the non-correspondence of gender and sex in nouns denoting persons socially considered as sexually immature is certainly no mere coincidence, the fact that a specific noun has natural gender or not should not mislead one to make hasty cultural speculations in languages with strongly grammaticalized gender. In such languages the primary function of gender is to classify nouns into different inflectional types and thus to signal which units of the sentence are related and how they are related.

Gender variation may marginally occur in languages with grammaticalized and thus predominantly fixed gender, especially in learned words and other loan-words, as e.g. German *Primat* 'primacy', *Zölibat* 'celibacy', *Liter* 'liter', and *Joghurt* 'yogurt', which vary between masculine and neuter gender. According to a general linguistic tendency of making use of formal distinctions for semiotic purposes, in other nouns such gender differences correspond to different, but related meanings (example 21).

- (21) *Erbe* M: 'inheritor', N: 'inheritance'
Gehalt M: 'content, value', N: 'salary'
Hut M: 'hat', F: 'protection'
Balg M: 'skin', N: 'brat'

While in languages with a rich system of noun inflection, such as Latin and Class. Greek — and even Mod. Greek as compared to German — a noun's gender can in the majority of cases be recognized by its nominative form, gender is not formally marked in most German nouns. It is neither deducible from their morphophonological structure in the nominative singular nor from most other case forms. Thus, the phonologically quite similar monosyllabics in (22a) differ in gender as do the bisyllabics ending in *-er* (22b).

- (22) (a) *Flug* (M) 'flight', *Flut* (F) 'flood', *Blut* (N) 'blood'
 (b) *Zucker* (M) 'sugar', *Butter* (F) 'butter', *Futter* (N) 'feed'

The situation is quite different with the nouns in (23), however.

- (23) (a) Gott (M) - Göttin (F) 'god - goddess'
 Sklave (M) - Sklavin (F) 'slave'
 Freund (M) - Freundin (F) 'friend'
 Löwe (M) - Löwin (F) 'lion - lioness'
 (b) Witwe (F) - Witwer (M) 'widow - widower'
 Gans (F) - Gänserich (M) 'goose - gander'
 Ente (F) - Enterich (M) 'duck - drake'

In the forms in the right-hand column gender is overtly marked by the suffix and it is natural. Pairs of masculine and feminine forms denoting masculine and the corresponding feminine beings also occur in languages like Latin, Mod. Greek, and Italian. In these languages gender is overtly marked in both forms (example 24).

- (24) (a) *dēus* (M) - *dēa* (F) 'god - goddess'
 (b) *δύλος* (M) - *δύλα* (F) 'slave'
 (c) *cugino* (M) - *cugina* (F) 'cousin'

The phenomenon that nouns denoting persons or animals can serve as bases for deriving nouns denoting referents of the opposite sex is called *motion*. In the older stages of language development it was only possible to derive feminine forms from masculine forms, never the reverse.³¹ In modern languages masculine forms may be derived from feminine forms as well (cf. example 23b above). A masculine or feminine noun is derived in complementarity to the gender of the class name,³² as shown by the German examples *Gans* (F)/*Gänserich* (M), but *Löwe* (M)/ *Löwin* (F) in (23).

Should *motion* be considered an inflectional or rather a lexical process? In Italian it seems possible to establish correlations like (25), which apparently look quite the same as those in (12) above.³³

- (25) *cugino*: *cugina* = *caro*: *cara* = *mio*: *mia*

The forms *caro/cara* 'dear' and *mio/mia* 'my' are different inflectional forms of the adjective *caro* and the possessive adjective of the first person singular, respectively. This can be shown by the fact that their form, as far as gender and number are concerned, is determined by the syntactic constructions in which they occur (example 26).

- (26) (a) *il caro/*cara mio/*mia cugino*
 (b) *la cara/*caro mia/*mio cugina*

The compatibility of the adjectives ending in *-o* with the noun ending in *-o* and their in-

³¹ Untermann (1979)

³² Cf. Plank (1981:96ff).

³³ The following argumentation is largely based on Matthews (1974:44ff).

compatibility with the noun ending in *-a* does not, however, show if the dependency of gender (and number) between noun and adjectives (as well as the article) is mutual or directed. That gender (and number) in the determiners are indeed determined by the noun can be proved by substituting nouns which are doubtlessly different lexemes, such as *cane* 'dog' and *madre* 'mother', for *cugino* and *cugina*, as in (27).

- (27) (a) il caro/*cara mio/*mia cane
 (b) la cara/*caro mia/*mio madre

Just as *cane* and *madre* determine gender and number of their determiners, so do *cugino* and *cugina*. It follows that the relation between the latter is lexical and not inflectional and thus different from the relation between *caro* and *cara* or *mio* and *mia* and a host of other adjective forms, where, contrary to nouns, masculine forms quite regularly have corresponding feminine forms, their use being determined by grammatical rule.

Contrary to inflectional rules, the applicability of lexical rules is quite heavily restricted by different factors. One of these is lexical stock. In German the rule of *motion* is usually blocked if the corresponding concept is already represented by a simple lexeme (example 28).

- (28) (a) Vater (M) - Mutter/*Väterin (F) 'father - mother'
 (b) Mönch (M) - Nonne/*Mönchin (F) 'monk - nun'

But even if there are no corresponding simple lexical items, derivations formed by *motion* may still be unacceptable, partly due to cultural reasons (example 29).³⁴

- (29) (a) Elefant (M) - *Elefantin (F) 'elephant'
 (b) Spinne (F) - *Spinnerich (M) 'spider'

Derivation by the rule of *motion* changes a noun's gender class. In a language like German, in which gender is used for agreement, gender and sex of the referent may conflict in masculine animal names, if reference is to the female animal in particular. Although in anaphorical reference to neuter nouns denoting persons agreement may be according to sex in German (example 30a), gender of the noun takes precedence over sex of the referent in animal names (example 30b).

- (30) (a) Das Mädchen hat sein/ihr Buch aufgeschlagen.
 the:NOM.SG.N girl:N has POSS.3.SG.N/F book opened
 'The girl has opened her book.'
 (b) der Esel und sein/*ihr Junges
 the:NOM.SG.M donkey:M and POSS.3.SG.M/F young
 'the donkey and its young (one)'

With feminine class names such conflicts between gender and sex do not arise (example

³⁴ Cf. Plank (1981:98).

31). For this reason derivations with *-in* are systematically absent from these class names.³⁵

- (31) die Katze und ihr Junges
 the:NOM.SG.F POSS.3.SG.F
 'the cat and its young (one)'

If one compares *motion* to the way gender is treated in German in general, obvious differences emerge which leave no doubt as to the lexical nature of *motion*. While gender in most nouns is neither semantically founded nor marked by a separate morpheme but solely exhibited by the declensional paradigm a noun adheres to,³⁶ nouns derived by *motion* carry a special suffix which determines their semantically based gender. Here we have one of the rare cases where gender change may take place in German. By *motion* masculine nouns become feminine (*Löwe* → *Löwin*, 23a) and feminine nouns become masculine (*Ente* → *Enterich*, 23b). Most importantly, however, application of the rule of *motion* does not simply lead to gender change but to a meaning difference as well. The lexically simple nouns *Löwe* and *Ente* are the unmarked terms of the lexical oppositions *Löwe/Löwin* and *Ente/Enterich*. As the unmarked terms do not specify the sex of their referents, they can occur in contexts referring to both masculine and feminine sex. The distribution of the marked terms is more restricted, because their meaning includes indication of the sex of their referents (example 32).

- (32) Jeder Zoo wird Löwen/*Löwinnen und Enten/*Enteriche beiderlei Geschlechts besitzen.
 'Every zoo will have lions/*lionesses and ducks/*drakes of both sexes.'

Furthermore, the rule of *motion* is heavily restricted in its productivity, partly depending on the stock of derivationally simple lexemes,³⁷ a consideration of no importance whatsoever in inflection. The suffix of *motion* precedes the inflectional ending and thus occupies a more central position in the word (example 33).

- (33) (a) Gött - in(n) - en 'goddesses'
 god- MOV- PL
 (b) Ente- rich- e 'drakes'
 duck- MOV- PL

Unlike gender, *motion* as such is not used for agreement in German. The attributive adjective of a noun derived by *motion* only takes an ending marking the appropriate gender, case, and number, but not *motion* (example 34).

- (34) (a) groß-e Gött-in 'great goddess'

³⁵ Cf. Plank (1981:99f).

³⁶ Cf. Lehmann (forthcoming).

³⁷ Sometimes doublets may occur, however, such as German *Enterich* 'drake' in spite of *Erpel*.

- great-NOM.SG.F god-MOV.NOM.SG.F
 (b) *groß-in Gött-in
 MOV MOV

While in Indo-European languages gender allocation without overt gender marking is the rule and gender variation as well as derivational potential of gender, as in *motion*, only occur exceptionally, there are other languages where gender is much more strongly semantically founded and may thus be lexically productive, which, of course, requires gender to be overtly marked morphologically.³⁸ These are the so-called class-languages comprising more than five noun-classes in most cases and exceptionally as many as forty. In these languages most nouns are classified according to semantic characteristics, such as human, animate, animal, plant, tree, fruit, tool, and others. Such noun-class systems are well known from African languages, especially Bantu languages.³⁹ The derivational potential and semantic foundedness of class-prefixes are illustrated in example (35a) from Swahili, a Bantu language, and (35b) from Turkana, a Nilotic language.

- (35) (a) m- fuko 'sack' (Walter 1982:218)
 CL3-sack
 ki-fuko 'small sack, bag'
 CL7-sack
 Ø fuko 'big sack'
 CL5-sack
 (b) e- moru 'mountain' (Heine 1982:191)
 big
 a- moru 'stone'
 part of
 i- moru 'hill, small stone'
 small

Despite the tendency of the class systems of typical classifying languages toward greater semantic foundedness, more derivational potential, the possibility of classification shift, and overt marking, it would be wrong to consider gender a matter of lexical morphology exclusively in these languages. The overall systematicity of noun class systems and especially their use for agreement prove that gender is grammaticalized to a certain extent. The scope of agreement of classifying languages may even exceed that of the so-called gender languages, as e.g. the Indo-European ones.⁴⁰ In the Swahili sentences (36) the class prefix of the subject noun is not only repeated in its modifier but also in the verb.⁴¹

³⁸ On gender in non-Indo-European languages cf. Serzisko (1981), Heine (1982), and Walter (1982).

³⁹ Cf. Heine (1982).

⁴⁰ Cf. Heine (1982) and Walter (1982).

⁴¹ Examples (36) have been adapted from Langacker (1972:70f).

- (36) (a) ki-tábu ki-móda ki-ta- ni-tóša.
 CL7-book CL7-one CL7-FUT-1.SG-suffice
 'One book will suffice for me.'
- (b) m- tóto m- móda a- ta- ni-tóša.
 CL1-child CL1-one CL1-FUT-1.SG-suffice
 'One child will suffice for me.'

In most African class-languages class-prefixes not only indicate gender but number as well, for noun classes are always either singular or plural classes. Classification is thus connected to ranking.⁴²

As shown in the present section, gender is a phenomenon pertaining to both inflection and derivation. Depending on the type of the language, it may be more closely associated with the inflectional pole of the scale of grammaticalization, as *e.g.* in Indo-European languages, or on the contrary, with its lexical pole, as in African classifying languages.⁴³

4. Agreement and Comparison in the Adjective

4.1. Agreement

Insofar as the adjective is marked for case, number, or gender, these categories are fully inflectional, for they are determined by grammatical rule. To ask for the gender of an adjective as such would be meaningless, for the adjective adopts the gender of the noun it modifies.⁴⁴ This is evidenced by the Swahili sentences above. While nouns belong to class 7 or class 1, the numeral adjective *móda* occurs with the prefix of class 7 in (36a), but with that of class 1 in (36b), depending on the class prefix of the noun it is constructed with. The adjective is marked for the gender class of its noun and in this way the syntactic subordination of the adjective to the head of the noun phrase is indicated.⁴⁵

4.2. Comparison

Besides forms serving agreement in gender, case, or number, adjectives may have comparative forms, as exemplified in (37).

- (37) (a) Dieser Hund ist klein/kleiner/am kleinsten.
 (b) aftó to skilí íne mikró/mikrótero/to mikrótero.
 (c) This dog is small/smaller/smallest.

Unlike agreement, comparison is not possible with all adjectives, but is restricted to

⁴² Cf. Seiler (1982).

⁴³ Cf. Serzisko (1981).

⁴⁴ Cf. Matthews (1974:46ff).

⁴⁵ Cf. Ostrowski (1982).

gradable ones. It is not possible if the adjective already expresses an extreme state, the limit,⁴⁶ such as *dead*, *blind*, or *deaf*. Adjectives such as the latter neither have comparative forms, nor are they compatible with lexical units having a grading function (examples 38 to 40).

- (38) (a) *Der Hase ist *toter* als die Maus.
 (b) *Jemand/etwas ist *besonders* tot/nahtlos/dreieckig/verheiratet.⁴⁷
 (c) *Jemand/etwas ist *zu* tot/nahtlos/dreieckig/verheiratet.
- (39) (a) *ο λαγός ίνε *nekróteros* apó ton pondikó.
 (b) *κάπιος/κάτι ίνε *idiétera* nekrós/árafo/triyonikó/pandreménos.
 (c) *κάπιος/κάτι ίνε *ipervoliká* nekrós/árafo/trigonikó/pandreménos.
- (40) (a) *The hare is *deader/more dead* than the mouse.
 (b) *Someone/something is *especially* dead/seamless/triangular/married.
 (c) *Someone/something is *too* dead/seamless/triangular/married.

The productivity of comparison in adjectives is thus restricted by semantic considerations.

While comparative and superlative forms of the adjective are constructed synthetically in German (*klein/klein-er/klein-st-*), in English they may be constructed either synthetically or periphrastically, depending on the phonological form of the adjective. The comparative and superlative forms of monosyllables and of bisyllabics ending in a reduced vowel are formed synthetically (example 41a), whereas the free comparative morphemes *more* and *most* are used with longer adjectives (example 41b).⁴⁸

- (41) (a) hot, hotter, hottest
 lovely, lovelier, loveliest
 (b) beautiful, more beautiful, most beautiful

Although comparison with *-er* and with *more* are in most instances in complementary distribution and the two morphemes could therefore be considered in suppletive relation, a sentence like *I've never seen a man prouder* is, according to Bolinger, "more likely to refer to active pride, say in the accomplishments of a daughter, whereas *I've never seen a man more proud* suggests self-pride".⁴⁹ The tendency to exploit formal differences for semantic purposes is more typical of lexical than of inflectional processes.

The adjective forms in (42) show that in German and Mod. Greek, where comparative suffixes may cooccur with inflectional endings marking case, number, and gender, the former occupy a more central position in the structure of the word.

⁴⁶ Cf. *Grundzüge*, p.614.

⁴⁷ Examples (38b) and (38c) have been taken from *Grundzüge*, p.615.

⁴⁸ Cf. Bolinger (1975:120).

⁴⁹ Bolinger (1975:120f)

- (42) (a) die klein-er- en Hunde 'the smaller dogs'
 the small-COMP-NOM.PL.M dog:NOM.PL.M
 (b) ta mikr-óter -a skiliá
 the small-COMP-NOM.PL.N dog:NOM.PL.N

As far as their relative proximity to the root is concerned, comparative suffixes are comparable to suffixes forming adjectival derivatives in both languages (example 43).

- (43) (a) die fleiß- ig- en Studenten
 the diligence-DER-NOM.PL.M student:NOM.PL.M
 'the diligent students'
 (b) i eryat-ik-í fitités
 the work- DER-NOM.PL.M student:NOM.PL.M

Much as the derivative suffixes in (43), the comparative suffixes in (42) seem to form the adjectival base to which the inflectional endings are added. The derivatives in (43) may, however, undergo comparison (example 44).

- (44) (a) die fleiß-ig- er- en Studenten
 DER-COMP-INFL
 'the more diligent students'
 (b) i eryat-ik- óter- i fitités
 DER-COMP-INFL

In this case the comparative suffix is more peripheral than the derivational suffix and less so than the inflectional one. At least as far as German is concerned, this position of the comparative suffix does not conflict with its possible inflectional status, as is shown by the forms in (45), where nominal and verbal bases are each followed by two suffixes of undoubtedly inflectional character.

- (45) (a) den Kind-er -n 'to the children'
 the:DAT.PL child-PL-DAT
 (b) du kauf-t- est 'you bought'
 2.SG buy- PRT-2.SG

What about determination of comparative and superlative forms by grammatical rule?⁵⁰ There are syntactic constructions in which a comparative form of an adjective may be substituted by a positive form without affecting grammaticality (example 46a), but comparative and positive are not always exchangeable (examples 46b and 46c).

- (46) (a) Der Aufsatz wird länger/lang.
 'The paper is getting longer/long.'
 (b) Der Aufsatz wird zu lang/*zu länger

⁵⁰ Cf. also Matthews (1974:48f).

'The paper is getting too long/*too longer.'

(c) Dieser Aufsatz ist länger/*lang als jener.

'This paper is longer/*long than that one.'

Even though the substitution test does not yield unambiguous results, the non-substitutability of the comparative by the morphophonologically simple positive in some constructions points to the fact that positive and comparative (as well as superlative) are different inflectional forms of the adjective rather than different lexemes.⁵¹ This view also agrees with lexicographic usage, where comparative and superlative forms of the adjective are treated in the same lexical entry as the positive, much the same as singular and plural forms of the noun.⁵²

The most important evidence for the inflectional character of comparison is, however, furnished by the fact that positive, comparative, and superlative form an independent paradigm, typical of the word class of adjectives.⁵³ These three form types belong to a closed set of forms obeying the afore-mentioned principle of constant proportionality of expression and content.⁵⁴ In the examples given in (47) one and the same meaning difference corresponds to one and the same formal difference in each language.⁵⁵

- (47) (a) klein: kleiner: am kleinsten = lang: länger: am längsten = regelmäßig: regelmäßiger: am regelmäßigsten = ...
 (b) mikrós: mikróteros/pió mikrós: o mikróteros/o pió mikrós = makrís: makríteros/pió makrís: o makríteros/o pió makrís = taktikós: taktikóteros/pió taktikós: o taktikóteros/o pió taktikós = ...
 (c) small: smaller: smallest = long: longer: longest = regular: more regular: most regular = ...

Such regular correspondences cannot usually be set up for derivatives and their bases. Thus, the same formal differences in the proportion (48) are not matched by a uniform meaning difference.

- (48) Richter: richterlich ≠ Vater: väterlich ≠ Herz: herzlich ≠ Widerspruch: widersprüchlich
 'judge: judicial ≠ father: paternal ≠ heart: hearty ≠ contradiction: contradictory'

While the denominal derivative *richterlich* is a relational adjective meaning *des Richters* 'of the judge', *väterlich* may also signify a quality as in *väterlicher Freund* 'fatherly

⁵¹ Sentence (46a) may be taken as comparing the length of the paper to a former stage of its composition thus implying a comparison the basis of which is not expressed.

⁵² Cf. Matthews (1974:49).

⁵³ Cf. *Grundzüge*, p.603.

⁵⁴ Cf. fn. 19.

⁵⁵ Actually, what matters is not that the formal difference is invariant but that it is predictable (such as the *umlaut* in the second of the German examples in 47a) and taken from a closed set of formal means.

friend/friend like a father'. The meaning of *herzlich* is highly idiomatic. *Herzlicher Gruß* cannot be paraphrased by **Gruß des Herzens* 'greeting of the heart'. *Widersprüchlich* means 'full of contradictions', a meaning which does not occur in any of the other examples.⁵⁶

Certain members of the inflectional paradigm of comparison may however become lexicalized and thus escape the regular form-meaning correspondences cited in (47). In German *ältere Dame* 'elderly lady' is used to refer to a lady who is not older, but younger than an old lady. Used in this way the comparative form *älter* is not part of the comparative series *alt, älter, am ältesten* 'old, older, oldest', but belongs to the lexical series of positives *jung, älter, alt* 'young, elderly, old' denoting a progression of age as well.

The discussion of the nature of comparison has shown that it does indeed possess typical characteristics of inflection in such languages as German, English, and Mod. Greek, but that it is not as closely related to the inflectional pole of the scale of grammaticalization as the inflection of the adjective for case, number, or gender.

5. Finite and Non-finite Forms of the Verb

5.1. Finite Verb Forms

In languages having inflection the verb is the word class richest in forms. This is due to the verb being the center of the predicate or even the whole sentence. By means of the categories of person and number the verb relates to the speech act. In languages like Latin or Greek, which do not require the subject to be overtly expressed, the verb can serve to realize the communicative roles of speaker, addressee, or person referred to. In languages like German or English, which do require explicit mention of the subject, person and number in the verb agree with the subject and in this way contribute to clarifying the syntactic relation between these constituents of the sentence.⁵⁷ In spite of their occurrence in the verb, person and number are not really verbal categories, for "personal participation in the speech act and countability... are not features of events or states". They are rather categories pertaining to the arguments of the verb, "the morphological reflection of which appears in the person-number formatives of the verb".⁵⁸

Contrary to person and number, tense, aspect, mood, and voice are genuine verbal categories. Tense and aspect represent the temporality of situations, with tense locating the description of a situation in time - usually with respect to the time of utterance - and aspect expressing the inner temporal structure of the situation described. Modal categories are concerned with the speaker's estimate of the validity of the description of the situation.⁵⁹ Finally, the category of voice with active and passive allows a situation to be expressed either with reference to the agent or with reference to the patient (example

⁵⁶ On denominal adjectives with *-lich* cf. Fleischer (1975:268ff).

⁵⁷ Cf. *Grundzüge*, pp.539f and 633.

⁵⁸ *Grundzüge*, p.540.

⁵⁹ Cf. *Grundzüge*, pp.507 and 520ff.

49). In a language like Mod. Greek, where the passive voice is actually middle-passive,⁶⁰ patient and agent may have different or identical referents (example 49b vs. 49c).

- (49) (a) *i astinómia épiase ton drásti metá apó dískoli katadíoksi.*
 'The police caught the perpetrator after a difficult pursuit.'
 (b) *o drástis piástike (apó tin astinómia) metá apó dískoli katadíoksi.*
 'The perpetrator was caught (by the police) after a difficult pursuit.'
 (c) *o drástis piástike stin pajiða tis astinómias.*
 'The perpetrator caught himself in the trap of the police.'

The different diatheses between the semantic roles of agent and patient and the syntactic functions of subject and object result in typical syntactic structures for the different voices.⁶¹

Forms of the verb which are determined with respect to tense, aspect, mood, and especially person and number, are called finite and the rest non-finite. The inflectional paradigm of the verb consists of finite forms, such as *speaks, spoke*, and non-finite forms of the conjugated verb combined with finite forms of an auxiliary, as in *has spoken, will speak*.⁶² There can be no doubt as to the inflectional status of finite verb forms, for they possess the most important characteristics of inflectional categories. Conjugational rules are highly productive, *i.e.* they are almost all applicable to the entire set of verbs. Furthermore, the finite verb forms constitute a closed system of forms which relies on the two principles characteristic of the inflectional paradigm, namely, constant proportionality of expression and content and correlation of grammatical features.⁶³ Thus, one and the same meaning difference corresponds to the formal differences of the pairs of forms in (50), whereas the pairs in (51) share a certain number of grammatical features but contrast in another.

- (50) *ayapó: ayápisa = yráfó = éyrafa = kimáme: kimómuna*
 'I love: I loved = I write: I wrote = I sleep: I slept'
 (51) (a) *ayapó: ayapás* 'I love: you love'
 (b) *ayapó: ayapiéme* 'I love: I am loved'

The forms in (51a) share the categories of tense, aspect, voice, mood, and number, but differ in person, whereas those in (51b) share person, number, tense, aspect, and mood, but differ in voice.

Finite verb forms can be substituted by morphologically simpler ones only if the latter possess the same grammatical information and are therefore of the same grammatical complexity. As an example, the trimorphemic German form *red-et-e* of sentence (52a) may be substituted by the monomorphemic form *sprach* in (52b) only because it ex-

⁶⁰ Cf. Mirambel (1949:119) and Babiniotis/Kondos (1967:155).

⁶¹ Cf. *Grundzüge*, pp.540f.

⁶² Languages differ in the extent to which they make use of periphrastic verb forms. These may also be formed by means of particles such as Mod. Greek *tha* in *tha milísi* 'he will speak'.

⁶³ Cf. above and fn. 19.

presses the same contextually relevant grammatical information, namely, 1.PS.SG and PAST.

- (52) (a) Ich red-et- e gestern mit ihm.
I talk-PAST-1.SG yesterday to him
'I talked to him yesterday.'
- (b) Ich sprach gestern mit ihm.
speak:PAST.1.SG
'I spoke to him yesterday.'

5.2. Non-finite Verb Forms

The non-finite verb forms, infinitive and participle, share the characteristics of the paradigm. Insofar as they enter into periphrastical verb forms, they doubtlessly belong to the conjugational paradigm of the verb. Contrary to finite verb forms, the non-finite ones represent verbal information without actualizing it in concrete sentences referring to actual speech situations. For this reason non-finite verb forms can be used outside the verbal predicate and function as nouns or adjectives.⁶⁴

Let us first consider the German infinitive (example 53).

- (53) (a) Maria sah ihn augenblicklich die Bremse *bedienen*.
Mary saw him instantaneously the brake operate.
'Mary saw him instantaneously operate the brake.'
- (b) Sein augenblicklich-es *Bedienen* der
his instantaneous- NOM.SG.N operate the:GEN.SG.M
Bremse verhütete das Schlimmste.
'His instantaneous operating of the brake prevented the worst.'

The infinitive clause *ihn augenblicklich die Bremse bedienen* in (53a) functions as the object constituent of the superordinate clause. Although the infinitive clause is a nominalized sentence form,⁶⁵ its verb preserves the syntactic characteristics of a verb: it takes a direct object and is modified by an adverb.⁶⁶ In contradistinction to this the infinitive in (53b) has become a verbal noun. Morphological, syntactic, and semantic evidence may be invoked to prove that we have a case of conversion here, *i.e.* of transfer into a different word class without morphological changes.⁶⁷ As a verbal noun the infinitive switches over to the inflectional paradigm of the noun. Its inflection is limited to case inflection,

⁶⁴ On German cf. Brinkmann (1971:264f) and *Grundzüge*, p.498.

⁶⁵ Cf. Lehmann (1982).

⁶⁶ On the characteristics of the German infinitive and more generally of the non-finite forms of the German verb cf. Brinkmann (1971:262ff).

⁶⁷ On conversion in German cf. Fleischer (1975:74ff) and Plank (1981).

however, for verbal nouns may not be pluralized. In sentence (53b) the verbal noun *Bedienen* is in the nominative. In the genitive case it takes the inflectional ending *-s* (example 54).

- (54) Aufgrund sein- es augenblicklich-en Bedien-
 by POSS.3.SG-GEN.SG.N instantaneous-GEN.SG.N operate-
 en- s der Bremse wurde das Schlimmste verhütet.
 INF-GEN.SG.N of.the brake
 'By his instantaneous operating of the brake the worst was prevented.'

Syntactically the verbal noun may take a determiner, such as the possessive adjective in (53b). It is no longer modified by an adverb but by an attributive adjective agreeing with the head of the noun phrase in case, number, and gender. Likewise, the direct object complement of (53a) has been replaced by a genitive attribute in (53b).

Semantically verbal nouns may deviate to a greater or lesser degree from the respective verbs. Sentence (53b) may be paraphrased by (55), where the noun phrase having the nominalized infinitive as its head has been replaced by a conjunctive sentence with a finite verb form.

- (55) Dadurch daß er augenblicklich die Bremse *bediente*,
 by that he instantaneously the brake operated
 wurde das Schlimmste verhütet.
 'By his operating the brake instantaneously the worst was prevented.'

The verbal noun *Vermögen* in (56a) denotes a state and the sentence may be paraphrased by (56b) containing a finite form of the verb *vermögen* in much the same way as (54) is paraphrased by (55). Matters are different with (56c), however. Here *Vermögen* denotes concrete objects. Its meaning differs from that of the verb to such a degree that a paraphrase like (56d) is no longer possible. Verb and noun are definitely separate lexical items in this case.

- (56) (a) Er stellte wiederholt sein *Vermög-en*, schwierige
 he put repeatedly his be.able-INF difficult
 Situationen zu meistern, unter Beweis.
 situations to master under proof
 'He repeatedly proved his ability to cope with difficult situations.'
- (b) Er bewies wiederholt, daß er es *vermoch-te*,
 he proved repeatedly that he it be.able-3. SG.PRT
 schwierige Situationen zu meistern.
 'He repeatedly proved that he was able to cope with difficult situations.'
- (c) Der mißratene Sohn verpraßte das gesamte *Vermögen*
 the wayward son squandered the entire fortune
 seines Vater-s.
 of. his father-GEN
 "The wayward son squandered his father's entire fortune".
- (d) *Der mißratene Sohn verpraßte alles, was sein Vater
vermochte.
 *The wayward son squandered everything his father was able to .

We may conclude our discussion of the German infinitive by stating that it incorporates both verbal and nominal potential.⁶⁸ The verbal noun, on the other hand, has to be considered a deverbal derivative.

The study of the other non-finite forms of the verb, the participles, yields observations similar to those of the infinitive. Whereas in English both present and past participle participate in the formation of finite verb forms by periphrastic means, in German this is only true of the past participle (example 57).

- (57) (a) He is *operating* the brake.
 (b) He had *operated* the brake.
 (b') Er hatte die Bremse *bedient*.⁶⁹

In example (58) the German present participle *genügend* and the past participle *unverkauft* function as adjectives.

- (58) (a) Der Schüler erbrachte keine *genügenden* Leistungen.
 'The student did not obtain satisfying results.'
 (b) Zu Ende der Saison befand sich noch ein hoher Prozentsatz *unverkaufter* Ware am Lager.
 'At the end of the season a high percentage of unsold merchandise was still in stock.'

For this reason the participles are sometimes referred to as 'verbal adjectives'. They are inflected according to the adjectival paradigm and may occupy the position of other adjectives in the sentence, function as nominal attributes and agree with the head of the noun phrase in case, number, and gender. Some participles may undergo comparison by the same suffixation procedure as is true of adjectives (example 59).

- (59) (a) eine überzeug-end- er- e Erklärung
 a convince- PRS.PART-COMP-NOM.SG.F explanation
 'a more convincing explanation'
 (b) eine ge- mäßig- t- er- e Haltung
 a PAST.PART-moderate-PAST.PART-COMP-NOM.SG.F attitude
 'a more moderate attitude'

The adjectival function of participles even extends to their derivational potential. Some participles may form derivatives with *un-*, a derivational prefix otherwise limited to adjectival and substantival bases (cf. *unverkauft* in 58b and 60). They also form compounds, a derivational technique untypical of verbs in German (example 61).⁷⁰

⁶⁸ Cf. also Admoni (1966:163), Brinkmann (1971:265), and Palmer (1974:174ff).

⁶⁹ The German sentence corresponding to (57a), *Er bedient die Bremse*, contains the non-periphrastic present form.

⁷⁰ On deverbal derivation cf. Walter (1976) and also Brinkmann (1971:265ff).

- (60) (a) ungenügende Leistungen dissatisfying results'
 (b) ungehobelter Klotz 'rude fellow'
 not.planned log
- (61) (a) zeitraubende Arbeit 'time-consuming task'
 (b) abendfüllende Veranstaltung 'full-length event'
 evening.filling event
 (c) haßerfüllter Blick 'look full of hate'
 hate.filled look

The character of the participle as a *mittelwort* between the classes of verbs and adjectives is even more apparent in example (62), where the past participle of *auszeichnen* 'to mark, distinguish' is more like a verb in (62a), but more like an adjective in (62b).

- (62)⁷¹ (a) ein gestern/am Arbeitsplatz *ausgezeichneter* Vorschlag
 'a proposal distinguished yesterday/at work'
 (b) ein wirklich *ausgezeichneter* Vorschlag
 'a really outstanding proposal'

In the forms of the so-called stative passive the adjectival character of the past participle may predominate to such a degree that these constructions have to be considered as syntactic phrases consisting of a copula and predicative rather than as periphrastical verb forms. This is the case in sentence (63a), which also semantically parallels sentence (63b) containing a true adjective in place of the participle.⁷²

- (63) (a) Der Saal ist *beleuchtet*. 'The hall is lit up.'
 (b) Der Saal ist *hell*. 'The hall is light.'

As we have shown, finite and non-finite verb forms differ radically. While the former are conjugated, *i.e.* change according to person, number, tense, aspect, mood, and voice, the latter participate in the conjugation of the verb only in conjunction with an auxiliary. The infinitive expresses the meaning of the verb as such. The present and past participles have imperfective and perfective aspectual meaning respectively.⁷³ Outside the conjugational paradigm of the verb the non-finite verb forms may take over nominal functions and may more or less completely pass into the word classes of nouns and adjectives. The non-finite verb forms are thus mixed forms: "They are on the whole nominal and verbal at the same time".⁷⁴

⁷¹ Example (61) is taken from *Grundzüge*, p. 559.

⁷² Cf. *Grundzüge*, pp.462 and 558ff.

⁷³ On German cf. Brinkmann (1971:264f) and *Grundzüge*, p.567.

⁷⁴ Admoni (1966:163).

6. Inflectional and Lexical Morphology as a Scaled Continuum of Grammaticalization

The study of some of the linguistic categories pertaining to the major lexical classes of nouns, adjectives, and verbs has shown that languages differ in the degree to which they grammaticalize such categories and, above all, that rather than fully belonging to inflectional or to lexical morphology such categories show a more or less pronounced tendency toward one or the other domain. The transition from inflection to derivation is not abrupt but gradual. Lexical and inflectional morphology form a scaled continuum with respect to grammaticalization. The upper and lower ends of this scale of grammaticalization can be characterized as the poles of maximum concreteness or materiality and of maximum abstractness or relationality respectively.⁷⁵

The gradual differences between lexical and inflectional phenomena do not defy precise description; however the theoretical model must be appropriately chosen.⁷⁶ Such a grammatical theory must allow for the representation of intermediate forms, of forms of ambivalent categorical status, and of category overlap. For this to be possible the model must above all admit of category membership "to a degree"⁷⁷ and make it possible to state in which respect an entity belongs to a certain category.

In order to determine the degree to which a certain linguistic category is grammaticalized in a language, it is necessary to consider its behavior on a number of parameters, each of which is ideally quantifiable. Lacking exact quantification of any of the categories to be examined on any of the parameters used, the classifications presented in tables (1) and (2) should be considered highly tentative. Maximum and minimum grammaticalization on a given parameter are symbolized by 1 and 0 respectively and intermediate values are put in parentheses.

Let us first illustrate this kind of description by a comparison of the degrees of grammaticalization of some linguistic categories of German.

	-bar	MOTION	COMP	GEND	NUMB	CASE	C/N/G
			ADJ	N	N	N	ADJ
P ₁ obligatory expression	0	0	(0)	1	(1)	1	(1)
P ₂ agreement	0	0	0	1	1	1	1
P ₃ peripheral position	0	0	(1)	(0)	(1)	1	1
P ₄ productivity	(0)	(0)	(1)	(0)	(1)	1	1
P ₅ const. proportionality	(1)	1	(1)	(0)	1	1	1
P ₆ word-class conservation	0	1	1	1	1	1	1
P ₇ morphol. techniques	1	1	(1)	(0)	1	(1)	1

|-----|
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Table 1. Degrees of grammaticalization of linguistic categories in German.

⁷⁵ Cf. Sapir (1921:ch.5) and Plank (1981:17).

⁷⁶ For the following discussion of the description of linguistic continua cf. Holenstein (1980) and Walter (1981:ch.6) and the references cited in these works.

⁷⁷ Ross (1973:188).

As shown in table (1), the category of case in the noun as well as the adjectival formatives indicating case, number, and gender each score maximum values on all but one of the seven parameters chosen: obligatory expression (P_1), use for agreement (P_2), peripheral position of formatives (P_3), rule productivity (P_4), constant proportionality of expression and content (P_5), word-class conservation (P_6), and expression by morphological means (P_7). Expression of case, number, and gender is obligatory in the adjective except when used predicatively (cf. examples 15 and 17 above). With nouns case is sometimes expressed syntactically, namely by the form of the determiner, rather than by the form of the noun itself (e.g. *die Mutter* 'the mother' NOM/ACC.SG vs. *der Mutter* GEN/DAT.SG). As one proceeds from right to left in table (1), the number of maximal values gradually decreases with a corresponding increase in minimal values. While number and gender of the noun and comparison of the adjective are characterized by a number of intermediate values, *motion* and the derivational suffix *-bar* '-able/-ible' (as in *waschbar* 'washable') are sharply distinguished from gender, number, and case in the noun and adjective on the first three parameters and from comparison on two of these. Although *motion* formations and derivatives in *-bar* are both usually considered as lexical, table (1) shows that there are differences between them, at least as far as conservation of word class (P_6) and constant proportionality of expression and content (P_5) are concerned. Of the seven parameters used, P_1 through P_5 are more important than P_6 and P_7 for the determination of degree of grammaticalization and hence the attribution of linguistic categories to the inflectional rather than to the lexical domain.

	CLASS. TIBETAN	NOOTKA	GERMAN
P_1 obligatory expression	0	0	(1)
P_2 agreement	0	0	1
P_3 morphol. techniques	0	1	1
P_4 word-class conservation	-	1	1
P_5 productivity of PL-rule	(1)	(1)	(1)
P_6 const. proportionality	1	1	1

grammaticalization

Table 2. Degrees of grammaticalization of number in Class. Tibetan, Nootka, and German.

In table (2) the same method of description has been applied to inter-language comparison of the category of number. Again, a graded scale of grammaticalization is obtained according to which number is most strongly grammaticalized in German and least so in Class. Tibetan, with Nootka occupying an intermediate position.

In this paper we have presented evidence for the gradual nature of the transition between the domains of lexical and inflectional morphology and in the face of this tried to indicate a way of giving a precise description of the resulting linguistic continua. The recognition of such linguistic continua is not only fundamental for an adequate syn-

chronic view of languages and for typological comparison but also for understanding diachronic changes in grammaticalization.

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