3 Inflectional morphology

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0.0 Introduction: the study of word structure

This chapter, as well as chapter III:1 (dealing with 'Stem formation'), will be devoted to the study of the internal structure of words. It is an intuition long familiar from traditional approaches to the study of language that grammatical description can be divided into two domains: syntax, or the study of the relations among words in a sentence, and morphology, or the study of the formal and semantic composition of the individual words. This division also implies a sort of parallelism between the two domains: just as sentences are made up of words, so words are made up of smaller pieces that can be called formative (a more neutral term than the traditional morpheme; see below, 0.2). But there appear to be significant differences between the sorts of principles that determine the combination of words on the one hand, and that of formative on the other, and this justifies the distinction between syntax and morphology. Such a distinction rests on the criteria by which we delimit, in so far as we can in any particular language, the units we will call words, establishing the boundary between the two domains.

0.1 The notion of 'word'

When we think about English, it seems obvious that a sentence can always be broken down into smaller parts: that *The baby is not feeling well*, for example, consists of no more and no less than six smaller pieces of *words*. We might suggest that this is simply an illusion, fostered by the fact that we have learned to write English with spaces in certain places and not others; but it is clear that these spaces correspond (in most cases at least) to something real about the organization of the sentence. Confirmation of this opinion is available from a number of directions, unfortunately not always mutually reconcilable.

0.1.1 Phonological criteria for the word

One obvious source of support for word divisions is the fact that it is usually possible to pause where there is a space (at the boundary between words, that is) but not (naturally) elsewhere. The pause in *The baby is not feeling well* is thus quite different, and much more natural, than if we were to say *The baby is not fee* – *ummm* – *ling well*. Furthermore, we can reorganize the word divisions of this sentence, either as *The baby isn't feeling well* or as *The baby's not feeling well*. The reorganization corresponds just to a shift in the location of these potential pause locations: a pause was possible between *is* and *not* in the original, but not between *is* and *n't* when we have *isn't*. Since we have not altered the content of the sentence in any other obvious way, it would appear we have changed the structure of the sentence just in terms of word boundaries.

The possibility of pausing thus supplies a certain kind of support for the division of a sentence into words. The divisions allowed (or required) by one language, however, may be quite different from those of another. In some languages, such as Vietnamese, practically every syllable forms a 'word' in this sense; while in a language like (West Greenlandic) Eskimo, a form like *igualussuarniaritartuqsaagaluq* ‘it is said that we have admittedly got a strict order to go out fishing sharks’ is as indivisible as English *isn’t*, though sentences in Eskimo are generally made up of several words (one of which is the form just cited), and pauses between these are perfectly possible.

Defining words in terms of the location of (potential) pauses treats them as units from the point of view of sound structure, and this definition is reinforced in many languages by other processes. In some cases, for instance, the location of the accent is fixed by reference to the boundary between words. In Czech, the accent is always on the initial syllable of the word; in Polish, on the next-to-last; and in Latin on the third from last (antepenultimate) if the next-to-last consists of a short vowel plus at most one consonant, otherwise on the next to last.

In a language with this kind of accent ('culminative' as opposed to free or 'distinctive'), we have an additional means of defining word boundaries.

Besides accent, other phonological processes may be sensitive to the difference between word boundaries and other positions. A well-known example of this is the distinction between 'internal' and 'external' sandhi (phonological change) in Sanskrit. Word internally, sequences of vowels are always eliminated by contraction, conversion of diphthongs or mid vowels to vowel-plus glide sequences, or other changes. At the boundary between words, on the other hand (in 'external' combination), such sequences are allowed to stand, or are even created, as when final *-as* becomes *a*. While there are many instances of similar rules applying both within and across word boundaries, there are also sufficient
differences to allow one to identify at least some of the word boundaries on this basis.

Like many other languages, Sanskrit also imposes much more rigid restrictions on the class of sounds that can appear at the end of a word than are applicable in the middle of a word. There are no final clusters of consonants, and the only consonants that can appear at the end of a word are voiceless unaspirated stops. In consequence, we can often determine negatively that a given position must not be the end of a word by the appearance of (syllable-final) consonants that could not appear word finally. Another well-known example of this sort is modern Italian, in which only a restricted subset of consonants is possible in final position. While most consonants do appear either singly or as geminates, geminates do not appear in word-initial position. The set of consonants that occur word finally is also quite limited. As a result of those restrictions, when we find a double consonant it is often a sure indication of word-medial position.

While some phonological properties of ‘words’, such as the limit on consonant clustering at word boundaries, are found in similar form in many languages, many others are peculiar to an individual language and can be arrived at only as a result of a detailed knowledge of the phonology of the language.

0.1.2 Grammatical criteria for the word
Besides the phonological clues, however, there are other criteria for determining whether two adjacent elements belong to the same word or not. In general, the composition of words in terms of formatives is much more rigid and restricted than is the combination of words into sentences. Words are often permutable with one another (at least to a limited extent): at the extreme we have ‘free word order’ languages such as Latin where we can say *puer puellam amat* ‘The boys loves the girl’, *puellam amat puer, amat puer puellam*, or any other permutation of these three words, without changing the meaning of the sentence. Formatives, on the other hand, can virtually never be reordered without change (or loss) of meaning: *amat* can be regarded as made up of *ama*—‘love’ and *t* ‘third singular present indicative’, but *tama* is totally impossible as a variant of this form. Similarly we can generally insert other words between two words, but not between two formatives that are parts of the same word, and thus *puer ama-puellam-t* is not a permissible variant of our Latin sentence. In some languages the same formatives can appear within a single word in more than one order, but generally with some difference of meaning. In Turkish, for example, formatives that could be represented as */türk/ ‘Turk, Turkish’, /*Er/ ‘plural’, and */dfr/ ‘be’ can be combined either as *türklerdir* ‘It is the Turks’, or as *türküler* ‘They are Turkish’. While subtle, this difference is semantically significant, and not a matter of stylistic or discourse-conditioned variation as in the Latin word-order example quoted above. The units which can thus be permuted or interrupted freely by other ‘words’ can therefore be taken to establish a syntactic notion of ‘word’, independently from any phonological criteria.

In some languages, there is still another possible basis for the notion of ‘word’, which is strictly morphological. In heavily inflecting languages, words belonging to different part-of-speech classes obligatorily include the expression of different categories. Latin nouns, for example, obligatorily express the categories of case and number, while Latin verbs obligatorily indicate tense, mood, voice, and the person and number of their subjects. A ‘word’ belonging to one of these classes is incomplete if some of the associated categories are unexpressed. In such a language, then, we could define a word in terms of a base together with the expression of the categories appropriate for its part-of-speech class. In Latin *bonōs librōs* ‘good books (acc. pl.)’, for instance, we could identify two such morphological words: *librö*, made up of the base *lib(e)r* ‘book’, a noun, and an ending expressing case (accusative) and number (plural); and *bonōs*, made up of the base *bon-* which is an adjective and an ending expressing case, number, and gender (all required for adjectives). Where formally expressed grammatical categories are associated with particular parts of speech, then, they provide another potential approach to the definition of the word.

0.1.3 Conflicts among criteria
In most languages, perhaps, these approaches to the word yield the same units: thus, the domain within which ‘word-bound’ phonological processes and limitations apply is the same as the unit which is manipulated by the syntax (permuted, deleted, etc.), and is made up of a base (perhaps complex in its internal structure, as with compounds and derivational formations) together with formal expression of whatever grammatical categories are relevant for the given part of speech. Phonological, syntactic, and morphological ‘words’ thus coincide in the most usual case. In many instances, however, this happy congruence of criteria does not obtain, and different definitions result in different word divisions for the same sentence. As a result of this, the ‘proper’ definition of the word is one of the classic chestnuts of traditional grammar, and a vast amount of literature can be found attempting to reconcile the apparent conflicts among the distinct and equally plausible bases for the notion of ‘word’.
A simple example of such a conflict is provided by French. We are accustomed to write a sentence such as \textit{Il les a vus en France} 'He saw them in France' as a sequence of six words (separated by spaces), but this division is at least potentially questionable. One could say that French has a rule of 'culminative' accent, with stress falling on the last (non-schwa) vowel of the word. On this basis, however (and arguably for some other phonological purposes as well), the sentence just cited is made up of only one word, since as normally spoken the sentence has only one stress. We can resolve the difficulty by saying that stress in French is simply not bound to the word, but rather to a larger unit (a 'phonological phrase'); to do so, however, is to recognize that culminative stress is not, in the general case, the basis of the definition of 'word', but rather a property which is frequently associated with a unit of this size.

In fact, French culminative stress is typical of properties that yield a notion of the word in various languages: for any one of these properties, some language can probably be found in which it does not coincide with other potential defining characteristics of words. This suggests that the traditional notion of 'word' conflates a number of different, distinct notions which do not always converge on the same unit. The situation is thus similar to that of the notion of 'subject' in traditional grammar, defined from the point of view of morphological categories (e.g. nominative case), semantic roles (subjects are typically Agents), discourse function (subjects are typically Topics), and sentence-internal syntax (subjects are typically antecedents for reflexive pronouns, the missing nominal elements in complement structures, etc.). As with the criteria for defining the word, these traditional bases for the notion of subject frequently but not always coincide. Nonetheless, we need not give up hope in either case, provided we make it clear in a given instance what sort of 'subject' or 'word' we are talking about.

0.1.4 The problem of clitics

A case is posed by so-called clitic elements. The form \textit{les} ('them') in \textit{Il les a vus en France} ('He saw them in France') for instance, can correspond to a full phrase (e.g. \textit{les gens dont j'ai parlé} 'the people I spoke of'), and so our intuition is that it 'ought' to be a separate word. Yet in phonological terms, it forms an indissoluble unit with the following \textit{a}. Furthermore, in syntactic terms the sequence \textit{les a} cannot be interrupted by adverbs, the second part of the negative marker \textit{ne pas} (which otherwise comes after the first word of the verbal phrase) or other words, with the exception of other clitic pronouns. Such an element, which does not stand alone but must rather 'lean on' (the meaning of the Greek word from which the name comes) some other form is called a clitic: proclitic if it comes before the element to which it attaches, enclitic if it comes after it.

Clitic forms present a particularly severe challenge to a general definition of the word, precisely because they involve a direct conflict of phonological and (some) syntactic criteria with morphological and (other) syntactic properties. On the one hand, the combination of a clitic and its \textit{host} (a term introduced by Zwicky (1977) for the element to which a clitic attaches) displays unitary and often distinctly word-internal phonology; it is generally subject to more rigid ordering restrictions than other elements of sentence structure, and is not interruptable by other words. On the other hand, clitics generally correspond to elements that can also be expressed (sometimes in the same language) by independent words: pronouns, auxiliary verbs, conjunctions, and the like, not simply to be part of the meaning of an independent word. They may also display a number of unique properties, phonological and syntactic, that establish their position as midway between that of independent word forms and simple constituents of morphologically complex words. For a useful and informative survey of the special properties of clitics, the reader is referred to Zwicky (1977).

While the distinction between a clitic and a component of a complex word is a rather subtle one, it is quite essential, and failure to make it can lead to incorrect (or at least misleading) analyses of linguistic structures. An excellent example of this possibility is furnished by the grammar of Nootka-Nitinaht, a group of dialects of the Wakashan family. In a major source of information on this language, Swadesh (1939) characterizes Nootka as having no part-of-speech distinction between noun and verb. In fact, while diligent search reveals some characteristics distinguishing these classes (cf. chapter 1.1), the difference is anything but obvious. Swadesh's claim is not based on negative evidence, however, but rather on the positive assertion that any word in a Nootka sentence can serve as its predicate. He gives examples (some of which are cited in chapter 1.1) to show that in a simple intransitive sentence such as \textit{The man is going}, either the 'verb' 'go' or the 'nouns' 'man' can apparently serve as predicate without undergoing any other obvious change in form. This identity of function, then, and its formal correlates appear to establish a positive case for a single part-of-speech class including 'nouns' and 'verbs', and other words as well which can equally serve as the predicate of a sentence in Swadesh's sense, including adverbs and even prepositions and particles.

Let us examine the correlates of the notion of 'predicate' which
Swadesh appeals to, however. In Nootka sentences, the predicate (in this sense) appears in initial position in the sentence, and is characterized by a set of suffixal elements indicating tense/mood for the sentence and person/number of the subject. Since this is the classic sort of inflection displayed by verbs (see below), there is no immediate reason to doubt Swadesh's analysis. A closer look, however, shows that there is an alternative account. Consider the pair of sentences below in (1), taken from a Nootka dialect (parallel in all relevant respects to the Nootka dialect described by Swadesh) described by Kloekeid (1976a) and presented in his orthography:

(1) a. Tl'ticitl-ibt-?a John ?yoyqw bowac ?aq
   shoot-PAST-DECLAR John ACC deer ART
   "John shot the deer"

b. ?yoyqw-obt-?a bowac ?aq tl'ticitl John
   ACC-PAST-DECLAR deer ART shoot John
   "The deer, John shot (it)"

These two sentences describe the same event, and involve the same words (the difference between ibt and obt being phonologically only), but in (1a) the inflectional elements for tense/mood (as well as, inferentially, person/number where this is overt: in a sentence of the type given in (1), third person singular subject is unmarked) appear on the 'verb', while in (1b) they appear on the preposition marking accusative (object) function. Surely in such a language anything can serve as a 'verb'.

But it is not necessarily accurate to say that ?yoyqw in (1b) has the inflectional material because it is a 'verb' (or more generally, 'predicate'). Rather, this material can be seen to be attached to a particular word (tl'ticitl in (1a), ?yoyqw in (1b)) by virtue of its position at the beginning of the clause. When we examine the range of word-order variants of a Nootka-Nitinaht sentence, a somewhat different picture emerges from that presented by Swadesh (according to whom virtually any word of the sentence is equally eligible to serve as 'predicate'). In the most neutral form of a sentence, uninfluenced by particular discourse conditions, the initial word (to which the inflectional material is attached) is the one which from translation equivalence we might expect to be the verb. Where this is distinguishable, this word is a 'verb'. Under appropriate discourse conditions, however, most other constituents of the sentence can appear in initial position by a process of topicalization. When this happens, the inflectional material of the sentence will still be suffixed to the first word, whatever this may be.

Sentence (1a) thus displays a ‘basic’ pattern, with the verb initial and therefore suffixed with tense and mood affixes. Sentence (1b) differs, in that ‘the deer’ is Topic, and first. Notice that when the phrase ?yoyqw bowac ?aq thus appears initially, the endings do not appear after the whole phrase, but rather after the first word: the accusative-marking preposition. Clearly then, the appearance of these endings with a given word does not indicate its syntactic function ('predicate'), but rather its position ("first word").

Behavior of this sort is typical of clitic elements. The positions in which they can appear are limited. In some instances they are attached to a host word which is adjacent to the position in sentence structure that they 'come from': thus, articles, for example, most generally attach to the noun phrase they determine. Otherwise, there are certain preferred positions in the sentence, and a language in which a category of clitics is important tends to collect all of these at some such position. French displays the common case of a language that collects clitics (here, the object pronouns and related elements) immediately adjacent to the verb of the clause. Nootka-Nitinaht, on the other hand, illustrates the other common case, in which the clitics attach to one of the boundaries of the clause. This is sometimes the end of the clause, as in many languages with question particles (e.g. Mandarian Chinese ma in Ni hui shuo zhongguo hua ma? 'You speak Chinese?'). Most commonly, however, it is the beginning. This gives rise to the impression that they are placed in 'second position', but this is perhaps misleading. Recall that enclitics must appear after their host; obviously, if they are to be placed at the beginning of their clause, this will position them after the first potential host. This is generally the first word or, in some languages, the first constituent such as a complete noun phrase. In some cases, such as Serbo-Croatian, these two interpretations of 'first potential host' are optional variants. The absence of a corresponding tendency for proclitics to collect at the end of a clause, however, still requires explanation.

In Nootka-Nitinaht, then, we analyze elements such as ibt-?a (or its phonological variant obt-?a) in (1) not as inflections on the first word of the clause, but rather as clitic elements which have been ‘attracted’ to their position after the first word without regard for the function of that element. In consequence, their appearance with a particular item in the clause cannot be regarded as providing evidence for the syntactic function of that item, and Swadesh’s principal basis for his assertion that any word can be a ‘predicate’ in Nootka disappears. This possibility is further supported by the fact that in Nootka-Nitinaht not only clauses contain clitic elements, but noun phrases do also. The article ?aq in the phrase bowac ?aq ‘the deer’ is such a noun phrase clitic, for example. We can see this when we add an adjective (such as ?x ‘big’) or numeral.
grounds, pigs and horses). Such a formal analysis is rather more difficult with mice: here it is clear that the /m/ at the beginning and the /s/ at the end have to do with a mouse, but the value of the vowel in the middle can be (and has been) the subject of controversy and alternative analyses. The idea of plurality here is associated less directly with a particular piece of phonological material, but part of the make-up of the word is the relation between /æj/ (in mice) and /æj/ (in mouse). One might represent this relation directly (‘/æj/ marks the plural, /æj/ the singular in such a word’) or as a substitution (‘the plural is formed by replacing /æj/ with /æj/’), but somehow the relation is part of the word’s shape and structure.

These simple examples suggest a division of the study of word structure into two domains, corresponding roughly to the analysis of the meaning of the word and the analysis of its form. In the case of a word like cat, for example, the ‘analysis’ required is trivial: there is no reason to say anything more than that there is an association between the sequence /kæt/ and the notion of a cat. When we look at words in general, though, we find that both their meaning and their form are decomposable into smaller parts that recur (at least potentially) in other words. Word structure, then, is concerned with this decomposition and with the principles by which a complex meaning is associated with a complex form.

The relation between mouse and mice is formally a vowel alternation, and it expresses the meaning ‘plural’. A vowel alternation between /æj/ and /æj/ can be used for other purposes (as in the relation between find and found), and the idea of plurality can be expressed by other means (as by the suffix -s in rats): the two are logically distinct, and we can follow Boas and other earlier writers in separating the study of grammatical processes (such as vowel alternation, suffixation, etc.) from the study of the ‘ideas’ or categories expressed by these grammatical processes.

If cases such as rats are typical, however, we might take such a separation to be rather artificial. That is, while we can divide the word formally into two parts (rat and -s) and semantically into ‘rat’ and ‘plural’, there is a one-to-one association between the two divisions: rat means ‘rat’, and -s means ‘plural’. If words generally have such structure, we will be missing it if we treat grammatical processes separately from the categories they express.

It is, in fact, this intuition that underlies traditional definitions of what is usually taken to be the minimal unit of analysis in word structure: the morpheme. The notion of a ‘smallest recurrent unit of sound/meaning association’ implies that a one-to-one association between the two
domains is general. If words are indeed built up out of such morphemes, we ought to reflect this fact in our analysis by treating sound and meaning together in determining word structure. We may well get into arguments about what are the morphemes in mice, but the idea that even this form is made up of two parts in each domain is still clear and there is apparently a one-to-one association between the two domains.

The study of languages of the traditional inflectional (as opposed to isolating, agglutinative, etc.) type shows, however, that the notion of the morpheme as it expresses a one-to-one correspondence between aspects of form and aspects of meaning can be an oversimplification. For a simple case, consider an Old English word like bēor ‘the boar’. This form is a third person singular past tense indicative verb: if we alter any of these categories, we get a different word (e.g. bere if we change person to second, bēorl if we change number to plural, bēr if we change tense to present, or bēre if we change mood to subjunctive). By studying other forms of the word, we see that (besides the part which corresponds to the basic meaning of the verb, ‘to bear’) there are two formal markers by which these categories are indicated: the stem vowel (here short æ) and the ‘ending’ (here ə, or phonologically null). But it is obvious that there is no one-to-one correspondence here between the formal markers and the categories they express. In fact, the stem vowel and the ending of bēre can each be found in some other form of the same verb which differs from this one along any one of the dimensions of person, number, tense, or mood. There is no association between either the stem vowel or the ending and some one of the categories expressed by the form (or some unitary subset of these categories): rather the association is between the entire form bēar (composed of the stem for ‘to bear’, together with the stem vowel æ and the ending ə) and the entire set of categories ‘third person singular past indicative’.

The association, that is, is not one-to-one but many-to-many, and since the grammatical processes involved in the shape of the word are not unitarily associated with grammatical categories, the analysis of word form in either domain cannot be directly tied to its analysis in the other.

This is not to say, of course, that the study of word structure can neglect the relations between the subparts of the shape of a word and the subparts of its meaning: quite the opposite. The point of this observation is that if a proper account of this relation is to be given, it is necessary to go beyond the simple notion that it is a one-to-one correspondence, as implied by the notion that the ‘morpheme’ is the minimal unit of analysis, and that it establishes a direct association of form with meaning. Since we wish to accommodate the general case (including languages like Old English, as well as those like Turkish where the notion of a one-to-one correspondence runs into much less trouble), we will therefore avoid talking about morphemes; rather, in the analysis of word structure we will talk about minimal subparts of the phonological content of a form as formatives, and elements of the semantic structure of words as roots (or stems) and grammatical categories. In the simplest case a given formative may directly and unequivocally express a single category, but in other instances the relation is more complex.

In dealing with problems of the sort we have just been discussing, an analysis based on the notion of the morpheme usually avoids the issue in the following way. Consider the Latin verb form scribō ‘I write’, a first person singular present indicative. We might want to say that the ending (here, -ō) is the ‘first person singular’ morpheme, since we can compare the word with scribis ‘you (sg.) write’, which differs in ending and in person/number categories. But when we consider scripsi ‘I wrote’, we see that the ending also provides information about tense and mood. If we wish to find a ‘first person singular’ ending, indeed, we are in trouble, for there is no aspect of this form which is unequivocally associated with all and only first person singular forms. Nonetheless, we can say that -ō in scribō is ‘really’ the first person singular marker, and that the difference between -ō in scribō and -i in scripsi does not express, but is rather ‘conditioned by’ the difference between present and past indicative.

Clearly, however, we could equally well have decided to say that -ō is ‘really’ the present indicative marker, and that the difference between -ō and -is (in scribīs) does not express, but rather is conditioned by the difference between first and second person. The choice between the two analyses is arbitrary, at least in formal terms. When we consider other paradigms in Latin, of course, we see that we get a more coherent analysis if we say that -ō marks first person singular, and that present tense is not directly expressed (except in so far as it conditions the choice of person/number ending), rather than the other way around. But this is to miss the point of the example: the truth is that -ō does not mark just first person singular or just present indicative, but rather all at once. The association between form and the categories it expresses is not a simple, one-to-one relation, and the choice of either ‘person/number’ or ‘tense/mood’ as the ‘meaning’ of the ending ‘morpheme’ is a distortion of the facts. In the general case (often approximated closely in inflecting languages like Latin), the entire (possibly highly complex) form is related to the entire cluster of grammatical categories it marks. There is a continuum in language between this situation and the rather simpler one-to-one correspondence
between formal elements and categories (typified by items such as English /-z/ ‘plural’) which is the basis of the notion of the morpheme. Because we wish to be able to deal with any language that may be encountered in the field, then, we will preserve the division of the morphology of a language into the description of (a) the set of morphological processes found in the language; (b) the set of grammatical categories represented morphologically; and (c) the relation between particular processes (e.g. particular affixes or sound alternations) and particular categories involved in conditioning their application. In fact, having observed that this relation may be complex in principle, we will have little to say about it below, except by inference, and will concentrate our attention on form and categories.

0.3 Subdivisions of the study of word structure
It is by now quite traditional to distinguish in grammatical description between inflectional and derivational morphology. The central insight of this opposition is that derivation produces new lexical items (perhaps complete words, or perhaps stems) from other lexical material, with the derived items on a par with simple, undervowed ones as far as their role in grammar is concerned; while inflection on the other hand serves to ‘complete’ a word by marking its relations within larger structures. Inflection typically marks categories which are applicable (at least potentially) to any item in a given word class, rather than being specific properties of individual lexical items. The ‘completive’ aspect inflection may (but need not) be shown in its conversion of stems which represent a coherent meaning but cannot occur alone into independent full words of the language, integrated into larger structures.

Though this distinction is quite an intuitive one, it is difficult to provide it with a firm definitional foundation. Derivation cannot be separated from inflection in terms of their formal realization, since none of the grammatical processes of prefixation, vowel change, etc. which appear in grammar are confined to one or the other domain. Similarly, the distinction cannot be made directly in terms of the grammatical categories involved, for a category which is inflectional in one language (in terms of our presystematic intuitions of the difference) may be derivational in another. The categories of diminutive and augmentative forms of nouns, for example, are fully inflectional in Fula (a West Atlantic language): these are marked by noun-class suffixes exactly as the categories of singular and plural, and function in the noun-class agreement system just as these latter do. In German, on the other hand, diminutives are formed by the idiosyncratic addition of suffixes (typically -chen or -lein). Aside from the fact that diminutives are always grammatically neuter, their formation is unintegrated into the system of inflections, and most grammarians would consider it derivational in character. Certainly diminutive formation in English (by the addition of suffixes such as -y and -let) is much too limited and ‘lexical’ to be called inflection by anyone.

If the distinction is a real and significant one, then (as is indeed suggested by the very fact that we can usually agree on the character of specific examples), it must have some other basis. We can probably isolate some general characteristics of one or the other type of process. Thus, any process which involves a shift in word class between the basic and the derived forms (as for instance nominalization) could probably be called derivational, since it is rather far from the notion of inflection as ‘completing’ a form or integrating it into a larger structure to imagine it changing major lexical categories. Obviously, though, while this criterion is sufficient for a morphological process to be classed as derivational, it is not a necessary one: many derivational processes do not alter lexical category.

Typically, inflectional categories are fully productive within a given lexical class, in the sense that all items of the class, including new formations or borrowings, are potentially subject to them. Thus, verbs generally appear in all person/number/tense/aspect forms, at least potentially; nouns have a plural (where this makes sense semantically) or an accusative case if these categories are marked in the language, etc. Derivation is much more idiosyncratic, at least typically. Thus, while most verbs in English have a nominalized form, the shape and even sense of this may vary considerably (compare pollution, rehearsal, laughter, etc.). Some derivational processes may be quite productive and even extend to new forms (as, for example, the derivation of adjectives from verbs by means of the ‘past participle’ suffix – closed, inflated, driven, etc. – though even here the form is not always the same), but most are limited to part of the vocabulary or possibly even to a single word. They are thus quite properly part of the lexicon of the language, while inflection is somehow independent of any particular word, and a property of the grammar itself.

Even here, however, we are not on perfectly firm ground. On the one hand, derivational formations may have virtually complete productivity (as for instance the class of -ing nominalizations in English); while on the other, inflectional categories may not extend in fact to all members of a major lexical class. Thus, in Russian there is a group of about 150 verbs which (probably by virtue of their phonological structure) cannot be inflected for first person singular subjects in the present tense. We would certainly hesitate to conclude from this that person/number is not
an inflectional category in Russian, however. In English we have pluralia tantum nouns such as scissors, spectacles, trousers, etc. which cannot appear in the singular (formally speaking) except as modifiers: trouser leg, spectacle case, scissors grinder, etc. And of course there are many nouns (including all abstract notions such as inflation) which cannot appear in the plural, probably by virtue of their semantics (but nonetheless quite generally). We certainly would not conclude from these facts that number is not an inflectional category in English, but this means that we cannot take complete productivity as a defining criterion for the division between derivation and inflection.

We may well ask whether there is any independent way of defining the distinction we have in mind in terms of other notions, and indeed there does not appear to be any fully satisfactory candidate among the host of proposals that have been made in the traditional literature – much as there is no fully adequate general definition of the ‘word’. Nonetheless, we will assume here that the limits of derivation in a language can be equated with the limits of its lexicon. Processes that are involved in the internal structure of a word as an independently occurring lexical form – derivation in the broadest sense, including compounding, incorporation, and others – are treated in chapter III.1. Here we will be concerned with inflection, in the intuitive sense suggested above.

We will presume that inflectional categories can be organized into a set of dimensions applicable within a given lexical class (a paradigm for members of that class), such that (virtually) any lexical item can be specified for one of a set of opposed categories along each dimension. For instance, nouns in Latin may be specified along a dimension of number (as singular vs. plural), as well as along a dimension of case (as nominative, genitive, etc.). A different set of dimensions applies to verbs, adjectives, and other classes. Sometimes the same dimension may apply to more than one class (as when both nouns and adjectives in Latin are characterized for number and case, with adjectives additionally varying in gender, for which a given noun is invariant). The dimensions, however, are in principle independent of the content of any particular lexical item, and it is this fact (as well as their involvement in the larger relations contracted by words in syntactic structures) that gives them their specifically inflectional character.

Our discussion below will deal with the inflectional aspects of word structure. On the formal side, we will briefly survey the range of grammatical processes that serve in various languages to specify a word’s membership in inflectional paradigmatic categories. We will then survey the major lexical classes that serve as the domain of these paradigmatic categorial functions, and consider the range of dimensions characteristic of each of these classes (as presented in chapter 1.1).

1.0 Grammatical processes in inflection

Considered individually, the grammatical processes that are utilized in inflection (or elsewhere in morphology) are quite straightforward. As we have noted above, however, it is important to distinguish between grammatical categories and the processes that reflect them, since the formal reflection of a given category may be quite complex. In Chickasaw (Muskogean), for example, a verb is made negative (an inflectional category in this language) by making the following changes in its positive form: (a) the verb is preceded by a prefix (ik); (b) the next to last vowel is laryngealized (or followed by a glottal stop) unless followed by a consonant cluster; (c) the last vowel of the word is replaced by o; and (d) active subject affixes are replaced by members of a different set used otherwise for non-agentive relations. Thus, the active positive form hilhili ‘I’m dancing’ corresponds to the negative akhi’dho ‘I’m not dancing’ (where lh = voiceless [H], ’ = glottal stop [ʔ]). Such a relation is certainly difficult to describe formally as a ‘morpheme’ of negation, but each of the components is of a well-established type. It is neither the category itself nor the formal devices which reflect it, but only the complexity of their relationship which is at all unusual.

1.1 Separate particles

We should note at the outset that there is probably no category of inflection which is marked morphologically, as part of a word to which it is applicable, which is not also marked in some (other) language by a separate particle which does not form part of a word with the ‘relevant’ material to which the category applies. Thus case, number, tense, aspect, and so on are often reflected inflectionally, but sometimes indicated by separate particles (e.g. ga, a, no for case in Japanese). Particles of this sort do not have independent lexical content; they are also prime candidates to become clitics. They may well cliticize to a word whose category they reflect. This is the case, for example, with the set of original postpositions in Uralic languages such as Hungarian, which have become clitic on preceding nouns resulting in the developing of a system of a vast number of local ‘cases’. This can be seen synchronically in Modern Hungarian, where the integration of one of these ‘case endings’ into the set is more recent, and less complete, than that of other ‘cases’. Since there are many ways in which cliticization may be manifest, there is a resulting continuum between full-fledged
independent words, reduced clitics, and affixes. In some cases, the
cliticization may result in unusual surface patterns. In Kwak'wala (or
‘Kwakiutl’, a Northern Wakashan language), for example, noun phrases
are preceded by particles indicating them as subject, object, or
instrumental/genitive. These particles, however, cliticize not to the
noun phrase itself, but to the preceding word:

(2) Nepid’i-da gananom-Xa guk’sa tisam
thow-SUBJ-ART child-OBJ house-INSTR rock
‘The child threw a rock at the house’

In such a case, the appearance is that a word is inflected not for its own
grammatical categories, but for those of the following word.

Having observed that grammatical categories can be indicated by
separate particles (which may then, as in Kwak’wala, behave quite
independently of their origin), we will ignore this fact below. We will
speak of grammatical categories as morphological categories, even
though these categories may be manifested in some languages by
non-morphological means.

1.2 Affixes
The simplest and most direct means, perhaps, by which a language can
mark a category is by the addition of some affixal material to the stem to
which it applies. Affixes appearing before the root are *prefixes*; those
coming after the root are *suffixes*; and one coming inside an (otherwise
unanalyzable) root, such as the inserted glottal stop in Chickasaw
negative verb forms, are *infixes*. Another example of an infix is the
marker of past tense in Palauan (Micronesian) *milanga*’ate’ (cf. *manga*
’eat’).

It is quite often the case that the morphology of a language is based
predominantly on one or another of the possible types of affix.
Languages such as Kwak’wala or Turkish are almost exclusively
affixing; Navajo (Athabaskan) and Abkhaz (northwest Caucasian) are
primarily prefixing. The four languages just cited have highly complex
inflectional systems involving the cumulation of many affixes in a single
stem but there are probably no languages of this sort whose morphology
is based primarily on infixation. While many languages can be classified
as prefixing or suffixing, this classification is unlikely to be absolute:
even fairly pure examples of one type or the other generally admit at
least a very few examples of the opposite sort of affix. The more
complex the affixal system, however, the more likely a language is to
lean in one direction or the other: a language with ten position classes
for both prefixes and suffixes would be likely to pose real difficulties in
locating the roots of words. Since the opposition between prefixing
languages and suffixing languages does not appear to correlate well with
basic word-order type or other aspects of syntactic structure, it is a
typological parameter of rather limited utility.

1.3 Stem modifications
The model of word structure based on a notion of morpheme performs
well enough where a grammatical category is marked by an affix, with a
one-to-one correspondence between categories and affixes. Difficulties
arise, however, when a category is marked not by the presence (vs.
absence) of overt phonological material but rather by the opposition
between two (or more) parallel forms neither of which can be obtained
by subtraction from the other (that is, of A vs. B, rather than of A+B
vs. A). It is here that analysts have employed ingenious devices such as
subtractive or replacive morphs.

1.3.1 Alternations in vowels, consonants, stress and tone
Many languages indicate grammatical categories by a shift of vowel
quality and/or quantity. In English, for example, this device marks
tense in verbs such as *drink*/*drank*/*drunk*. This is in turn a reflex of
the system of vocalic Ablaut reconstructed for common Indo-European, by
which every root appeared in several related but distinct shapes: a full
grade, with the vowel /e/ in a certain position; an o-grade, with /o/ in
place of /e/, and a zero grade, with no vowel in the corresponding
position. Each of these shapes is associated with a rather heterogeneous
collection of grammatical categories. In general, some other marker of a
given category is present in a form, as well as the ‘grade’ of the root, but
in some cases (e.g. English *drink* vs. *drank*) the vowel grade may be the
only indication of a distinction between categories. The replacement
of the final vowel of Chickasaw negative forms seen above is another
instance of such vowel change; here, of course, there are abundant
additional markers of the category as well. Yet another example of the
same type is the vowel alternation in German *Haus*/*Häuser*
‘house/houses’. This particular alternation is accompanied in German
usually, but not always, by some additional mark of the plural, and it
occurs in other categories such as diminutives as well. It is usually given
the distinct name *Umlaut* for reasons having to do with its historical
origin, but from the point of view of the synchronic morphological
system, it is simply another alternation of vowel quality like *Ablaut*,
correlated with certain grammatical categories.

Probably the most extensive systems of vowel alternation are found in
the Semitic languages. Here the root or ‘lexical item’ can often be
represented simply as a skeleton of consonants (e.g. *k-t-b* 'write'); in an actual form every vowel is correlated with the set of grammatical categories to which the word belongs. Thus, the same root may have one pattern of vocalism (for instance, Egyptian Arabic *kitaab* represent 'book'; with another (Egyptian *kátab* 'he wrote', etc. Some affixes may appear with the word as well, but the point is that the entire pattern of vowels in a given word is determined by the complex of categories (derivational as well as inflectional) to which the word belongs.

Grammatical categories marked by vowel alternations (perhaps in combination with other elements) are quite common, but in some languages this purpose is served by consonant alternations as well. In Fula, for example, every root appears in one of three grades (some of which may in some cases be superficially identical): a 'continuant grade', a 'stop grade', and a 'nasal grade' (cf. Anderson 1976 for further information and references on this system). The root */wór-*/'man', for example, is the continuant form: the stop grade of this root is */gor-/, and the nasal grade */gor-/. The difference among the grades consists in an alternation in root-initial consonant, and the choice of a particular grade is determined by grammatical categories. For nouns, for example, each of the approximately two dozen (depending on dialect) noun classes is associated with a particular grade. Membership in a given class is marked both by a suffix and by the grade of the root, thus, the noun 'man' in the singular (non-diminutive, etc.) belongs to a class marked by suffix */-ko* and stop grade (hence, *gorko*), but in the plural to a class marked by suffix */-bé* and continuant grade (hence, *worbé*). In this instance the category is marked not only by consonant alternation but also by overt affixation; but elsewhere in the language the consonant alternation may be the only indication of a grammatical feature. In some instances, number is marked in the verb only by the alternation in initial consonant. The verb stem appears in continuant grade for singular subjects, but in nasal grade when the subject is plural or, in most dialects, when the subject is a postposed pronoun.

Many languages mark grammatical categories with suprasegmental features such as stress and tone. In Spanish verbs, for example, the location of stress is (partly) correlated with tense, and thus *habló* (1) 'speak' is opposed to *habló* (he) spoke only in terms of the location of the stress (though in other cases there is some additional overt indication of the tense distinction). A number of West African tone languages (e.g. Tiv, Etung) utilize tone patterns to mark tense/aspect distinctions in a fashion similar to the Semitic use of vowel patterns. Each combination of tense and aspect categories is associated with a particular tone pattern (e.g. 'all high', 'high-low-high', etc.). The segmental material of the verb then indicates the lexical content, together with subject and object markers, etc.; on this segmental skeleton can be imposed any of the possible tone patterns to form a complete inflected verb.

Thus, languages may make use of alternations in any of the various domains of phonological structure (vowels, consonants, stress, tone) to indicate the grammatical category to which a form belongs. Though such processes of 'Ablaut', 'stem modification', 'consonant gradation', 'accent shift', etc. are frequently supplemented by overt inflectional affixes, this is not always the case, and such alternations are an important part of the overall inventory of grammatical processes in the languages of the world. More often than with simple affixes, however, they can be sets of categories, and as a result the field worker who expects to find a unitary 'meaning' for each piece of grammatical material will often find these alternations frustratingly difficult to pin down, or indeed miss their grammatical significance altogether.

1.3.2 Repetition
This process which consists in the copying of part or all of the affected stem, perhaps modified in some systematic fashion (such as by the insertion of a constant vowel), could be treated either as a special sort of affix or as a type of stem modification. It has sufficiently special properties, however, to justify separate discussion.

Reduplication most typically affects the leftmost portion of the stem. The material copied may consist of (1) the initial consonant (or cluster), perhaps reinforced by a constant vowel; (2) the initial *C*/; (3) the entire first syllable; or perhaps (4) the entire root. There may be some additional modifications performed in the process of copying: thus in Kwak'tala, some types of reduplication insert the segment */s*/ or *// between the copy and the original, some impose rigid vowel length or accented relations between the two, etc. It seems that the copied material is always placed adjacent to the 'template' from which it is made: thus, we do not find instances in which * CávcáVCá* is copied as * CáVCáVCáVCá*, etc. Reduplication is not, however, limited to initial material. Chickasaw for example has a process by which the repetitive aspect of verbs is formed as follows: take the penultimate vowel, nasalize it, and place it after the original, separated from it by */h*/ (thus, *yopi* 'he's swimming', but *yohompi* 'he goes swimming all the time'; *ishi* 'he's taking it', but *ihinshi* 'he keeps on taking it (as, for example, medicine)'). This is surely a type of reduplication, but does not always affect the first syllable: cf. *taksell* 'he's working', but *taksahull* 'he works all the time' (in fact, the syllable affected is the one that bore the main accent in proto-Chocotaw-Chickasaw).
The same language may have several different sorts of reduplication processes, used for different purposes. In Kwakiutl for example, from the stem of *modēlq*ala ‘it is boiling’, we can form (a) *mîm*modēlq*ala ‘many are boiling’; (b) *ma*rikīdēlq*ala ‘it is boiling all over’; and (c) *modēlq*modēlq*ala ‘it is boiling repeatedly’ by various types of copying. In some cases, one type of reduplication can apply to the output of another; thus, from the root of *nul̓a* ‘worried’ there is a (derivationally related) form *nul̓ul̓u* ‘reckless’ which illustrates one sort of reduplication, and which undergoes another to yield the plural *nul̓ul̓ul̓u*.

The phonological properties of reduplication in natural languages are quite engaging, but this is not the place to explore them: for our purposes the general characterization of the process as a (partial) copying of phonological material is sufficient to distinguish it from simple affixation (which adds constant material) or other sorts of stem modification. What is of interest to us, however, is the fact that unlike other sorts of grammatical processes, reduplication seems always to reflect one of a fairly limited set of categories. Thus, in nouns we typically find reduplication marking plurality or diminutive (or augmentative) forms but not case, gender, or deictic/referential categories; in verbs, we find it marking aspectually distinct forms (such as progressives, imperfects, perfects as representing a state, distributives, iteratives, etc.), plural forms, and such ‘moods’ as hypothetical, unrealized, etc., but not person, voice or the like, or even tense (where this distinction is uncontaminated by aspectual oppositions). One can speculate on the possibly iconic nature of the process of reduplication (see chapter III.4 for some remarks on this in connection with the marking of aspect), and no doubt there are isolated counterexamples (perhaps with historical explanations, as when an aspectual opposition develops into one of pure tense), but it is still striking that this formal process is much more directly linked with the content of the category it represents than others in morphology.

1.3.3 Suppletion

The most extreme form of stem modification is the complete replacement of one form by another, as in the English type *go/went*. This is most frequently encountered in the closed word classes of the grammar: pronouns, the copula, etc. In some languages, however, it is fairly extensive even in the productive classes of the lexicon (as for instance in Georgian, where aspectual oppositions in a number of verbs are indicated by stem suppletion). When this situation arises, it is reasonable to ask whether we are in fact dealing with a single lexical item, whose morphology involves suppletion to mark an inflectional category, or with two (or more) distinct lexical items, each restricted to a single category. A large number of languages in Western North America, for example, display root suppletion based on number: thus, the root for ‘one is standing’ differs from that for ‘several are standing’; and the root for ‘pick up one round object’ differs from the root for ‘pick up several round objects’ in languages like Navajo and other Athabaskan-Eyak languages, Tsimshian, the Salish family, and others. In some cases there are even separate forms for duals: in Chickasaw the verb ‘be sitting’ is *binîl* in the singular, *chîya* in the dual, and *binohma* in the plural. One could plausibly argue, perhaps, that this does not reflect a simple morphological fact, but rather a different perception of the action, according to which the fact of one thing’s sitting is simply different in character from the fact of two, or of several things sitting. The situation would be somewhat similar to that in a few verbs in English: an act of massaering, for example, can only be carried out on a group and not on an individual.

In most cases, such speculation on the possible basis of suppletion is rather pointless and circular, but in a few instances it can be confirmed. The Moses-Columbian dialect of Salish (according to Kinkade 1977) contains (at least) twenty-two pairs of roots differing in number as singular versus plural, expressing the expected range of meanings such as sit, stand, lay down a round object, kill, etc. Thus ‘one sits’ is *fâq-lx*, while ‘several sit’ is *yâr-lx*. The fact that these are not simply inflectionally different forms related by suppletion, however, is shown by the fact that each stem can undergo the language’s general plural-marking processes. Such a ‘pluralized singular’ is *fâq-fâqlx l*x ‘each of several has a place to sit’; a ‘pluralized plural’ is *yâryâr-lx* ‘people are sitting around and resting’. In fact, the ‘plural’ stems refer to activities as carried out by a group, as opposed to an individual, so when several perform the action individually, a ‘pluralized singular’, rather than a ‘plural’ is called for, and when several groups perform (or undergo) the action, a ‘pluralized plural’ is required. Indeed, one of the other pairs on Kinkade’s list, a singular vs. a plural stem for ‘tree’ (better, ‘be a tree’) is directly parallel to English *trees vs. forest or grove*, which illustrates the distinction involved. Suppletion thus forms the borderline between inflectionally related forms of the same lexical item and distinct lexical items with a great deal of shared semantic material. The field worker should be open to both possibilities.

This completes our discussion of the formal devices employed for the indication of inflectional categories. We turn now to a survey of the grammatical oppositions which make up inflectional systems.
2.0 Inflectional categories expressed by grammatical processes

Within the general domain of inflection as sketched in section 0.3 above, we can distinguish three different sorts of categories that may be given formal realization. First, a given inflectional property may be an inherent one, in that it reflects a property whose domain is the inflected word itself. This property may be one which contributes to the meaning of the word (and hence, to that of the larger structure within which it appears), like the difference between singular and plural; or it may be a totally arbitrary and meaningless one, such as (usually) membership in a particular inflectional class. For our purposes, the distinctive aspect of inherent categories is that they are not imposed by the structural position occupied by the word and they do not depend on the properties of other words in the structure.

The second class of inflectional properties which we can distinguish is the set of relational categories, which reflect the position the word occupies in larger structures. A noun may designate or refer to an entity of a certain sort by virtue of its meaning, and it may be singular or plural on its own account, as it were, but it can only be a subject or an object, etc., by virtue of its position in some syntactic construction. An indicator of such position is the formal reflection of a relational category.

Finally, we can recognize a class of grammatical categories that arise in a word by agreement with properties of some other word or phrase. Most languages exhibit particular syntactic connections between words through inflectional agreement: some of the properties of one word, either inherent or relational, are marked also in the other. A common role for agreement processes is to identify the members of a grammatical phrase. Properly speaking, for example, a relational property such as one marking ‘subject’ does not refer to a single word, but rather to an entire noun phrase. In many languages, such a property is indicated by a single particle located at the beginning of the phrase (as in Kwak’wala sentences such as the one in (2) above) or at the end of the phrase. In Chickasaw, for instance, subjects are marked by a following particle such as at, ot, akot (with the choice depending on emphasis and discourse factors):

(3) a. Hattuk at toksali
   man subj work
   ‘The man is working’

b. Hattuk yamma (a)kot toksali
   man that (emph) subj work
   ‘That man’s working’

c. Hattuk yamma-n pinsa-li-k akot toksali
   man that-obj see-l subj emph subj work
   ‘The man I see is working’

Here the particle appears as a clitic on the end of the phrase, regardless of its internal complexity. In other languages, categories applicable to an entire phrase are realized on its head, or in some other determinate position.

Another possibly more common situation however, is for a category applicable to an entire phrase to be represented on (or a certain subclass) of the words of the phrase. Thus, in Finnish, näiden miesten ‘these men’ is a genitive, opposed to nämä miehet, a nominative version of the same phrase: the category of case is realized not only on the head noun, but on the modifier (here a demonstrative) as well. The fact that all of the constituents of a phrase show the same category serves to identity them as part of the same phrase: this is the basic function of agreement within the phrase. The importance of this is particularly clear in Warlpiri, where word order is strikingly free. As long as a noun phrase remains intact, with its parts not separated by any other material, only its head need be marked for case; but as soon as word order is varied so as to separate parts of a phrase from one another, they must all be marked individually:

(4) a. Ngarrka nyampu-rlu wawirri pantu-rnu
    man this-erg kangaroo spear-past
    ‘This man speared a kangaroo’

b. Ngarrka-ngku wawirri pantu-rnu nyampu-rlu
    man-erg kangaroo spear-past this-erg
    ‘This man speared a kangaroo’

In cases where a category is realized on all (or several) of the parts of the phrase, we might suggest that it is, in principle, a property of just one of those parts, independently of the others. We might regard it, that is, as distributed secondarily to other elements by agreement with the head. This is clearly not possible in cases displaying more structure, however. Latin bonōs lībrōs, for example, not only shows accusative case on the adjective as well as the noun: the adjective is also inflected as masculine and plural. One could plausibly argue that when ‘good books’ is used as an object, or in some other position where the accusative is called for, ‘good’ is as much part of the object as ‘books’, and hence just as suitable for marking as accusative; but there is nothing masculine – or indeed plural – about ‘good’, either inherently or by virtue of its structural position as a modifying adjective. It is only by
agreement with the head of its phrase, ‘books’, that it acquires these properties. There are clearly some inflectional categories which arise through agreement in this way, then, rather than inherently or relationally; and we could also assume that in other instances, relational properties are primarily assigned to heads of phrases, and secondarily to other members of a phrase through agreement.

For our purposes in this chapter, the distinction among types of inflectional categories is primarily an expository convenience. For the field worker confronted with an unusual formal distinction, however, it is quite important to bear in mind the various possible origins of such grammatical categories.

2.1 Grammatical categories of nouns

2.1.1 Inherent categories of nouns

Probably the most widespread inherent category realized in nouns in the languages of the world is that of number. Most languages provide some formal way of marking nouns or noun phrases as singular or plural. As with most categories, this may be done by any of the formal devices of morphology, including (as noted above) reduplication. The formal expression of plurality in the noun may be obligatory (as for most nouns in English); limited to certain categories, such as animates (as with the suffix -men in Mandarin) or referentially prominent nouns (as with proximate forms in most Algonquian languages, opposed to referentially less prominent obviative forms); not marked if there is any other overt indication of number (as in Kwak’ala); optional as in Hakomelem (Salish); or absent (as in Chickasaw).

Some languages make distinctions similar to that of number, but not quite equivalent to the English difference between simple single versus multiple reference. In Tlingit, for example, there is not really a category of plural, but rather of collective: the difference between a singular and a coherent group. The ‘plural’ of tlingit ‘man’ is tlingitaq, which really refers to a group of men, not simply to multiple men randomly distributed in space. Similarly, the ‘plural’ of q’at’ ‘island’, which is q’at’q’a’, really means something like ‘archipelago’. In fact, we can make a ‘plural’ form yayat’l’amaq ‘the big whale’, which refers to a single whale but stresses that it was very large and had many parts to be cut out. Sometimes, as in Old Breton, these collective forms are distinct from and coexist with the more usual sorts of plural.

In some languages, number marking in nouns shows unusual interactions with numerals. Thus, Hungarian, Turkish, and some other languages use the singular when number is overtly indicated by an accompanying numeral. Russian has a special form for nouns, resemb-
human/non-human), but other dimensions may enter in as well, as with the proliferation of semantically semi-coherent noun classes in Bantu languages, or the 'edible' and 'drinkable' genders (in addition to animate and neuter) of Fijian. Despite the fact that some aspect of meaning can often be found (at least historically) at the base of gender systems, there is almost always at least some element of arbitrariness as well. For instance, the Algonquian languages oppose animate to inanimate nouns as a fundamental grammatical category, but a few items do not fit this distinction: kettles and certain kinds of berries (among other non-animals) are 'animate', but frying pans and other kinds of berries are 'inanimate'. The amount of grammatically arbitrary classification in this system is actually quite small, but in the case of most two or three gender systems in Indo-European languages it affects the great bulk of the lexicon, since the opposition of masculine vs. feminine and/or neuter is extended into the vast areas of vocabulary where natural gender is strictly speaking meaningless.

We should be careful to distinguish gender or noun-class systems from simple differences in inflectional class. Thus Icelandic nouns belong to several different declensional classes ('strong' declension vs. 'weak' declension, 'i-stems', 'u-stems', etc.), based on systematically different forms taken by the inflections for case and number. This division partially correlates with, and partially cross-cuts the distinction among masculine, feminine, and neuter genders. Rules of agreement in the language, however, show that gender is a distinct inherent category: adjectives, demonstratives, etc. agree with the head of their noun phrase in gender, but not at all in declensional class. The noun hestur 'horse' (acc.imest, nom. pl. hestar), for example, is a 'strong a-stem' masculine noun, while afi 'grandfather' (acc. afar, nom. pl. afar) is a 'weak' masculine noun. Adjectives agree with both of these in the same way, however, since it is only the feature 'masculine' that is relevant: gamal hestar 'old horse' (acc. gamlan hestur, nom. pl. gamlar hestar), gamal afi 'old grandfather' (acc. gamla afar, nom. pl. gamlar afar). A feminine 'strong a-stem' noun, like kerling 'old woman' (acc. kerlingu, nom. pl. kerlingar) or 'weak' noun, like amma 'grandmother' (acc. ammru, nom. pl. ömmur) similarly results in adjectives agreeing for gender, but not for declensional class: gómul kerling, gómul amma (acc. gamla kerlingu, gamla ömmu, nom. pl. gamlar kerlingar, gamlar ömmur).

In some languages noun class ('gender') distinctions are represented overtly in the surface form of the noun itself. Thus, Bantu and other African class languages generally mark nouns with a prefix (and/or suffix) indicative of the class to which they belong; most nouns in Russian can be identified as masculine, feminine, or neuter by their phonological shape, etc. In many others, however, the situation is closer to that of French or Breton, where there is no clue to the gender of a noun in its surface form. Certain derivational categories may belong systematically to a particular gender, of course, but this association is just as arbitrary in both semantic and phonological terms as any other. The category of gender is an inherent one in nouns, but often not the basis of any grammatical process applying to nouns: it is realized overtly only in other areas of inflection, through the operation of agreement. This sort of behavior is not strictly limited to noun class: for instance, some languages (including some in the Mayan family) do not generally mark number in nouns, but indicate plurality primarily through agreement in verbs or elsewhere in the noun phrase. Nonetheless, such indirect reflection of an inherent category is reasonably common for noun-class systems, and rather rarer elsewhere in grammar.

Distinct from gender or noun class, but related to it in some languages, is the category of diminutives (and occasionally augmentatives as well). It is quite common for a language to have such a formation, of course, but even in cases of such fairly productive affixes as German -chen/-lein or Spanish -ito, there is little real basis for calling this an inflectional rather than a derivational category. In a few cases, however, the formation of diminutives is so thoroughly integrated into the language's inflectional system that its status is not in doubt. In Fula, for instance, each noun belongs, in its simple singular form, to a particular class. Corresponding to these there are a (rather more limited) set of plural classes. Any noun, however, regardless of its class can be made into a diminutive (providing this is semantically appropriate, of course) simply by inflecting it as a member of one of the two diminutive singular classes (which differ in that one has pejorative connotations - 'punny little . . .') or as a member of the special diminutive plural class. In addition, there is an augmentative singular and an augmentative plural class, giving rise to a paradigm of seven forms for any noun: singular, basic plural, two diminutives, diminutive plural, augmentative, and augmentative plural. This process is (in principle - given semantic limitations) completely productive, and its full integration into the noun-class system, which is the basis of the agreement and concord system of the language, makes its inflectional status clear.

A less striking, but quite clear case is furnished by Halkomelem. In this language, nouns belong to one of two classes as shown through agreement. One of these classes consists of feminine persons and all diminutives (marked formally by a distinctive reduplication pattern), and the other consists of all other nouns. Diminutive formation is
completely productive, and its status as an inflectional category is confirmed by its integration into the gender system.

A number of languages display in their nominal inflection one or more categories of a referential or deictic sort. Consider first the difference between definite and indefinite nouns. A language like Danish, in which we can distinguish hus ‘house’ and huset ‘the house’ appears to treat definiteness as an inflectional category, but this is not entirely clear. When a noun is modified, for example, it is no longer ‘inflected’ as definite: cf. et lille hus ‘a little house’, det lille hus ‘the little house’. The analysis that suggests itself here is that definite nouns are accompanied by an article which, in the absence of any additional modifiers, becomes a clitic on the noun. In that case, there would be no reason to treat definiteness as an inflectional category in Danish.

In the closely related languages Swedish and Norwegian, however, it appears that definiteness has been reanalyzed as inflectional. The directionality of the development is clear, since Old Norse and Modern Icelandic, which represent the language from which all three developed, are like Danish in this respect. Here the definite ending remains even in the presence of a modifier and a demonstrative, for example Norwegian hus ‘house’, huset ‘the house’, and det store huset ‘the big house’. The situation is also fairly clear in Basque, where definiteness forms a dimension of the inflectional system, and there is no apparent alternative analysis taking definiteness as marked by a clitic article. Compare buru ‘head’, burua ‘the head’, buru bat ‘a head’; buruak ‘head (erg.)’; buruan ‘the head (erg.)’. The argument here comes from the fact that the formal mark of definiteness precedes the case ending; but it should be noted that in Basque, definiteness is marked at only one point in the noun phrase: buru handi ‘(a) big head’, buru handa ‘the big head’.

It is comparatively common for definiteness to interact with the marking of case in certain syntactic positions. It is often the case that direct objects receive distinctive marking only if they are definite. In languages as diverse as Turkish and Chickasaw, object marking does not apply to indefinite noun phrases. Here, while there is no formal representation of definiteness in isolation, its status as an inflectional category is clear. It would be incorrect to identify the object marker in such a language as either an ‘accusative’ marker (deleted for indefinites) or a ‘definite’ marker (appearing only in object position): rather, this is an example of the fact that grammatical processes do not correspond one-to-one with the categories they reflect. It is the conjunction of categories ‘definite’ and ‘accusative’ that is represented.

In some languages, of course, the category of ‘definiteness’ that may receive inflectional or other formal indication is not the same as that marked in English by the definite article. Some languages have a category of ‘specific’ noun phrases instead, including expressions for which (as with ‘definite’ noun phrases) it is presumed that a referent exists, but about which (unlike ‘definites’) it is not presumed that the identity of this referent is known.

Another variant of such a category is the recognition of a category of proper, as opposed to common nouns. Most languages assign some distinctive properties to proper names, such as the special articles found in Polynesian languages. Such a category may interact with definiteness where both are formally realized.

Yet another category related to those above is the marking of nouns for deictic status. The variety of systems of this sort is surveyed below in chapter III.5. They are generally restricted in their formal realization to a set of demonstrative elements, but in a few cases these distinctions are marked inflectionally on nouns as well. A particularly well-known example (thanks to Boas) is Kwak’ala: here a noun phrase is not only preceeded by a demonstrative element, but its first word is also marked (obligatorily) as belonging to one of six categories. These are based on two dimensions: near me/ near you/ distant (roughly), and visible/invisible. Given the fact that this distinction is marked on the first word of the noun phrase, whatever that is, it may well be that we are dealing with a case of clitics rather than inflection here: there are very few examples of languages in which such a deictic category has clearly inflectional status.

The primary inherent categories of nominal inflection, then, are number, gender, and referentiality/deixis. Other categories are reported for various languages: in Kwak’ala, for example, the verbal category of tense is said to extend to the inflection of nouns, as in xan x’ak’x’ana ‘my canoe’, x’an x’ak’x’ana ‘my future canoe’ (as, one I am presently building), and x’an x’ak’x’axde ‘my past canoe’ (as, one that sank, or that I sold). Marshallese is another language in which tense is said to be a category applicable to nouns. In this and numerous other cases, however, it is difficult to show that we are really dealing with an inflectional category, rather than with a derivational formation made on the analogy of verbal inflection. Tense in this sense does not seem to function in agreement rules, to be part of a network of interlocking inflectional dimensions, or generally to show the sort of productivity and semantic uniformity we expect of inflectional categories.

2.1.2 Relational categories of nouns
The traditional term ‘case’ is fundamentally a name for the entire class of relational categories applicable to noun inflection. As the formal
reflection of all of the roles played by nouns in larger structures, this is a large and somewhat homogeneous set. We can generally divide case categories into grammatical or direct case (marking syntactic functions such as ‘subject’ and ‘object’ determined primarily by structural position) and oblique cases (marking a range of functions, including but not limited to spatial or local ones, with more independent semantic content and less dependent on structural role). Terminology is not well standardized here: traditional grammarians often use ‘oblique’ to designate all cases except the ‘nominative’, though some include the ‘accusative’ as a direct case as well. In distinguishing between grammatical cases and those with more independent, meaningful content, one might choose to call the two classes ‘syntactic’ and ‘semantic’, respectively; but as we will see, the oblique cases often have syntactic functions and the direct cases (in our sense) frequently convey meaning as well as relational information. We thus prefer the more manifestly arbitrary terms ‘direct’ and ‘oblique’. Inevitably, the boundary between the two is somewhat hard to draw; one might also argue that at least some of the oblique cases ought really to be treated as inherent rather than relational categories. We will assume here that case is a uniform notion (at least as the basis for inflectional categories as they affect word formation), but that we can distinguish direct from oblique case functions at least for expository purposes.

2.1.2.1 Systems of direct cases. The direct case categories serve to indicate basic grammatical relations such as ‘subject’, ‘object’, and ‘indirect object’. We might expect, therefore, that the range of possible systems of these cases would follow closely this inventory of functions, but the actual picture presented by the languages of the world is rather more complex than this would suggest.

Confining our attention for the moment to the marking of subject and object, we note at the outset that the transitivity of the verb with which a noun phrase is associated plays an important role. Bearing in mind the problems noted in chapter 1.2 with the notion of ‘subject’, we can distinguish three major categories of interest: the category of subjects of intransitive verbs (s), that of subjects of transitive verbs (s), and that of direct objects of transitive verbs (o). We could imagine that a language might provide distinct categories of inflection for all three of these functions, but such systems occur marginally at best. Motu (a language of New Guinea) is said to mark s and s with distinct particles, and o with no overt mark at all: this may be the closest we can come to the sort of system we seek, though the particle for s (ese) is apparently optional. The particle na marks s, but this also is optional in most dialects, and

even appears (under conditions that are not understood) with some noun phrases. Other languages, particularly in Australia, display such a system for a small subcategory of noun phrases (usually pronouns); these cases will be noted below.

In the Australian language Wangkumara (cf. Breen 1976) pronouns display such a three-way distinction among Ergative, Accusative, and Nominative (Absolutive) case forms. Noun stems in this language, furthermore, are followed by reduced clitic forms of these pronouns: thus, the Ergative, Accusative, and Nominative masculine singular pronouns ngu, nga, and ngi are added to a stem such as kana ‘man’ to give kanyula, [kaniya] (implied but not actually cited in Breen (1976)), and kani. These forms, with attached clitics, may not yet constitute a three-way case-marking system for nouns, but if not it may safely be assumed that such a system is in the process of development.

Another logical possibility would be a language that provided a category of s, and another that marked s and o identically. Note that this would be equivalent to marking the noun phrases of a clause for the transitivity of its verb: such a system does not appear to occur anywhere.

When we also ignore the possibility of identical marking for all three functions (equivalent to no distinctive marking for any, and hence not the basis of a possible inflectional category within the range of direct cases), we are left with two possibilities: (i) a category of s and s, opposed to one of o alone; and (ii) a category of s and o, opposed to one of s alone. Both of these occur, and both are distributed throughout the language families of the world. The first possibility is of course the familiar system of Latin and many other languages, with s and s belonging to a category usually called the nominative and o assigned to the accusative. In many languages with such a system, the nominative is the formally unmarked base form of the noun, and the accusative involves the addition of some grammatical process; but in others (e.g. Cushitic, Yuman, Muskogean, and others) it is the nominative that is formally marked as opposed to the accusative.

The other possibility is realized in ‘ergative’ languages. Here the category containing s, noun phrases is called the ergative case (other names that appear in the literature include relative case, active case, agent case, and others): the category opposed to it, containing s, and o, is usually called an absolutive case. Sometimes this category is called a nominative, but it seems better to reserve that name for a case category opposed to an accusative, as above. In ergative systems the ergative case is apparently always marked formally, and the absolutive is usually the unmarked base form of the noun. Examples of ergative languages include Basque, Eskimo, Tsimshian, Tibetan, Avar (Northeast
Caucasian), virtually all of the languages indigenous to Australia, and a host of others.

When we speak of a language as having an accusative or an ergative case-marking system, we are describing it as belonging to one or the other of the above ideal types. Especially with ‘ergative’ languages, this can be something of an exaggeration, since these generally display at least some features characteristic of other systems. Most ‘ergative’ languages are actually ‘mixed-ergative’ languages, in the sense to be discussed now. There are several different sorts of ‘mixed ergative’ system, which have distinct motivations and thus should be treated separately.

We should mention first a linguistic type that does not find a natural place in this survey, which treats noun morphology and verb morphology separately. As we will see below (in section 2.2.3), verbal agreement patterns may also be divided into an ‘ergative’ type and a ‘nominative/accusative’ type. Frequently, ergative case marking is associated with ergative verb agreement (as for instance in Avar), but in other languages, ergative case marking co-occurs with nominative/accusative verb agreement (this is the situation in the Indo-Iranian Dardic language Shina, for example). Apparently there are no instances of languages in which agreement is ergative but case marking nominative/accusative.

We can next note the existence of a number of languages in which ergative case marking is restricted to sentences in which the verb is in a particular tense/aspect category. This is the case, for example, in Georgian, in Hindi and a number of other Indic languages, in Pashto (Iranian), and in the language-isolated Burushaski (all of which are spoken in roughly the same part of the world, though they are not all genetically related). In each case, ergative marking is associated with sentences in perfect tenses (or in tenses that are the modern reflex of a perfect, as in Hindi). The opposite asymmetry does not seem to occur, nor do other tense/aspect conditioned splits. This fact appears to have an interesting explanation in terms of the historical processes that lead to the development of (new) perfects and new imperfects (cf. Anderson 1977a), but it is not necessary to develop that explanation here in order to establish the typological status of the systems that do exist.

Another sort of split-ergative system is particularly common in Australian languages, though instances can be found elsewhere as well. In Dyirbal, for example, we find that while ordinary noun phrases are assigned case on the ergative/absolutive pattern, first and second person pronouns are marked as nominative vs. accusative. Several other related possibilities exist, which can be given a unitary account in terms proposed by Silverstein (1976). He suggests that we can arrange possible participants in an event along a scale like that in (5):

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(5) \text{first person pronoun} \quad \text{2nd person pronoun} \quad \text{demonstratives & 3rd person pronouns} \quad \text{proper nouns} \quad \text{human common nouns} \quad \text{animate inanimate}
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Roughly, the further an item is to the left on this scale, the more likely it is to receive case marking on an accusative pattern, and the further to the right, the more likely to be case-marked by an ergative system. There are several possible dividing points, and in a few languages (such as the Australian language Yidiñ), a zone of ‘overlap’ in the middle of the scale actually displays both systems. For demonstratives with human reference, Yidiñ separates both an accusative (o case) and an ergative (s; case) form limited to s. There do not, however, appear to be ‘split-ergative’ systems of this sort in which a middle zone on the scale in (5) is left completely without case marking. Again, it is unnecessary to go into the basis of a scale like (5) to make the point that it characterizes a dimension along which such split-ergative morphological systems can be ranged typologically.

A final type of ‘split-ergative’ system that has been reported for a number of Mayan languages involves ergative marking in main clauses, but accusative marking (apparently through generalizing the ergative marker to apply to s, as well as s) in certain types of subordinate clauses. The opposite situation (with accusative marking in main clauses and ergative marking in subordinate—specifically, relative—clauses) has been suggested for the Australian language Ngarrum, but this may be the result of a misanalysis (cf. Nash 1977). The status (and indeed, the existence) of split-ergative systems based on the opposition of main vs. subordinate clauses is not at all clear.

A final, related sort of phenomenon should be noted here. In some languages which otherwise display nominative/accusative case-marking patterns (e.g. Finnish, Southern Paiute, and the Australian languages Lardil and Ngarrum), direct objects in certain constructions appear not in the accusative, but in the nominative. The constructions in question include imperatives in all of the above languages; in some (e.g. Finnish), impersonal infinitives are included as well (of the type ‘It is necessary to kill the bear’).

It is rather difficult to maintain that the objects in these constructions are ‘really’ subjects, and thus appropriately marked as nominative; but fortunately, there is no need to do so. When we consider both of the commonly occurring case systems (accusative and ergative), we can see
that they have one thing in common: both provide a formal differentiation of subject and object phrases in transitive clauses, the kind of clause in which both subjects and objects occur. It is clear why systems of the sort we are considering should exist: accusative marking can fail to apply to the objects of transitive verbs precisely in constructions where there is no subject noun phrase. Imperatives in virtually all languages involve the systematic deletion (or at least non-appearance) of a presumed second person subject and the impersonal infinitives relevant here have no subject expressed; thus the appearance of a verb as an imperative (or impersonal infinitive) guarantees that an associated noun phrase will be identified as object, independent of case marking. We are not dealing with a different sort of case-marking system here (much less with an unusual class of subjects), but simply with the failure of accusative marking to apply in a well-defined class of environments in which its operation is not functionally motivated.

Thus far, we have been dealing with case-marking systems in which the choice of inflection is based primarily on grammatical relations (subject and object) and the transitivity of the associated verb. When we consider verbal agreement systems (in many ways closely related to noun inflection) below in section 2.2.3, we will encounter languages in which there is a role played by semantic as well as structural properties of the relation between verbs and their associated noun phrases. In some languages, uses of oblique cases for the subjects of particular verbs can be said to follow semantic principles (these will be discussed in the next section), but it is noteworthy that there are no (direct) case-marking systems that are based fundamentally on semantic principles (rather than on syntactic relations). Even a language like Chickasaw, with a highly 'semanticized' verb-agreement system, marks noun phrases straightforwardly as subjects or as objects.

Before leaving the topic of direct-case systems, we should mention the formal treatment of indirect objects, since these are frequently felt to occupy the status of a third basic grammatical relation. Many languages, of course, mark this function with a preposition (or postposition), along the lines of English I gave a fish to John. Others have a distinct case, generally called a dative, for this function, as in German Ich gab dem Mädchen einen Fisch. Still others present indirect objects as a special instance of the direct object, as in English I gave the girl a fish. English, as well as some others languages (e.g. Indonesian) allows for both the first and the third possibility. There are apparently no languages in which the indirect object appears in the same case form as the subject (unless, of course, there is no case-marking at all, in which event all noun phrases have the same inflectional form). It should also be noted that in some languages, the semantic structure of certain verbs is such that what we expect to find as an indirect object is in fact treated as a direct object. In Kwak’wala, for example, the verb(s) meaning ‘give’ take as their direct object the Recipient, and express the thing given in an instrumental phrase. There is no reason not to treat this structure as basic: it is simply that acts of giving are expressed in Kwak’wala with a verb that might be more accurately glossed as ‘present’, as in ‘I presented the girl with a fish’. Field workers exploring the case system of a new language must always be alert to this sort of possibility - the translations given may employ verbs that are subtly different in semantic structure, thus not preserving the grammatical relations of the original English (or other language) sentence.

The final direct case to be considered is the genitive. The most obvious function of the case usually given this name is the expression of possession (‘John’s dog’), but it generally functions to express a whole range of other relations between nouns. Thus, John’s picture may be the one he has, the one he took, the one someone else took, etc. The genitive really expresses the fact that one noun is subordinate to, and a modifier of, another: this is our motivation for treating it as a direct case function. Sometimes this function is even more general, as in the case of the Mandarin particle de which can indicate many sorts of subordination - not just that of noun to noun.

A variant of the construction ‘Noun<sub>subord</sub> + genitive − Noun<sub>head</sub>’ is found in some Semitic and Nilotic languages, among (very few) others. Here it is the head Noun which is inflected - put in the so-called ‘construct state’, or ‘appertentive’ form to indicate that it is in fact modified. The subordinate noun in the structure then appears in its basic form. This situation can be distinguished from that of possessive inflection on nouns (discussed in section 2.1.3 below), since a ‘construct state’ form does not indicate the person, number, gender or other features of the subordinate noun, but only that there is one.

Many languages use cases including those just dealt with (especially the dative and genitive) idiosyncratically to mark the objects of certain verbs. This is sometimes associated with a semantic distinction, as in Warlpiri or Maori where the marking of a direct object as dative rather than absolute (in Warlpiri) or accusative (in Maori) indicates that the action was unsuccessful, or incompletely carried out, or that it affected only a part of the object, etc. It may also be associated with a semantic class, as when all Russian verbs meaning ‘control’ take their objects in the instrumental case - even new ones, such as dirižirovat’ ‘conduct (an orchestra)’. In other cases, however (as with the verbs in German whose objects are marked dative or genitive, rather than accusative), it is
simply a morphological idiosyncrasy of a particular verb, without a coherent semantic basis (so far as we know).

2.1.2.2 Oblique cases. Many of the oblique relations borne by nouns to the larger structures in which they appear are expressed commonly by prepositions (or postpositions). Like other members of closed classes, however, these elements (especially postpositions) have a tendency to be de-stressed, and to turn into clitics. As we have already noted above, this is the first step on the road to reinterpretation as an inflectional affix; and thus there is probably no function which is expressed prepositionally in, say, English, which is not expressed somewhere in the world by an oblique 'case'.

We should first note that some of the direct cases can also serve oblique functions. Thus, in Old English, phrases such as 'he went three miles', or 'it snowed (for) a week' were put in the accusative not because they were direct objects, like other accusatives, but because this was one of the local uses of the same inflectional form. Similarly, German, with a set of four cases and a large number of prepositions, marks noun phrases that are objects of prepositions with the accusative, dative, or genitive depending partly on semantic factors and partly on lexically idiosyncratic grounds.

We simply list here some of the more common case categories recognized by languages, that are not fundamentally 'grammatical' in content.

(i) Many languages recognize an instrumental form expressing the means or manner of implement with which something is done. In ergative languages (such as most of those of the Northeast Caucasian family) this is frequently identical with the ergative. In Kwak'wala, it is the only distinct case form besides the object and subject cases, and serves to express possession as well as instrumentality.

(ii) Some languages (e.g. Finnish) recognize a distinct partitive case, whose content is 'some (part) of (the Noun)'. This case is used in Finnish in some ways similar to that of the dative in Maori or Warrpiri for the objects of unsuccessful or incomplete actions mentioned in the previous section. It is also used for the objects of negative verbs, which is surely a related fact. Compare the fact that Russian also marks the objects of negative verbs in a special way (under complex conditions), namely with the genitive rather than the accusative.

(iii) Some languages have a special comitative case, indicating accompaniment (e.g. Yidiŋ in Australia).

Other languages recognize many different unusual and quasi-unique categories by case inflections, in ways that do not lend themselves to systematization. Yidiŋ, for example, has not only absolutive, ergative, instrumental, dative, and a set of cases for spatial location, but also a case for the purpose of an action (as 'we set a trap for fish') and a case for expressing something the subject is afraid of (as 'the child sat still (for fear of) the person'), among others.

We turn now to systems of cases expressing spatial location (and metaphorical extensions of this, as temporal extent, etc.) — usually called local cases. Many people, when first told that Uralic languages such as Finnish and Hungarian typically display more than a dozen cases, consider (perhaps recalling their own difficulties with the five cases plus vocative of Latin) that this must be some sort of highly aberrant and unstable situation. The majority of these cases are local in nature, however, and as local case systems go the Uralic situation is quite restrained. Some of the languages of the Caucasus (such as Lezghian, Lak, and others known almost exclusively by reputation to European and North American linguists) have systems with more than thirty local cases alone, in addition to a set of direct cases and other oblique forms, some with grammatical functions. These systems generally show quite interesting degrees of internal organization and coherence, from which the simpler systems of local cases in Europe can often be better understood. The fairly straightforward system of Avar, for example, contains twenty distinct inflectional categories of a local nature (again, in addition to a set of grammatical cases), though for semantic reasons any given noun can appear in at most sixteen of these. The categories can easily be seen to be organized along two dimensions: first, whether reference is being made to location or motion on top of, beside, under, inside a compact object, or among the parts of a dispersed object; and second, whether location at, motion toward, motion away from, or motion by way of (or along a path contacting) the object is referred to. This yields a five-by-four matrix of categories, defining the twenty different cases. We can now see a system with locative, allative, and ablative cases as analogous to (a part of) the second dimension that functions in Avar, with neutralization of the distinctions made along the first dimension; and the opposition among inessive, illative, and elative cases in Finnish as the special case of the second Avar dimension where the first has the value 'inside of' or 'among the parts' of the object.

Sometimes local (and other oblique) cases develop grammatical uses in a particular language. The frequent coincidence of ergative and instrumental cases noted above, for example, is probably sometimes the result of an original instrumental developing a secondary use for the subjects of transitive verbs. Frequently verbs whose subjects are not
forms depending on whether their governing verb is a future or a non-future form. One might also regard the split-ergative systems based on tense/aspect, noted above, as manifesting a category of tense/aspect agreement with the verb, intersecting with such relational categories as subject and object to determine the inflectional form of the noun.

2.2 Grammatical categories of verbs

In most languages, a large part of the complexity of word formation (and inflection in particular) concerns the verb. A complete catalog of the distinctions of meaning that can be indicated formally by verbs in the languages of the world (independent of the lexical meanings of stems) would be extraordinarily long and difficult; beyond the dimensions indicated below, much of what remains displays little cross-linguistic structure of typological interest. We concentrate here on the major parameters of inflectional specification.

2.2.1 Inherent categories of verbs

Most of the bulk of the 'complete catalog' just referred to would come in this area. Especially in dealing with 'polysynthetic' languages, such as Eskimo or Kwak'wala, there seems often to be a nearly open-ended list of adverbial, verbal, adjectival, and even nominal modifications to the basic meaning of a verb root that can be indicated by essentially productive processes (generally in the form of affixes). Notions such as the direction in which an action is directed, the instrument with which it is performed, the manner in which it is carried out, the generic type of object on which it is performed, and so on – and on – may all correspond to such productive or semi-productive affixes. In general, these matters seem best treated as lexical derivation rather than as inflection.

A somewhat 'adverbial' category which is sometimes clearly related to inflection, however, is that of evidential markers. Several languages (including Turkish, Bulgarian, Georgian, Hopi, and Kwak'wala) recognize formally a category of 'reportive' verb forms: verbs describing events for which the speaker cannot vouch personally, since he did not witness them, but has only second-hand knowledge. Kwak'wala also has a marker for events described from the evidence of a dream, and other languages have a category for events of which the speaker is frankly doubtful. These forms are generally marked by discrete affixes which could well be derivational in character, and so it would be difficult to be sure that they are functionally part of the inflectional system; but at least in the case of Georgian, we can be fairly sure. In this language, reportive verb forms involve a major rearrangement of the tense-marking, agreement, and even case-marking pattern of the language;
they are completely integrated into the morphology of the verb, and are thus at the very heart of the inflectional apparatus.

Another category that is not far from adverbial notions is that of polarity (or negation). Chapter 1.4 surveys the properties of negation in a variety of languages; here we only note that this is indicated directly in verbal inflection in some languages, such as Abkhaz (Northwest Caucasian) and Chickasaw. We have seen above something of the mechanism of Chickasaw negative formation; among other things, the change in the verbal agreement pattern that this involves confirms its status in this language as part of the system of inflectional categories.

We should also note that a variety of modal functions performed in languages like English by auxiliary verbs are filled in others by categories of the verbal system. Abkhaz, for example, has an affix appearing in verbs to mark potential (‘be able to’) forms; Kwak’wala has affixes to mark potential and obligatory (‘be obliged to’) forms, as well as one (which appears together with reduplication marking irrealis) marking attemptive (‘try to’) forms. A similar (but not identical) distinction has been found to be quite fundamental in several languages of the Salish family: here the question of whether the subject (especially of transitive verbs) was fully in control of the action, or whether he simply performed it or brought it about without effectively controlling it determines much of the overall inflectional pattern in languages like Bella Coola, Halkomelem, and Thompson. This parameter may be reflected not only in an overt affix, but in the choice of pronominal affixes indicating agreement.

Perhaps the most important inherent category of verbs which is undeniably inflectional is that of tense and aspect (together with mood). Tense and aspect systems are surveyed in chapter 3.4 following and there is thus little to be added here. These categories can be reflected formally in the direct application of grammatical processes of all sorts (affixes, stem modification, reduplication, or suppletion); they may also be reflected less directly, as when tense conditions the form taken by agreement markers (e.g. in Takelma) or even the form of case marking on noun phrases (as observed above).

A distinction which is sometimes made in inflectional systems is that between actions and states. Active and static verbs (the latter frequently including many of what are treated as adjectives in English: cf. chapter 1.1) may have somewhat different tense and aspect systems, and different patterns of agreement — as well as some direct, overt indicator of the difference. In Ubykh (Northwest Caucasian), for example, there is a set of eight different tenses found with active verbs, but only two (parallel to two of the active tenses, but formed differently) for statives.

Nouns in Ubykh can be inflected as static verbs and thus used predicatively (‘I am a man’), a not uncommon state of affairs.

A final inherent category of verbs is that of conjugation class. Like the category of declension class in nouns, this is generally a more or less arbitrary, formal difference in the way verbs are inflected. In the more archaic Germanic languages, for example, there were typically four distinguishable patterns of inflection for ‘weak’ verbs (in which tense was indicated primarily by a suffix) and seven or more for ‘strong’ verbs (where tense was primarily indicated by vowel change in the stem). The partitioning of the lexicon among these classes was largely arbitrary, from the point of view of semantics and other grammatical categories. Furthermore, such a class does not figure elsewhere in the grammar (as in an agreement rule, for instance): it is simply a formal idiosyncrasy of particular verbs that they belong to one or another conjugation. Morphology is a little like that, sometimes.

2.2.2 Relational categories of verbs

Among the relational categories that receive formal indication on verbs, we can distinguish between those that reflect aspects of the structure of the clause in which the verb appears, and those that are based on the position of that clause in still larger structures.

It is not at all uncommon for the inflectional pattern of a verb to reflect the number and source of the grammatically related (direct case) noun phrases that co-occur with it in its clause. A difference between the inflections of transitive and intransitive verbs has this effect. In Basque, for example, most verbal inflection appears on a small set of auxiliary verbs, and transitive and intransitive verbs take different auxiliaries. In Algonquian, a set of stem formatives distinguish transitive from intransitive verbs, and similar examples can be found in a considerable number of languages.

Somewhat commoner, however, is the overt indication of the fact that a given verb is associated with a different set of noun phrases than its basic sense admits. The Circassian languages, for example, have a marker for verbs normally transitive, but in which an object noun phrase is absent (of the type ‘John doesn’t smoke’). In Bella Coola (Salish), a formative in the verbal inflectional system reflects the (non-transitive) use of transitive verbs in circumstances where the action rather than its object is of importance (of the type ‘John is (doing some) carving’). Such ‘detransitivized’ forms appear formally marked in a few instances.

Far the most common category of this sort, however, is that of causative verbs. The syntax of causative constructions is reviewed in
chapter 11:6, but we should note that it is extremely common for such uses of basically intransitive verbs in transitive constructions, or of transitive verbs in bi-transitive constructions, to be formally marked in some way. Typically this is by means of an affix (which one might call derivational), but not always. In Bella Coola, for example, causative verbs employ a different set of subject/object agreement markers than do ordinary transitive verbs.

Another aspect of clause structure which a verb may display inflectionally is voice, or, more generally, foregrounding constructions (cf. chapters 1:5 and 1:6). Passives, in which a notional direct object has been 'promoted' to subject status, are one such type. A language may provide for more than one set of passive, as in Kwak'wala: here one set of affixes marks the promotion of direct objects to subject status, while another set marks the promotion of instrumental or other oblique complements (where the direct object retains its original form and structural position).

Not only advancements to subject position may be inflectionally reflected in the verb; a number of languages allow the 'promotion' of oblique noun phrases to direct object status, and reflect this in the verb. Fula, for instance, has (separate and distinct) markers for the promotion of indirect objects, instruments, location phrases, and certain other oblique complement types.

A category similar to voice is that of reflexive and reciprocal forms. When subject and object of a transitive verb coincide in reference, most languages provide a distinctive treatment. Some provide a distinctive affix, replacing the normal object agreement markers (assuming the language has agreement with objects, of course): this is the case in some of the dialects of the Abkhaz-Abaza group in the Northwest Caucasian family, for example. Other languages provide a distinct marker for reflexive forms, but otherwise treat them as if they were structurally intransitive (as in Dyirbal, for instance). Reflexive pronouns in some languages are formed as possessed forms of some specified noun (typically 'head', 'body', 'heart', etc.), and in at least one case, a similar form is given to reflexive inflection. In dialects of Abkhaz (other than those referred to above, which simply have a distinct reflexive affix), reflexive forms involve an incorporated noun stem (meaning 'head'), preceded by an agreement marker indicating formally a possessor, in the place of an object agreement prefix.

Reciprocals ('each other') are similarly reflected by distinct inflections, though perhaps less commonly than reflexives. Sometimes, however, the two are treated as the same category, and receive the same marking.

Related to reflexives and reciprocals are other inflectional forms stipulating identity between the participants filling various roles in an event. In many languages, what is called the 'middle voice' falls under this description (in others, such as Icelandic, this refers rather to a set of reflexive forms); the subject is described as performing the action for his own benefit or in his own interest. When an object noun phrase is present with middle-voice verb forms, it is often treated inflectionally as an oblique rather than a direct complement, and the verb has inflectional characteristics of an intransitive (or detransitivized) form.

Another kind of stipulated coreference which may be marked inflectionally is between the direct object (or, more accurately, between the possessor of the direct object) and some other noun phrase. Chinook inflects the verb to indicate whether the direct object is (or becomes) the possession of (a) the indirect object; or (b) the subject. The Georgian verb is inflected for a category called (rather unrevealingly) 'version' in the descriptive literature; this is somewhat similar to the Chinook category, but (as with many things in Georgian) somewhat more complicated. In addition to benefactive and possessive 'version', denoting a relation of the appropriate type between the direct object and either subject or indirect object, Georgian also has a 'superessive' version in sentences like gelam surati daaxata kedels 'Gela painted a picture on the wall', where the second a of the verb form daaxata indicates that the direct object (surati) is on the indirect object (kedels).

A final sort of indication of coreference in verb forms perhaps belongs better with categories indicating the integration of a clause into larger structures. This is the indication of 'switch reference': the marking of a clause (or its verb) to indicate that its subject is, or is not, coreferential with the subject of another clause (either the next clause in sequence, or the next higher level of embedding). Switch-reference systems are found in a number of American Indian languages (in the Yuman languages and several others of the 'Hokan' stock, for example, and in Muskogean), as well as elsewhere in the world. The languages of New Guinea quite commonly mark verbs differently depending on whether they have the same or different subjects (e.g. Kâte); some of these languages go so far as to mark a clause for agreement not only with its own subject, but in case this is different from the subject of the next clause, for agreement with that too.

The major way in which verbs can be inflected to show the position of their clause in a larger structure is by the differentiation of forms used in main clauses from those used in subordinate clauses of various sorts. In some instances, such a verb form (often called a 'subjunctive') can also
appear in main clauses, perhaps with the function of marking an irrealis mood. A number of languages (including Fula) have special sets of verbal forms for use in relative clauses (discussed in chapter 11:3). The properties of other subordinate clause types are discussed in chapters 11:2 and 11:4 and will not be further reviewed here. We should note, though, that in terms of their inflection such clauses range from types with all of the basic categories of main clauses marked, together with some additional element to indicate the subordinate status (as in the Northwest Caucasian languages, in one complement type), through forms similar to main clauses but with a different (and usually reduced) set of tense/aspect distinctions, to forms usually called participles or infinitives, in which most of the verbal categories of main clauses are neutralized. These forms are often treated inflectionally like stems of some other class. Thus, ‘participles’ may display the agreement properties of adjectives, and be marked for categories like noun class and case in agreement with some overt noun phrase elsewhere in the clause referring to their notional subject or object. Similarly, ‘infinitives’ may behave like nouns inflectionally; Fula has a special noun class for marking and agreeing with infinitives, and both Basque and Finnish allow a full range of case endings to be added to infinitives to mark a variety of relations between these reduced clausal types and the larger structures in which they appear.

2.2.3 Agreement properties of verbs
The borderline between genuine inflectional verb agreement and simple attraction of clitic elements to the verb is extremely difficult to draw in many languages. Since there do not appear to be significant differences between the grammatical categories reflected in these two ways, however, the distinction will be ignored below. We divide the discussion of verbal agreement between the questions of (a) the choice of other elements of sentence structure the verb agrees with; and (b) the categories of those elements with which the verb agrees.

The most basic sort of verbal agreement is with a single noun phrase in its clause. There are apparently two major patterns that are attested in language: either the verb agrees with the subject — s, or s, depending on transitivity — or it agrees with the noun phrase which is marked as an absolutive, or fills the same role as an absolutive: s, in intransitive clauses, o in transitive ones. The former, ‘accusative’ (better, ‘nominative’) pattern is familiar from languages like Latin, and indeed most of the Indo-European family; while the latter, ‘ergative’ (better, ‘absolutive’) agreement is attested only in languages in which ergative case marking applies to noun phrases, such as Avar. There do not seem to be any languages in which agreement takes place only with the accusative (o) or only with the ergative (s) function.

In other languages, the verb can agree with more than one noun phrase in its clause. One of the dimensions of such multiple agreement is always one of those mentioned in the previous paragraph (i.e., either ‘nominative’ or ‘absolutive’). If the first dimension is absolutive, the other is agreement with the ergative (this is the case in the languages of the Mayan family). Where the first dimension of agreement is nominative, the second is usually with a direct-case indirect object, if one is present, or otherwise with a direct object.

In such two-dimensional agreement systems, the two components may interact to produce unitary, unanalyzable affixes (perhaps including tense and other information as well), as in Eskimo or Bella Coola; or they may be related to two distinct ‘slots’ in the verb form. This latter situation is particularly clear in some instances. In Georgian, for example, one dimension of agreement is with the subject (s, or s, regardless of its case marking). The other dimension is with a direct case benefactive, indirect object, or direct object, when one is present. Now any one of these latter functions can also be presented in an oblique form (in a postpositional phrase), in which case there is no agreement with it. When the direct object is not third person in form (e.g. ‘I sent you to him’), any indirect object or benefactive must be in oblique, non-agreeing form. When the direct object is third person, however, this constraint does not hold, and the verb agrees with a direct-case indirect object or benefactive. This is probably because third person object agreement in Georgian is formally unmarked, and thus the verb does not have to ‘use up a slot’ agreeing with such an object. ‘I sent him to you’, therefore, is possible with the verb agreeing with both subject and indirect object, although in ‘I sent you to him’, a third person indirect object, even though marked by no change, apparently does count as ‘using up’ the object agreement slot.

Another clear ‘two-slot’ system is the Algonquian one. Here the verb agrees with either one or two noun phrases, without regard for their function, but only for their position on a dimension of person categories. A further affix in the verb then expresses the orientation of the action. In Ojibwa, for example, both nwa:bmarg ‘I saw them’ and nwa:bmigoma: ‘they saw me’ contain the prefix / ne/ ‘first person’, the stem /wabam/ ‘see (animate goal)’, and the suffix /-ag/ ‘third plural’; they differ in that the first form has the element /a/ ‘direct orientation (here, first person acts on third)’, while the second has /ego/ ‘inverse orientation (here third acts on first)’.

A number of such ‘polypersonal’ agreement systems are not limited to
agreement with two noun phrases in the clause. Chinook, and the languages of the Northwest Caucasian family, are examples of languages in which up to four noun phrases can be represented in the verb. West Circassian (Adyge) ɣa-s-ye-wə-xə-ə ‘you (we) make (ye) him (ye) give (iə) me (s) it (zero initial) hither (gə)’ is such a form, though periphrastic constructions are often employed to avoid having more than three participants indicated in such forms, in causatives of causatives, etc. Often some of the indicators of person in such polypersonal verbal forms are accompanied by overt indicators of grammatical function: ‘postpositions’ following the affixes, as in Ubykh a-s-x’ə-w-ya-nə-wə ‘ay-əvi ‘he (nə) will (awr) take (wə) it (ə) away (ay) from (ya) you (wə) for (x’ə) me (s)’.

The agreement systems we have described thus far are based on dimensions that can be defined in terms of grammatical functions such as subject and object. Another kind of system has also been found, however, in languages of the Siouan-Iroquoian-Caddoan and Muskogean families in North America and also in the Northeast Caucasian language Bats. In such a system (called ‘active’ as opposed to ergative or accusative) the subjects of (most) transitive verbs have one set of agreement affixes, and the objects of (most) transitive verbs another. A third set may represent indirect objects. Let us call these three sets the agent set, the goal set, and the oblique set, respectively. When we now turn to intransitive verbs, however, we do not find a single uniform pattern. Roughly, those verbs describing activities agree with their subject by means of the agent set affixes (as Chickasaw hikə-li ‘I’m dancing’); while most of those describing states, or events not under the control of their subjects show agreement by the goal set (as in Chickasaw sa-hipokonna ‘I’m dreaming’). A few may even show agreement by means of the oblique set (as in Chickasaw am-ilha ‘I’m scared’). Further, some transitives agree with their objects by means of the oblique set, and some may use forms other than agent affixes to agree with their subjects. The choice of agent or goal set may be optional for some intransitives, with the sort of semantic difference we might expect: in Chickasaw, hoolhko-li ‘I’m coughing (agent set)’ says in effect ‘that’s what I’m doing, that’s what’s going on, that’s the source of the noise you hear’, etc., as opposed to sa-hoolhko ‘I’m coughing (goal set)’, which says ‘that’s what’s wrong with me, that’s why I’m going to the doctor’. In these systems, agreement is with the direct-case noun phrases in the clause, but a parameter more important than grammatical function is (roughly) the semantic role played by the referent of the noun phrase. To some extent, these languages have all grammaticized the distinction in at least part of the vocabulary (thus, Chickasaw uses the oblique set with the verb ‘be lazy’, though generally this is only true with verbs describing emotional states like fear and surprise).

The systems above account for most verbal agreement in the languages of the world, though there are a few unusual examples that do not quite fit into these categories. Thus, in the Northeast Caucasian language Dargwa, agreement is preferentially with the absolutive noun phrase, but if the object is third person and the transitive subject first or second person, the verb agrees with s, instead of with o. In Basque, there are markers for ‘agreement’ with the honorific status of the person addressed, even though no second person participant appears in the clause. This includes agreement with the gender of a person familiarly addressed – the only place gender appears in the entire language! Other languages, such as Japanese and Korean, show quite extensive agreement with the honorific status of various participants. In Blackfoot and in Breton, agreement only takes place with noun phrases that are not overtly present in the clause (by reason of anaphoric processes) – otherwise the verb is third person singular regardless of the noun phrase itself (NB in Breton there is another construction for indefinite or unspecified agent, a category that will be mentioned for this language below). And in Wichita (a Caddoan language), agreement is primarily of the ‘active’ sort discussed above for Chickasaw, but where a third person noun phrase is possessed by first or second person, agreement may be with the possessor: thus one says, literally, ‘my horse am running’. But however interesting such cases may be, they are definitely marginal by comparison with the vast number of ‘well-behaved’ agreement systems.

When we turn to the categories that are manifested in agreement, there are few surprises: verbal agreement is usually in terms of person and number. The category of person seems universally to distinguish speaker (first person), addressee (second person), and non-participant (third person). Some languages distinguish, in the forms for plural first person, between inclusive (speaker + addressee, plus perhaps others) and exclusive (speaker + others, excluding addressee) forms. Within the ‘non-participant’ category, a ‘fourth person’ may be distinguished: this may be one that is referentially less distinct, or less central to the discourse at this point (as in Algonquian and in Navajo); or one that is explicitly unspecified, an impersonal agent like French en or German man, or a sort of reflexive, a noun phrase coreferential with the subject of some higher verb (as in Eskimo).

The category of number as reflected in verbs is of course the same as that described above for nouns: verb agreement, too, may distinguish
2.3 Grammatical categories of adjectives

Unlike nouns and verbs, adjectives are comparatively poor in inflectional terms. Only a few categories are realized in their morphology (though of course the formal indication of these may be quite difficult and complex: it takes comparatively few inflectional dimensions to produce a heavy burden on the memory of the language-learner, as any student of the classical languages can attest!).

2.3.1 Inherent categories of adjectives

Aside from the fact that adjectives may manifest differences in declension class without any relation to non-arbitrary features (just as verbs and nouns can), the only genuinely inherent category of their inflection is apparently that of comparison, as in English big/bigger/biggest. Some languages (e.g. Irish) also have a category of ‘equative’ (‘as big as’) inflection. In morphological terms, it is not at all clear that comparison should be considered an inflectional (rather than derivational) category at all.

2.3.2 Relational categories of adjectives

Both nouns and verbs appear in a considerable variety of structures; this is not really true for adjectives. They are virtually always either (a) noun modifiers, or (b) predicates. By virtue of this fact, there is little reason to expect them to show relational distinctions, and they generally do not. When used as predicates, they may be given verbal inflections (as when they are treated as stative verbs in the Northwest Caucasian languages), or affixed with a copula of some sort; this constitutes at least implicitly an indication of their relational position.

When used as noun modifiers, there is generally no formal indication of that fact for adjectives (except for the possible operation of agreement). There are a few exceptions to this. First, some languages, such as Tagalog, have an overt marker (here called a ‘ligature’) that appears between modifier and head in nearly all modification structures. In other languages, when an adjective is used to modify a ‘head noun’ that is not overtly present (as in ‘the rich are in revolt in California’), there may be some reflection of the fact. For example, in Mandarin the subordinating particle de is not normally used with certain short and common adjectives and other modifiers; but when no head is present, the particle must be used after all modifiers. Finally, the overall structure of the noun phrase may have an influence on the pattern of adjective inflection, as in German and related languages, where adjectives are inflected according either to the strong or the weak declension depending on the presence of one of a certain class of determiners. This and other instances of special forms for adjectives with ‘definite’ noun phrases, as in the Baltic and (other) Slavic languages, could be treated either as a relational category or as a type of agreement.
2.3.3 Agreement categories of adjectives

Since adjectives are used either as modifiers of a distinct head or as predicates whose subject is uniquely determined, there is no problem in identifying the element with which they agree. Typically, any of the inherent or relational categories of the noun (gender, number and case, most commonly) may also be reflected in adjectives modifying it. Arbitrary declension class properties that cannot be treated as noun classes, of course, are not eligible for agreement in this case (or under other types of agreement). Frequently, the declension of adjectives, since it reflects the same categories as nominal declension, involves the same formal elements (affixes, etc.) as the nouns with which the adjectives agree, but this is not necessary.

2.4 Grammatical categories of adverbs

Since adverbs typically do not even manifest agreement, they are even simpler in inflectional structure than adjectives.

2.4.1 Inherent categories of adverbs

Adverbs frequently show close similarities in formation to adjectives, and thus in some languages inflected comparative and superlative forms exist. Other than this, they do not manifest overt inherent categories.

2.4.2 Relational categories of adverbs

In languages in which adverbs are productively formed from adjectives, the process of their formation could be regarded as reflecting relational information, since adverbs occupy structural positions distinct from those of adjectives. Otherwise, there are no categories of this sort for members of this class.

2.4.3 Agreement categories of adverbs

In line with their general inflectional poverty, adverbs do not normally manifest agreement: they do not generally agree, for example, in an inherent category such as tense with a verb they modify. In Yidin, adverbs apparently are inflected exactly like verbs, for the same range of categories and in agreement with the verb they modify; but here the parallelism is so close (and so unusual) that one could accordingly question whether Yidin really has a distinct word class of adverbs. Some clear cases of agreement in an adverb class can be cited, however. In Maori, adverbs show agreement in voice (as passive vs. non-passive) with their accompanying verb, though they do not indicate any other verbal category, and are not plausibly considered as simply a subclass of verbs. In Avar, some adverbs (depending on their phonological shape) may show agreement in noun class with the absolutive noun phrase of their clause. Recall that this is the same pattern as agreement in Avar verbs, although the adverbs are not marked for other categories, such as tense, which are specified for verbs. If adverbs do show agreement, one would expect it to be of this sort: parallel to the agreement shown by verbs in the same structures.

2.5 Grammatical categories of closed classes

Most of the closed classes that can be identified in languages are either of the sort that could not be expected to show any sort of inflection (e.g. interjections) or of the sort that are clearly parallel to some open class (e.g. pronouns to nouns, copulas and auxiliaries to verbs), and thus show some variant of the inflection displayed by this corresponding class. There are a few surprises, such as the inflection of prepositions for person and number of their object in Celtic languages (a residue of the combination of prepositions with clitic pronouns). Different sorts of pronouns could be taken as reflecting a set of relational categories, and of course the category of person which is at the basis of pronoun systems is an inherent one for this word class. There are not, however, categories manifested by members of closed classes that have not been surveyed above. Frequently a class with small, closed membership can by virtue of that fact retain historically archaic patterns of inflection. Grammatical categories that are not marked in the corresponding open class in a given language may thus be preserved, such as the accusative in Finnish, found as a distinct case only in pronouns; or the dual in Old Icelandic, found only in pronouns.

3 Conclusions

The above survey of inflectional word formation is inevitably somewhat anecdotal and list-like in places, with few coherent patterns being apparent. This is to some extent inherent in the nature of the subject: morphology, like the lexicon, is a finite system in important ways (though both may be arbitrarily expandable in a given language). It can thus tolerate a substantial degree of arbitrariness and idiosyncrasy.

Space has permitted few concrete examples of the morphological categories referred to above; abundant examples of virtually all, however, will be found in other places in this work. The one most important point which the overall weight of such examples supports is that made above in section 0.2: the correspondence between form and category in word formation is not a simple one, and the field worker who expects it to be will find morphology a most intractable study.