Tense and Aspect Systems

Östen Dahl

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Preface

My interest in tense and aspect goes back at least to 1970. In my early work in this area, emphasis was on the application of notions from logical and philosophical semantics to the analysis of tenses and aspects mainly in English, Russian, and Swedish. At a relatively early stage, however, I felt that a widening of the data base was highly desirable, although it turned out to be quite difficult to find out what the tense-aspect systems of other languages were like from the linguistic literature. This is the background to my switch to a more data-oriented approach.

In 1977, Lars-Gunnar Andersson and I applied for financial support for a large-scale project on 'Universal grammar and language typology', with tense-mood-aspect as one of the fields of research. The Swedish Research Council for the Human and Social Sciences was wise enough to ask us to concentrate on one area. For partly accidental reasons, the subject chosen was the categories of tense, mood, and aspect. Between 1978 and 1982 the Research Council supported the investigation financially. After that time, continued computer processing of the material was made possible by grants from the Faculty of Humanities at the University of Stockholm.

I want to express my gratitude here to those people in Göteborg and Stockholm who were active in the project in one way or another: Karin Aijmer, Lars-Gunnar Andersson, Sally Boyd, Kari Fraurud, Pierre Javanaud, Masha Kopchevskaya, Dora Kós-Dienes, Liisa Karhapää, Kerstin Nauclèr, Maria Toporowska Gronostaj. Dora Kós-Dienes, being the only person ever employed within the project on a more regular basis, should receive special mention: she carried out the bulk of the data collection and analysis work, and I wonder if we would have got through without her unfailing enthusiasm.

Between 1977 and 1985, the role of the computer in linguistic research has changed from being used only by a few specialists to being a necessary tool for almost everyone. In our case, the project was computerized, so to speak, in mid-time. In retrospect, it is hard to see that we could have got anywhere without that. Benny Brodda, Christian Sjögreen, and Carl-

Wilhelm Welin should be gratefully mentioned as those who gave us the necessary help to get the computer analysis going.

Draft versions of the book or parts of it were read and commented on by Bernard Comrie, Casper de Groot, Tore Janson, Dora Kós-Dienes, Nils-Bertil Thelin, and Hannu Tommola. To the extent that I have managed to express myself clearly enough to make myself understood, it is largely thanks to them; none of them should be held responsible for the final result, however.

An investigation which is based on data from as many languages as ours has to rely on the help of many people in different places. In addition to the people otherwise involved in the project, thanks for help in organizing the collection of questionnaires for not so easily obtainable languages are due to Eva Ejerhed, Dick Hudson and Digvijay Singh. In addition, I want to thank the following people, who served as informants and/or investigators for particular languages: Hamid Ahmed Mahmoud (Beja), Fathi Talmoudi (Arabic), Josef Porat and Jan Retsö (Hebrew), Dominic Buttigieg (Maltese), Leo Lindblom and Fessahaie Ghebrezghi (Tigrinya), Tesfaye Alemayehu (Amharic), Valerie Pines, Intizar Salehova (Azerbaijani), Guürel Eğecioğlu (Turkish), Chieko Fujio-Düring (Japanese), José Larraí'n (Quechua), Pedro Monges (Guarani), Barnabas Roberts (deceased) and M.C. Sharpe (Alawa and Bandjalang), John and Ida Wolff (Cebuano), Peter Sengkey (Indonesian, Bugis Makassar), Stephanus Setiabrata (Javanese), No'eau Warner (Hawaiian), Winifred Bauer and Bill Parker (Maori), Shukia Apridonidze, Vilena Jojna, Lily Goksadze, Iza Bakradze, Dali Sakhokia (Georgian), Michaeal Fortescue and Robert Petersen (West Greenlandic Eskimo), R. Morris and E. Alldrich (Afrikaans), Joyce Hudson and Bernadette Willian (Fitzroy Crossing Kriol), Folke Freund (German), Bo-Lennart Eklund and Michalis Zervor (Modern Greek), Lluís Solanes i Poch (Catalan, Spanish), Jean-Michel Saury (French), Pier Marco Bertinetto (Italian), Gabriella Serban (Romanian), Francisco Lacerda (Portuguese), Anna and Arne Hult and Iskra Jordanova (Bulgarian), Jarmila Panevová and Ivana Seidlová (Czech), Elena Dahl (Russian), Clifford Abbott, Melinda Doxtator, Rebecca Ninham, Mary Jordan and Flora Skenandore (Oneida), Thomas McElwain (Seneca), Elisabet Engdahl and Panit Chotibut (Thai), Jan-Olof Svantesson (Kammu), Pamela Gichangi (Kikuyu), Maseephu 'Muso (Sotho), Tsokolo Muso (Zulu), Magdalena Wichser, David Sagnon, Oty Sori (Karaboro), A.P. Omamor (Isekiri), Ingela Ökvist and Morakinyo Akintofolarin (Yoruba), Suleyman Njie (Wolof), Liao Qiuzhong, Chen Ping, Wang Juquan and Zhou Huanchang (Chinese), Diana Krull and Katrin Maandi (Estonian), Orvokki Heinämäki and Marja Leinonen (Finnish), and Istvan Kós (Hungarian).

Over the years, I have had occasion to discuss tense and aspect with a great number of people: it would not be of any use to try to enumerate them all, but thanks are extended to them collectively, as also to all the

people who should have been on the lists above, but who are not, due to faulty memory or book-keeping. Finally, thanks to the staff of Blackwell, for shortening the final phase of this eight-year undertaking by publishing this book quickly and efficiently.

Although the aim of this book is to convey a general picture of what tense-aspect systems of human languages are like, it is not a general introduction to the study of tense and aspect. For this reason, relatively limited attention will be paid to explaining basic concepts and surveying earlier work. Anyone who feels dissatisfied with this is referred to Bernard Comrie's excellent books in the Cambridge Textbooks in Linguistics series (see the bibliography).

Abbreviations

Labels of cross-linguistic category-types

ALREADY	p.129
CONCL	p. 95
DEFAULT	Default category (p. 19)
DEFAULTd	Default category, dynamic contexts
DEFAULTs	Default category, stative contexts
EXPER	EXPERIENTIAL (pp. 139-44)
FRAMEPAST	pp. 148-9
FUT	FUTURE (pp. 103-11)
FUTi	FUTURE, applies only to IPFV contexts
FUTs	FUTURE, applies only to stative contexts
HAB	HABITUAL (pp. 96-7)
HABG	HABITUAL-GENERIC (pp. 97-100)
HABPAST	HABITUAL-PAST (pp. 100-2)
HABPASTc	HABITUAL-PAST, used also as a counterfactual
HEST	HESTERNAL (p. 126)
HOD	HODIERNAL (p. 125)
IMMED-PAST	IMMEDIATE PAST (p. 127)
IPFV	IMPERFECTIVE (p. 69)
IPFVd	IMPERFECTIVE 'Slavic style' (p. 69)
NARR	NARRATIVE (p. 113)
NOW-TENSE	NOW-TENSE (pp. 95, 176)
PAST	PAST (p. 115)
PASTd	PAST, applied only to dynamic contexts
PASTi	PAST, applied only to imperfective contexts
PASTn	PAST, non-narrative
PASTs	PAST, applied only to stative contexts
PFCT	PERFECT (pp. 129-39)
PFCTq	PERFECT/QUOTATIVE (p. 130)
PFV	PERFECTIVE (pp. 69-89)
PFVd	PERFECTIVE 'Slavic style'
PLPFCT	PLUPERFECT (pp. 144-7)
POSTHOD	POST-HODIERNAL (p. 126)
PRED	PREDICTIVE (p. 110)
PREHOD	PRE-HODIERNAL (p. 125)
PRES-PROG	PRESENT PROGRESSIVE (p. 94)
PROG	PROGRESSIVE (p. 90-5)
PROSP	PROSPECTIVE (p. 111)
QUOT	QUOTATIVE (pp. 149-53)

REM-PAST	REMOTE PAST (p. 175)
RESUL	RESULTATIVE (pp. 133-5)
STAT	STATIVE (p. 29)
VOL	VOLITIONAL (p. 161)

'<' before a category label means that the set of contexts in which the language-specific category is used is included in the normal distribution of the cross-linguistic category, although the fit is not good enough.

'?' after a category label means that the identification is uncertain.

Marking types

M	Morphological
P	Periphrastic
U	Unmarked

Other abbreviations used in the category tables

Adj.	Adjective
Aor.	Aorist
Aux.	Auxiliary
Cont.	Continuous
Cop.	Copula
Dep.	Dependent
Impfct.	Imperfect
Impfv.	Imperfective
Inf.	Infinitive
Pass.	Passive
Pred.	Predicative
Pres.	Present
PrP	Present Participle
PtP	Past Participle
V	Verb

Sentences from the TMA questionnaire are referred to as follows: (Q.nnn) or (Q.nnn:XY), where nnn is the number of the sentence in the questionnaire and XY is the code of the language into which the sentence has been translated.

1

General background

> Our ordinary language shows a tiresome bias in its treatment of time. Relations of date are exalted grammatically as relations of position, weight, and color are not. This bias is of itself an inelegance, or breach of theoretical simplicity. Moreover, the form it takes – that of requiring that every verb form show a tense – is peculiarly productive of needless complications, since it demands lip service to time even when time is farthest from our thoughts.
>
> (Quine 1960, 170)

Depending on one's inclinations, one may agree or disagree with Quine concerning the 'tiresomeness' of the property of English he is referring to; it is indisputable, however, that in many languages the speakers are forced by the grammar to pay constant attention to time reference in order to choose correctly among the forms traditionally called 'tenses'. Likewise, it is equally or even more common that speakers have to choose among different forms called 'aspects' and 'moods', the semantics of which tends to be even more elusive than that of tenses.

Tenses, moods, and aspects – henceforth 'TMA categories' – belong to the things in one's native language that one tends to take for granted, and often, they have only attracted the attention of grammarians who have had to explain the use of such categories in one language to speakers of another language in which the system is different. However, since the semantics of TMA categories is connected with concepts that are fundamental to human thinking, such as 'time', 'action', 'event', philosophers have often had occasion to reflect upon their use. In recent years, as the scope of general linguistic theory has widened, there has been an upsurge in studies of TMA systems, where the insights of earlier traditions have been exploited. Still, most such studies build on limited data bases, even when they make universal claims. Some languages have had their TMA systems described in hundreds of monographs and articles; yet it is usually impossible to know to what extent the claims and the

conceptual apparatus of these works can be extended to other languages. Most extant descriptions of the world's languages contain almost no information at all about the use of TMA categories except for the labels that the grammarian has chosen to apply to them. Even if these labels are not just taken over from school grammar – as is often the case – the terminology tends to be too idiosyncratic to warrant proper comparisons with other languages, and the few examples given are more often than not of little help, too.

This book is the outcome of a research project whose aim was to remedy the situation we have just described by creating a data base containing comparable data on the TMA systems of a large number of languages. Thus, the book is a report of a concrete investigation: it contains extensive descriptive material as well as discussions of research methodology. More importantly, however, it aims at conveying a general picture of what a TMA system - primarily, a tense-aspect system – can be like. Expressed in somewhat more ambitious terms, the book is intended to be a contribution to the general theory of tense and aspect, and of grammatical categories in general, based on the analysis I made of data from more than 60 languages collected within the research project. The primary aim of this analysis was to test the hypothesis that the TMA categories that occur in the languages of the world can be reduced to a small set of cross-linguistic category types. In contradistinction to the original project, in which we tried to cover the total TMA field, the final analysis was restricted to tense and aspect categories that occur in affirmative declarative simplex sentences (hence the absence of 'mood' from the title of this book).

A few points about our area of interest should be made right here, although they cannot be developed in detail until later. Even if it is true, as was said above, that TMA categories are linked up with fundamental concepts in human thinking, their study is not co-extensive with the study of temporal, modal and aspectual notions: rather, the former coincides with the latter only in so far as these notions play a role in grammar, i.e. correspond to grammatical categories. If we find that there are cross-linguistic constraints on what notions TMA categories express, plausible explanations to these constraints may be found in limitations on what grammatical categories can be like as well as in properties of human cognitive structures in general. In particular, I shall argue in this book that there are clear differences between those TMA categories that are expressed morphologically and those that are expressed periphrastically, e.g. by auxiliary constructions.

The structure of the book is roughly as follows. In this initial chapter, I shall try to give a general background to what follows, concentrating on some of the fundamental concepts that lie behind the analysis. In chapter 2, I describe in some detail the different stages

of the investigation. In chapters 3–5, the postulated cross-linguistic TMA categories and their manifestations in individual languages are discussed. In chapter 6, a survey of the systems of major tense-aspect categories in the languages of the sample (ordered by genetic groups) is given. Finally, the results of the investigation are summed up in chapter 7.

General semantic and pragmatic considerations

Before going into a discussion of TMA systems, it is necessary to discuss some general theoretical questions which have bearing on our undertaking. Mainly, these are questions of semantics and/or pragmatics: the dividing-line is almost impossible to draw, since the 'meaning' of TMA categories cannot in general be reduced to questions of reference but must be formulated in the broader framework of a theory of language use. When in the following the term 'extension' of a TMA category is used, what is intended is the set of contexts in which the category is found in a language, rather than the set of objects which a term denotes.

Impreciseness and focusing

In this subsection, I shall discuss the two notions of **impreciseness** and **focusing**.

By an imprecise category I mean a category which cannot be defined in such a way that for every member x of its domain (that is, the set of things to which the category can be meaningfully applied), the definition determines a truth-value to the statement that x belongs to the category in question. Instead, even if some members of the domain clearly fall under the category and some clearly do not, there is in an imprecise category a zone in the middle where membership is not clearly defined. In fact, most everyday terms denote imprecise concepts: a classical example is *bald* – it is virtually impossible to define this term in such a way that there will be no unclear borderline cases.

The notion of impreciseness can be extended in such a way as to be applied also to cases where 'membership of a set' is not – at least at first sight – immediately applicable. In particular, when talking about grammatical categories, it may often be more natural to speak of the impreciseness of the borderline between the cases when the category can or should be used (e.g., the cases when, say, the Past tense in English can or should be used) and the cases when it cannot. This will have little or no bearing on the logic of the notion of impreciseness, however.

The notion of an imprecise category or concept has been referred to by several different names in the literature. Philosophers usually refer to the notion by the term 'vagueness', although this probably does not correspond to the most common use of the word *vague* in everyday language (to say that someone expresses himself in a vague way usually means that he does not give very specific information on a subject). Recently, the term 'fuzziness' has become popular in connection with the development of 'fuzzy set theory'. Below, I argue that 'fuzzy set theory' does not provide us with an adequate logic for imprecise concepts and I outline an alternative treatment.

Another notion that has played an important role in recent discussions of cognitive structures is that of a 'prototype'. Underlying this notion is the idea that concepts are best understood in terms of a description of what the 'best exemplar' of the concept or category is like. There is a clear and direct relation between this and imprecise categories: speaking of 'the best exemplar' presupposes that not all members of the category have the same status – the extension of a category has to have a 'focus' and a 'periphery', where those entities that belong to the periphery will have a more or less dubious membership. In fact, one could say that the weakest formulation of the main claim of prototype semantics is just that concepts are generally imprecise. A stronger version of the theory would say that there are differences in status even among those entities that are clearly within the extension of the category. For instance, it has been argued that members of a category like 'birds' differ in 'typicality' – sparrows are more typical birds than penguins, although there is no doubt that a penguin is a bird. We shall therefore introduce the term **focused** category for those categories the extensions of which have a definable focus (or alternatively, several foci), admitting, however, that this property will in most cases coincide with impreciseness.

We shall now discuss in more detail, and with some degree of formality, the underlying logic of impreciseness and focusing.

Suppose we have a universe of discourse U consisting of a set of persons, and consider some predicates that we could use to describe the members of this set. To start with, consider a description such as 'x is male'. For most practical purposes, this can be regarded as expressing a precise concept: that is, for every member of the set, it is possible to state definitely whether he/she is male or not. Let us now do the following: (i) assign one of the numbers 1 and 0 to the members of the universe of discourse, accordingly as the predicate under discussion is true of them or not; (ii) order the members of U in such a way that those who have been assigned 1 precede those who have been assigned 0. The result might be depicted as in figure 1.1.

If we have an imprecise predicate – say *bald* – on the other hand, there will be a subset of the universe of discourse which cannot be assigned 1 or 0, at least not for the time being. Thus, we cannot use

Figure 1.1

figure 1.1 as a representation. We might instead use figure 1.2, where the unclear cases are in the middle.

Figure 1.2

Assume, for the sake of discussion, that the only criterion for judging the baldness of a person is the number of hairs on his head, but that there are different options as to where the borderline goes, that is, that the maximal number of hairs that a bald person can have is not defined (although it is known to be greater than zero). (These are the assumptions that underlie the old 'Paradox of the Bald Man'.) In such a case, we know that if we decide that a person x is bald, we must also assume, in order to be consistent, that any person who has more hairs than x is also bald. What this means is that we can break up the middle group into smaller ones, which are ordered relative to each other in such a way that assigning baldness to a group entails assigning baldness to all other groups to the left of it (see figure 1.3).

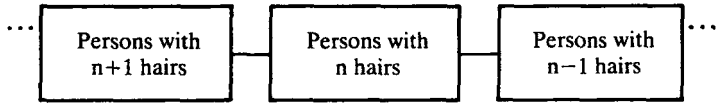


Figure 1.3

One important point about the kind of impreciseness that we are discussing is that we can reduce it by choosing a more precise concept, i.e. we can assign a truth-value to some or all of the elements of the set C. Let us say that a concept Q1 is a **sharpening** of concept Q2 if all elements with determinate truth-values relative to Q2 have the same truth-values relative to Q1 and in addition at least one element with undefined truth-value in Q2 has a determinate truth-value in Q1. Two possible sharpenings of the concept of baldness are shown in figure 1.4.

We see that the diagram so to speak shrinks when the concept is sharpened. We shall give a more formal characterization of what happens shortly. First, however, let us introduce the distinction

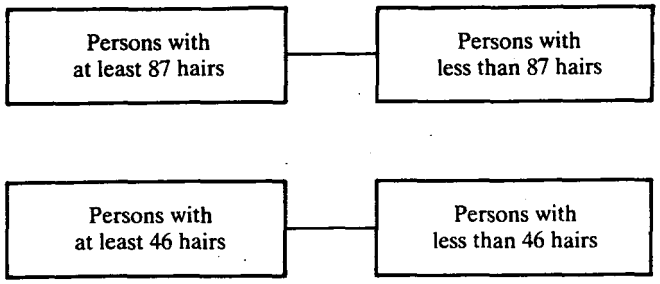


Figure 1.4

between **one-dimensional** and **multi-dimensional** impreciseness. Baldness, understood as above, is a paradigmatic case of one-dimensional imprecision – the imprecision consists in an indeterminacy as to where a borderline is to be put on a one-dimensional scale. Consider now instead the concept of 'being Swedish'. There are of course plenty of clear cases: on one hand, persons who are born and live in Sweden, who speak Swedish and have Swedish parents etc.; on the other, people who have nothing to do with Sweden at all. But consider e.g. a person who was born in Sweden of Swedish parents but who has lived in the United States all his life, is a US citizen and does not remember a word of Swedish. We immediately see that the problem here is of another character: we do not know which of a number of criteria should be decisive, and there is no way of reducing 'Swedishness' to a one-dimensional scale. Nationality words are thus paradigmatic cases of multi-dimensional impreciseness.

Discussions of impreciseness, whether under the name of vagueness, fuzziness or whatever, often concentrate on one-dimensional impreciseness, although multi-dimensional impreciseness is at least as interesting, and furthermore can be regarded as the more general concept, of which one-dimensional impreciseness is just a special case.

In the case of multi-dimensional impreciseness, we need a more complex representation than what we had in the simple case exemplified in figure 1.4. In order not to complicate things more than necessary, let us confine ourselves to two-dimensional cases. If we simplify the concept of being Swedish in a way similar to what we did with baldness, we might assume that the only two criteria that are of importance for judging a person's nationality are his present citizenship and his place of birth. Let us call the propositions that each of these criteria hold p and q, respectively. We then get four logical possibilities, which we can denote by p_1q_1, p_1q_0, p_0q_1, and p_0q_0, according to the respective truth value of p and q. Of these, the cases where both criteria go the same way – p_1q_1 and p_0q_0 – are clear cases:

in the first, the imprecise category holds, in the second, it does not. The other two cases – p_1q_0 and p_0q_1 – constitute the fuzzy area: if someone is a Swedish citizen but was not born in Sweden – or vice versa – we could decide either way. Since each of the criteria can be accepted or rejected independently of the other, they cannot be said to be ordered relative to each other, and the diagram would have to look like figure 1.5.

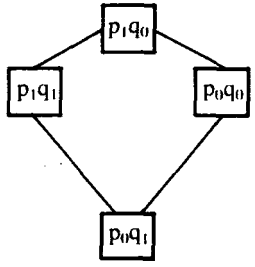


Figure 1.5

This structure is a simple example of a formal object called a **lattice**. (In fact, figures 1.1–2 are also lattices, but of too trivial a kind to be good illustrations of the concept.) Lattices are well-known structures in mathematical logic. They – or more specifically, the kind of lattices known as **Boolean algebras** – can be used to represent e.g. both set-theoretical and truth-functional relations. I shall claim without formal proof here that the logic of imprecise concepts can also be treated in terms of Boolean algebras, with the nice consequence that all the familiar properties of such algebras can be assumed in the discussion.

Let us now return to the concept of sharpening. Call the category in figure 1.5 C0. Figure 1.6 then represents the possible ways of successively sharpening C0.

We are now in a position to fulfil the promise to give a formal characterization of a sharpening. In terms of lattice theory, a sharpening of a concept A into another concept B is a **homomorphism** from the Boolean algebra representing A into the Boolean algebra representing B. A homomorphism, basically, is a function which preserves the relations between the elements in the algebra. As we have already said, sharpening a concept means that the lattice that represents it 'shrinks'. The final result will always be the minimal two-element lattice of figure 1.1 which represents a precise concept.

Looking closer at the sharpenings in figure 1.6, we see that all the sharpenings have as a consequence that C0 is reduced to a one-dimensionally imprecise category. Of particular interest are the lattices C1–4, in which the cells 2 and 3 are ordered with respect to

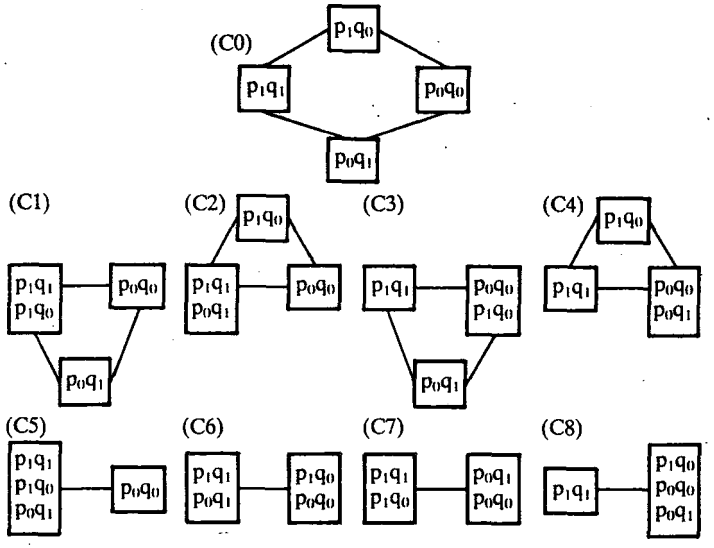


Figure 1.6

each other. We shall say that in such situations, one criterion is **dominant** relative to the other. More precisely:

> a property p is dominant relative to a property q in the category C iff no entity can be included in the extension of C which has q but not p.

A concrete example will illustrate what this will mean in practice. Suppose for example that C0 is the interpretation of *Swedish* and that p and q mean 'is a Swedish citizen' and 'was born in Sweden', respectively. As long as we have not sharpened C0 in any way, these criteria are equally important. If we go from C0 to C4, however, the result is that the criterion 'is a Swedish citizen' becomes dominant in the sense that it is not possible to include in the extension of C0 any individual that does not have this property: we cannot for instance sharpen C4 into C5. Another way of expressing this is to say that 'being a Swedish citizen' becomes a necessary condition of being Swedish. It may still not be sufficient, though: we may sharpen C4 further into C8, which means that both p and q are necessary for C0: in order to be Swedish, you have to be both a Swedish citizen and born in Sweden. In the same way, we may sharpen C0 into C3, making 'was born in Sweden' the dominant criterion.

Proceeding now to the problem of describing focused categories, we may note that it is often assumed that we can characterize the focus of a category in terms of a list of prototypical properties. For the concept 'bird', for instance, such a list might include 'having wings', 'having feathers', 'being able to fly' etc. The discussion above suggests that the members of such a list of categories may not have equal status – some may be dominant relative to the others. As a concrete example, take the word *man* in English. In its prototypical use, it denotes male adult human beings. We might then suggest that the list of properties corresponding to the prototype of *man* consists of three elements: 'male', 'adult' and 'human'. The extended uses of *man* are characterized by subsets of this list of properties: for instance, *man* may mean 'male human', as in *Man is usually physically stronger than woman*, or just 'human', as in *All men must die*. But it does not seem natural to use *man* in the sense 'grown-up human'. Thus, the properties 'male' and 'human' are dominant relative to 'adult' in the meaning of *man*. We shall see that the concept of a dominant parameter is often relevant in the description of TMA categories. For example, the category Perfective will usually be interpreted as 'perfective' and 'past', although with the first feature clearly dominant.

Let us now briefly return to the theory of fuzzy sets. Fuzzy set theory is a version of set theory which takes membership in a set to be a matter of degree rather than a binary, yes/no question. In technical terms, the characteristic function of a fuzzy set may take any value on the scale between 1 and 0, rather than just the endpoints of that scale. Applying this to imprecise terms, one might suggest that the borderline cases are those where the membership in a category has an 'in-between' value. Thus, someone who is Swedish by birth but not by citizenship might be assumed to belong to the category of Swedes to a degree of, say, 0.75. It seems to me that the idea of explaining imprecision by a theory of this kind is essentially misguided. Its basic flaw is that it confuses indeterminacy with graduality. If one assigns an absolute value to e.g. the Swedishness of the person in question, one creates precision where there is none, and thus entirely misses the point.

The notion of 'basic meaning'

The notion 'basic' (alternatively 'primary') 'meaning' (alternatively 'sense' or 'use') can in fact be interpreted in several ways. To start with, we can look at it either extensionally or intensionally. In the first case, we divide the extension of a term into different regions, one of which we – for whatever reason – look upon as 'basic' or 'primary' with regard to the others. A case in point is the postulation of 'focal' or 'prototypical' uses which are contrasted against 'peripheral' ones. In the intensional case, we might for instance postulate that the 'meaning' or 'sense' of the word consists of several components (features, markers or whatever), one or more of which are then said to be primary or basic with regard to the others. This is the approach we

have taken when we have talked about 'dominant' parameters. It is of some importance to keep these two approaches apart, since – particularly in discussions of TMA categories – the choice of one before the other may very well lead to different consequences. For instance, we shall argue that although the primary – in the sense of prototypical – use of the Future in English involves both 'future time reference' and 'intention', the basic meaning in the sense of dominant parameter, however, is 'future time reference'.

Another difficulty with the notion 'basic meaning' is illustrated by the following example. The extension of *cat* would normally be said to be something like the set of all cats. However, when *cat* is used generically, it might be regarded as referring to a kind or species. Given that the borderline for what is a cat is imprecise, we might get several possible 'kinds' that *cat* refers to, and *cat* might then be taken to be ambiguous. Thus, the kind might be taken to be the species Felis felis domesticus, but it could also be the family that comprises lions and tigers (as in *lions and other big cats*). It would appear natural to say that the former possibility constitutes the 'basic' or 'primary' alternative – it also coincides with the narrowest sharpening which contains only the most prototypical exemplars. However, it is not always self-evident that the 'primary' meaning can be identified with the narrowest delineation of a concept. Consider the word *dog* in English, which may be taken to refer either to the species Canis canis or to the male members of that species. If the situation were quite parallel with that of *cat*, one would classify the narrowest reading – 'male dog' – as the primary meaning of the word *dog*. However, this appears rather counterintuitive: most people would probably feel that this interpretation is secondary relative to the gender-neutral one. The point of the argument is that we may have to identify a 'basic sharpening level' for a concept, which may not be the narrowest possible one, as a simple identification of 'primary meaning' and 'prototypical cases' would imply.

Secondary meanings

Given the notion of a focused category, a 'secondary meaning' ('sense, use, reading, interpretation') could be defined negatively as something that is outside of the focus. (Obviously, we are now taking an 'extensional' perspective in the sense defined above.) If we take the focus to be defined by a set of properties, then the prototype, secondary meanings would, in the simplest cases, be represented by a subset of the prototype, that is, some of the prototypical properties would be present and others not. Secondary meanings would thus be weakened primary meanings, so to speak. Thus, when we talk about lions as being cats, we might be said to see lions as objects that are cats

in a secondary sense since they have only some of the properties of the focal cats. This may be a possible way of accounting for some kinds of ambiguities: I do not think that we can adequately describe typical cases of polysemy this way, however. Rather, the formation of polysemic items should be seen as an active process, which eventually leads to the creation of what could be called **secondary foci** which are characterized by sets of properties containing elements not present in the original prototype. For instance, a film star is no doubt so called because there is some similarity with a star in the primary sense: but the intersection between the properties of a film star and a star in the sky is hardly sufficient to account for how we understand the word 'star' in a film context. The traditional concepts of metaphor and metonym will cover a significant part of this, but there are no doubt other processes.

One powerful mechanism for creating secondary foci and secondary interpretations is what we can refer to as the **conventionalization of implicatures**. Following what is by now standard terminology, I use the term **implicature** (coined by the philosopher H. P. Grice – see Grice 1975) to mean something that can be inferred from the use of a certain linguistic category or type of expression, although it cannot be regarded as belonging to its proper meaning. It should be noted that given a prototype approach to meaning, the borderline between implicatures and meaning proper is much less clear than it may be in other theories, since a prototype is a set of 'characteristic' rather than a set of 'defining' features. What happens when a conversational implicature is conventionalized may be described as follows: if some condition happens to be fulfilled frequently when a certain category is used, a stronger association may develop between the condition and the category in such a way that the condition comes to be understood as an integral part of the meaning of the category. For instance, the tendency for categories like the English Perfect to develop 'inferential' interpretations might be explained in this way (see chapter 5 for further discussion). Another example would be the development of Perfects and Pluperfects into recent and remote pasts, respectively (see chapter 5).

Accidence categories and Gricean principles

In the preceding sections, I have discussed some general problems of semantic description. I now want to turn to issues specific to a restricted class of categories that are exemplified in many if not most natural languages. This class includes categories such as number, gender[1], 'level of formality', but most importantly for us, TMA categories such as the Past tense in English. I shall not try to give precise criteria for what should be included in this list, but shall argue

that the categories I have enumerated have certain interesting common properties that warrant treating them under one heading. There is no standard term for them in contemporary linguistics: 'grammatical category' would be a possibility, but would most naturally be interpreted much more widely. Characteristically, the categories I have mentioned are those that are most often expressed morphologically; it is therefore tempting to refer to them as the class of 'inflectional' or 'morphological' categories; this would be misleading, however, since they may also be expressed in other ways, e.g. by syntactic means, and there may also be inflectional categories which we would not like to include here. In traditional grammar, the term 'accidence' was used for categories that characterized expressions (words, mainly) 'accidentally' or 'contingently' as opposed to 'inherent' or 'essential' features of lexical items. Since this term has lately gone out of fashion, I feel free to usurp it for my purposes; consequently, I dub the categories enumerated above 'accidence categories', preferring this expression to the potentially misleading 'accidental categories' and the clumsier 'categories of accidence'.

Typically, accidence categories can be said to work in the following way. There exist in the language alternative forms, the choice between which is regulated by some parameter pertaining to properties of the objects or situations referred to in the utterance, or of elements of the speech situation, or the relations between the former and the latter. Sometimes, the choice may be dependent upon some feature of the linguistic context. The choice between the alternative ways of expression is typically a 'forced one'; not only in the sense that you have to choose one of the alternatives (or to remain silent) – something that is of course always trivially true when you have to choose between two ways of saying something – but also in the stronger sense that in choosing a certain form you voluntarily or involuntarily convey a piece of information, viz. the information that the conditions for the appropriate use of that form are fulfilled, and at the same time you make a commitment – however implicit – to the truth of that information.

As a simple example, consider the use of the category of natural gender in a language like French. As is well known, every adjective in French must agree with its head noun (if it is attributive) or controlling noun phrase (in other positions). This means that whenever a speaker uses an adjective about a person, he has to make a decision about the sex of that person. Thus, a sentence such as (1.1) carries the information that the speaker is female.

(1.1) Je suis contente 'I am satisfied'

When speaking, we convey information of various kinds, and in various ways. Consider the difference between saying (in English) *I*

am from Sweden and making an arbitrary utterance, say *It's raining*, with a Swedish accent. In both cases, the speaker can be said to convey the same piece of information: that he is from Sweden. In the first case, it is part of his 'intended message': he has himself chosen to make the statement in question with the intention that the addressee should believe that it is true. In the second, on the other hand, it is information that he conveys whether he likes it or not, in view of his imperfect knowledge of English. (We disregard for the time being the possibility that the Swedish accent is intentionally faked or exaggerated.) These are clear examples of the distinction between intentionally and unintentionally conveyed communication. (For a more careful taxonomy of the field, see Allwood 1976.)

Returning to (1.1), we see that the compulsory character of the use of feminine gender for women means that you cannot avoid conveying this kind of information, whether or not it belongs to the 'intended message', i.e. the information that you want to convey. This is so in spite of the fact that, of course, the choice between different grammatical forms is something that can be more easily manipulated than the phonetic features of speech referred to as 'accent'.

The example I chose to illustrate the compulsory character of accidence categories did not concern a TMA category, but what I have said applies with equal force to them. The 'semantic irrelevance' of TMA categories is particularly striking in a typological survey like the present one; in spite of the great similarities between TMA systems in different languages, and the obligatoriness of language-specific categories, there is hardly any distinction in the TMA field which is marked in all languages. Still, in most cases the loss of information entailed by not marking a potential distinction seems to have little or no negative effect on communication. Of course, there are usually optional means of making a distinction, if needed: in practice, however, these means need only be used in fairly infrequent cases.

Formal interpretation rules for natural languages are most commonly given in terms of truth-conditions. Such rules are of the general form:

(1.2) A sentence S is true iff p.

It should be clear from what we have said that the semantics of accidence categories can only partly be accounted for in terms of such truth-conditions; the choice between different ways of marking a sentence by such categories may be only indirectly related to the question of whether it is true or false. For instance, the choice of the Present Perfect instead of the Simple Past in English may render the utterance unacceptable but rarely makes it false. Even if it would be too strong a statement to say that TMA categories have nothing to do with truth-conditions, I prefer to think of them as governed in general

by 'conditions of use'. I also prefer to speak of the 'use' rather than the 'meaning' of TMA categories, since it appears to me that the latter should be restricted to what directly concerns 'the intended message'.

Linguistic communication is commonly supposed to obey some principles like the Gricean conversational maxims (Grice 1975), in particular, his 'maxim of quantity' and his 'maxim of relation':

> Maxim of quantity: Make your contribution as informative as is required (for the current purposes of exchange).
>
> Maxim of relation: Be relevant.

We can see that in a sense (1.1) violates both these principles: it contains information about the sex of the speaker, although this is normally redundant in the speech situation. I think it would be wrong to say that the existence of such cases invalidates the principles, but it is essential to keep in mind that it is a pervasive trait of human languages that they force us to make our messages 'too informative' in various respects, and that accidence categories play an extremely important role in this regard.

Having made this claim, I hasten to make an important modification. I have used the word 'obligatory' several times. It turns out, when you look closer at the facts, that this word is often too strong. For instance, it is tempting to say that the Past tense in English is obligatory in the sense that whenever you talk about the past, you have to use it. However, as is well known, there are certain styles or certain situations when it is perfectly possible to use the Present tense about the past:

(1.3) Suddenly this guy comes up to me and says . . .

We would thus have to modify our statement to say that we normally mark past time reference by the Past tense or that such marking is the 'default' case. This suggests that the characteristic property of accidence categories may be that they are used systematically rather than obligatorily. I think that the fact that most languages seem to have systematic marking of certain semantic features is a non-trivial fact in need of an explanation. In particular, I think it is a challenge to developmental psycholinguistics to explain how it comes about that such principles of systematic marking are usually willingly accepted and learnt (at least seemingly) without great trouble by children at the age of two or three.

One might speculate that we in fact have a need to disregard the Gricean maxims of relation and quantity, resorting instead to more automatized principles of what information to include in the message. In fact, a person who really wants to follow the principle of never saying anything redundant will have to devote a lot of energy to

checking what he is saying. Even if we do not go to such extremes, it is clear that there are quite a few different factors that come into play in determining what is optimal in conversation.

Roman Jakobson (and perhaps someone before him) said somewhere that languages do not differ so much in what they can express as in what they must express. If this is true of anything, it is true of accidence categories. A direct consequence is that we can draw no conclusions from the non-existence of a certain accidence category in a language or an idiolect about the cognitive capabilities of its speaker(s).

One consequence of the above-mentioned properties of accidence categories should be mentioned. The fact that the semantic features involved in accidence categories typically do not belong to the 'intended message' makes it rather difficult to arrive at clear judgements of how many 'readings' one should assign to them. Even if one can isolate a set of factors that influence the choice between two forms, it is not obvious that one is thereby entitled to regard the forms in question as ambiguous. For instance, the choice between the second person pronoun *tu* and *vous* in French depends on at least two factors: (i) the number of persons one is addressing, (ii) the degree of formality of the relation between the speaker and the addressee(s). The question then is: is *vous* ambiguous between 'plural' and 'formal' or perhaps even three-ways ambiguous: 'formal singular', 'informal plural' and 'formal plural'? If we accept the not too implausible idea that *vous* is ambiguous, what then about the English *you*, which can be used in all the cases mentioned but also when it corresponds to French *tu*? Clearly, to resolve such questions, we would have to take into account rather abstract considerations such as the general relevance of the category in question in the language. Thus, a possible position would be that *you* is ambiguous between singular and plural but not between 'informal' and 'formal' since the latter category is not systematically marked in English.

It may be noted that the assumption that there is a universal level of semantic representation at least in its stronger versions, where it is coupled with the assumption that translatability from one language into another implies identity of semantic representation, leads to the consequence that whenever an expression has more than one translation into another language it is ambiguous. Whereas such an assumption can be shown to have rather absurd consequences – any English sentence would e.g. be ambiguous between three or more levels of formality, in view of multiple translations into languages like Japanese where such a number of levels are systematically distinguished – similar claims have been made for e.g. the semantics of tense and aspect, where they are much more difficult to refute.[2]

Different ways of accounting for grammatical categories

Suppose that we have a language where nouns can have two grammatical numbers, Singular and Plural. Let us consider some different possibilities as to the status of the category of number in the grammar of such a language.

(i) We might simply say that there is a parameter Number which has the two values Singular and Plural. Every noun in a text will then be characterized as being either Singular or Plural.
(ii) We might postulate a binary feature, say Plural, which has two values, '+' and '−'. Again, every noun form would be either +Plural or −Plural.
(iii) We might regard Plural as a 'flag' or 'marker' characterizing certain nouns. Singular nouns would then simply be those which lack this flag.
(iv) Plural could be regarded as an 'operator' which applied to a (singular) noun creates a plural one.

It may not be quite easy to see how these alternatives differ from each other in practice – they may appear to be more or less notational variants. However, which one we choose will in fact be crucial for the claims we want to make about the functioning of the grammatical system of the language. First, we may note that (iii) and (iv) differ in one clear respect from (i) – with (ii) as a somewhat equivocal possibility in between – by ascribing a clear asymmetry to the two members of the opposition, since in the former, we treat Singular as being more basic – as the 'unmarked' or 'default' member of the opposition. In the terminology of European structuralism, (i) treats Number as an 'equipollent' opposition, whereas the others treat it as a 'privative' one. Another difference would be that (i) is easier to reconcile with the possibility of having more than two values.

In set-theoretical terms, any of the above alternatives would be equivalent to the postulation of a function from noun forms to something, but this 'something' would be different. The simplest case is (iii): it would involve a function from nouns to truth-values, or alternatively, to the integers '1' and '0', which in its turn is equivalent to a one-place predicate. Case (ii) could be interpreted in the same way, or as equivalent to (i): as a function from nouns to any delimited set of objects.

As we have seen, (ii) and (iii) could be regarded as equivalent. One thing that seems to distinguish them, however, is the possibility of interpreting (ii) in such a way that one allows for cases where the value of the feature is 'zero' or 'not defined'. In set-theoretical terms, this corresponds to the distinction between a total and a partial function: the question is whether the function has a determined value for all members of its domain or not. In fact, (iii) may also be interpreted so

as to allow for partial functions, if we put a restriction on the set of objects to which the flag can be applied.

(iv) is different from all the others in that its co-domain is, like its domain, a set of expressions: it must be regarded as a function from word forms to word forms. The importance of this is that the logic of (iv) is rather different, and in crucial ways more powerful, than that of the other alternatives. Suppose that the grammar defines n binary features or flags for a certain type of expressions. There will in such a situation never be more than 2^n possible combinations of those features, in the same way as a set of n one-place predicates will never yield more than 2^n possible descriptions. A set of operators, on the other hand, can well give rise to an infinite set of objects, since they can potentially be applied recursively, that is, it is in principle possible that an operator gets its own output as input. Also, two operators may apply to one and the same thing in different orders, yielding different outputs.

Thus, whereas the alternatives (i–iii) are representable in terms of monadic predicate calculus, i.e. to a version of predicate calculus with only one-place predicates, alternative (iv) demands a more powerful logic, which we shall refer to as 'operator' logic.

The possibility of representing a theory in monadic predicate calculus is in fact of great importance from the point of view of axiomatization, since monadic predicate calculus, as distinct from predicate calculus in general, is decidable. In principle, this means that we can regard the system as having the properties of an even simpler logic, viz. propositional calculus. Propositional calculus can be regarded as a kind of Boolean algebra, and we can therefore refer to categories that are thus reducible as 'Boolean'. The Boolean character of TMA categories in a binary feature framework is clear already from the fact that since such categories normally pertain to whole sentences, they would, if treated as predicates, be 'zero-place' rather than anything else, and thus be equivalent to propositional variables.

We may illustrate the difference between the 'one-place predicate' and the 'operator' alternatives by making a short digression on the semantics of adjectives. Early treatments of the formal semantics of natural languages translated adjectives into one-place predicates *tout court*. Combinations of adjectives, such as in *small red house*, would then have to be treated as equivalent to conjoined constructions, e.g. *small and red house*, which implies that the order of the adjectives is not important. However, for many cases, such a treatment is not adequate: for instance, *Italian fake money* might be e.g. counterfeit money manufactured in Italy, regardless of what country it is suppposed to be from, whereas *fake Italian money* is counterfeit liras, wherever it is made. To account for such cases, later works (see e.g. Kamp 1975) have treated adjectives as operators, i.e. as functions

from common noun phrases to common noun phrases.

Binary feature models have been extremely popular in recent linguistics, inter alia for the description of TMA categories (cf. e.g. Haltof 1968, Pettersson 1972, Thelin 1978). It is therefore important to consider the inherent limitations of these models[3] and the restrictions they put on what you can do with your system.

If we look at tense logic, which is the kind of logic commonly supposed to mirror the behaviour of tense categories, it is easily seen that it is not reducible to a binary feature model. Tense logicians employ operators such as 'it has been the case at some point in the past that', 'it will be the case at some point in the future that' etc. Complex formulae involving the nesting of several such operators are readily constructed. The translations of these formulae into natural languages tend to be rather unnatural, but it is at least not too hard to find pairs of natural language expressions which differ only in the order in which TMA categories have been applied, e.g.:

(1.4) Many people *have been going to marry* Susan.
(1.5) John *is going to have married* her next week

It thus seems probable that a binary feature model, or anything logically equivalent, cannot account for TMA systems in general. Still, it is of course not excluded that parts of these systems may be described within such a restricted system. In particular, we may note that there seems to be a strong correlation between the possibility of having 'nested' structures and the ways in which the categories in question are marked. Categories of the type traditionally labelled 'inflectional' seldom behave like operators: usually, an inflectional category is applied to a word only once, and order of application does not matter: it is rather improbable that the plural of an accusative noun would be different from the accusative of a plural noun. As can be seen from (1.4–5), periphrastic constructions are not limited in the same way: at least in principle there are no constraints on their nesting possibilities. To a somewhat lesser extent, the same can be said of derivational categories: there is e.g. nothing that disallows nominalizing a denominal verb – in fact, the word *nomin-al-iz-ation* is a case in point. Now, TMA categories are expressed by both inflectional, derivational and periphrastic means, and it can thus be expected that there will be differences in how easily they nest.

But there may also be differences in their need to nest: some categories may have a semantics that is 'binary feature-like' and others may not. If we suppose that languages tend to optimalize the expressive power of its categories, we would then predict that categories with a non-Boolean semantics are in fact more often expressed by periphrastic and derivational means than other categories. 'Every category has the marking type it deserves'. We shall have occasion to test this possibility in the course of the investigation.

It is important to note that what we have been talking about in this section are the limitations of pure binary feature models: that is, models that do not involve any structures that go beyond simple unordered sets of binary features. Any additions to that, such as the introduction of orderings of features or hierarchical relations of any kind, may well enhance the logical power of the system so as to make it 'non-Boolean'. Since at least some of the works mentioned above involve such extra structure, it is not clear that what we say here can be applied to them, and this section should not be seen as providing direct criticisms against these works but rather as an attempt at clarification.

Markedness

The concept of 'markedness' has by now a rather long and complicated history in linguistics, which I shall not try to go into. In the paradigmatic cases, a grammatical opposition consists of a zero-marked member with less specific interpretation which is opposed to an overtly marked member with more specific interpretation, where the overt marking involves the addition of an extra morpheme. English genitive formation could be an example of this:

John: John's

From such clear cases the concept of markedness has been extended in various ways, a development which has gradually led to a situation where the connection with the original, concrete use has become rather weak and where it is assumed that almost any linguistic choice has a 'marked' and an 'unmarked' alternative. I feel that there may be a certain point in terminological conservatism here, and would therefore like to make a distinction between 'unmarked category' and 'default category'. An unmarked category would be such a member of a grammatical opposition that has the less complex or (relative to a given grammatical description) the basic or non-derived form. The term 'default' – well-known from computer terminology – will be used instead of 'unmarked' to express the more general idea of being the alternative that 'is felt to be more usual, more normal, less specific than the other' (Comrie 1976, 111). In other words, 'marked' would be understood as concerning the expression or form of a category, whereas 'default' would rather pertain to its meaning or use.

This usage has among other things the advantage that we can take care of 'paradoxical' cases of marking, such as the person endings in the Present tense of English verbs, where the 3rd person is marked in our sense, since it has the ending *-s*, although it can reasonably be argued to be the default choice relative to the 1st and 2nd persons.

Some important notions in the study of TMA systems

Definitions and impreciseness in science

Impreciseness, which was discussed at length above, is a property of almost all notions or categories used in everyday thinking, and terminological discussions in science often aim at reducing this impreciseness. This is a laudable and necessary activity, but may not be possible to carry to its logical limits. Impreciseness is not always an entirely bad thing: it may be that in order to get rid of it we have to make arbitrary decisions that in fact make the notions we use less useful. Suppose we have two phenomena, A and B, each of which is typically characterized by a set of properties. There may then be various borderline cases between A and B which share some of the properties of A and some of the properties of B. Ideally, we would like to make our notions so precise as to be able to assign each of these borderline cases to either A or B. However, by doing so we may miss the fact that the borderline cases are interesting precisely because they are like A in some respects and B in other respects. Also, they may differ between themselves in having picked out different subsets of A's and B's properties: forcing some of them into A and others into B obscures the fact that they are all somewhere in between. For instance, everyone can tell the difference between a man and a chimpanzee: that we are not able to make up our mind whether some fossil should be regarded as a human or an ape does not diminish the value of the distinction. Similarly, refusing to answer the question whether the English Perfect is a tense or an aspect does not mean that one does not know what tense is and what aspect is.

I think that most concepts are learnt by some kind of ostension: a typical exemplar of the concept or category is pointed out and the learner abstracts from it a prototype, i.e. a list of typical and salient properties of the category. I believe this to be true also of many concepts used in scientific thinking: we learn what a 'subject' is by being exposed to simple examples such as 'Socrates' in 'Socrates runs'. Similarly, we know – or think we know – what a 'tense' is because we know what the Past tense in English is like. Now, in spite of its usefulness, ostension obviously has its pitfalls: if the learner is unlucky, the purportedly typical exemplar turns out to be some kind of very infrequent and freakish variety of the category – the child who meets a Great Dane as his first canine creature may have serious trouble with his concept of dog later on. In the same way, a linguist who studies one language or a couple of languages from a restricted area may be unlucky enough to meet grammatical phenomena that turn out to be very untypical from a universal point of view. An investigation of the kind presented in this book may, if it is successful, sort out the Great Danes from the more common mongrels in our

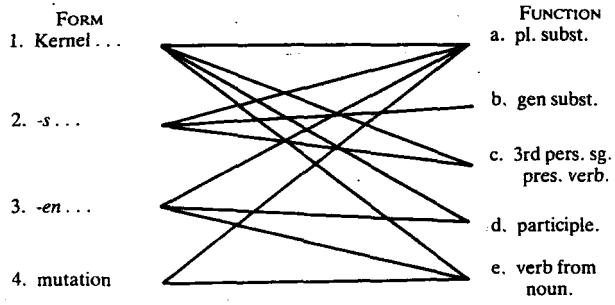
linguistic repertoire. I shall later argue that at least one assumedly 'paradigmatic example' of a TMA category, viz. the perfectivity-imperfectivity distinction in Slavic, is a rather peculiar animal in various respects.

The notions of 'category' and 'grammatical category'

The most fundamental terms are usually the most difficult ones to define. The word 'category' has a wide range of uses in linguistics and related branches of science: this makes it hard to employ it without giving readers various relevant and irrelevant associations. However, there are few alternatives to the term as a label for the units that build up TMA systems, that is, things like the Simple Past in English or the Imparfait in French. Already at this stage some confusion may arise: categories may be defined on different levels, and we could equally well choose to talk of e.g. 'the category of tense' or 'the category of aspect'. Since it is important to our undertaking to be able to treat the individual elements of a TMA system as entities in their own right, the former alternative will be preferred here.

As we have already stressed, the categories that we are primarily interested in are those that play a role in grammar – what could naturally be called 'grammatical categories'. This term, again, is not unproblematic – first, it is also very wide, and could equally well include things like 'subject' and 'object' or say, 'reflexive pronoun', as the categories that interest us here. One might think that 'morphological category' would be more adequate – the Simple Past in English clearly is something that belongs to morphology, but as we shall argue in more detail later, this would delimit our area of study too much. The term 'grammatical category' is problematic from another point of view, too, however: language is commonly thought of as consisting of a level of expression or form and a level of content or meaning, and it is tempting to think that any entity that figures in a linguistic theory must belong to one of these. The view I shall take here, however, is basically that expressed already in Jespersen 1924, viz. that we must assume that grammatical (or as he says, 'syntactic') categories are 'Janus-like' in facing 'both ways, towards form, and towards notion': they 'form the connecting link between the world of sounds and the world of ideas'. The example Jespersen uses happens to be one mentioned in the preceding paragraph, viz. the Simple Past (Preterit) of English, as illustrated in figure 1.7 (Jespersen 1924, 56).

I part with Jespersen, however, in taking the view that it is possible to arrive at a universal characterization not only of semantic or notional categories – as he and many other linguists argue[4] – but also of grammatical categories, that is, the entities on his 'functional' level. The rest of the book is an attempt to substantiate this claim.



Examples. 1a *sheep.*—1c *can.*—1d *put.*—1e *hand.*—2a *cats.*—2b *John's.*—2c *eats.*—3a *oxen.*—3e *frighten.*—4a *feet.*—4e *feed*

Figure 1.7

The notion of 'TMA system' and 'TMA category'

Intuitively, a 'TMA system' is the set of TMA categories of a language. This takes us back to the question of how to interpret the notion 'TMA category', and 'grammatical category' in general. As Comrie (1976, 9) points out, there is a general problem of distinguishing between what is a 'grammatical category' and what is not:

> It is usual to consider the French construction *être en train de* 'to be in the process of' as a free syntactic construction that expresses progressive meaning, rather than as a grammatical category of French, although it is not clear exactly where the boundary-line would be drawn between this and the English or Spanish Progressives, which are usually considered as grammatical categories.

Since 'tenses' and 'moods' are usually thought of as morphological categories, and treated as such in traditional grammars, one might at first sight want to restrict the term 'TMA category' to inflectionally marked categories, excluding 'periphrastic' ones, i.e. categories expressed by syntactic means, e.g. auxiliaries and particles. Some linguists seem to have wanted to take such a step (see Comrie, 1976) although, as I have already suggested, this in my opinion would mean an unwanted delimitation of the field of inquiry, given the frequent cases of functional equivalence of syntactically and morphologically expressed categories across languages and even in one language – cf. e.g. the Latin 'Perfect' tenses, which are inflectional in the active voice but periphrastic in the passive.

An alternative solution would be to regard 'having morphological expression' as one of several features that characterize categories that are 'central' to the TMA system of a language. What I am suggesting is that the TMA system and in general systems of grammatical

categories are 'focused' and 'imprecise', having a centre or 'core' and a periphery, in the same way as an individual TMA category does. In addition to morphological expression, features that plausibly characterize the core categories of a TMA system might include obligatory or systematic use and (something which may be hard to distinguish from obligatoriness) lack of alternative ways of expression. The last-mentioned features would distinguish e.g. the English Progressive, which is obligatory in its typical uses, from e.g. the synonymous but optional and non-unique constructions in Swedish (*hålla på att, sitta och, vara i färd med att*), even if both the English and the Swedish constructions are periphrastic.

What I am suggesting here appears to be consonant with Comrie's view (Comrie, forthcoming) that the difference between 'grammaticalization' and 'lexicalization' 'can be understood in terms of the interaction of two parameters: that of obligatory expression, and that of morphological boundness'.

I shall return to the question of centrality in chapter 7.

The notions of tense, mood, and aspect

When defining the terms 'tense', 'mood', 'aspect', linguists usually choose a semantic point of departure. As a typical example, we may take Comrie's statement (1976, 3) that 'aspects are different ways of viewing the internal temporal constituency of a situation' or his definition (Comrie, forthcoming) of 'tense' as 'grammaticalized location in time'. Such a semantic approach is not entirely unproblematic: as we shall see later in this book, it is not at all uncommon for e.g. categories that are usually regarded as aspectual to be constrained as to temporal reference. In fact (as is also acknowledged in Comrie, forthcoming), in order to use such semantically based definitions in a constructive way, we need the additional assumption that we can determine what is basic and what is secondary in the meaning of a grammatical category.

The notion of dominance discussed above (p. 81) suggests a possible way of delimiting tense, mood, and aspect from each other. As we shall see below, although universal grammatical categories typically combine semantic parameters of temporal, aspectual or modal character, it is in several cases possible to single out one of these as dominant in the sense discussed above. Thus, the category PFV typically combines 'perfectivity' and 'past time reference' – it is clear, however, that perfectivity is subject to less variation than past time reference – and there is thus good reason to regard PFV as a basically aspectual category. In a similar way, we shall see that in spite of recent arguments to the contrary, there is something to the traditional view that future tenses are just that – tenses, rather than modal categories.