A phrase-structure grammar for German passives*

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Abstract

Personal and impersonal variants of the German werden *passives are examined and argued to be (1) subjectless in the impersonal case and (2) lexically formed. A rule introducing these is formulated in GPSG and shown to account for (1) the evidence that indicates that impersonal passives are subjectless, in particular, the behavior of matrix-initial* es*; and (2) the evidence that indicates a lexical rule, in particular (a) the various constituent structures in which passive participles and auxiliaries participate; (b) the admission of lexical exceptions; and (c) the behavior of reflexives in passives (in one variety of German). Illustrative derivations of personal and impersonal passives are provided.*

Introduction

If we identify *passive* constructions as ones in which a notional object may appear as subject, then German has several passives, distinguished by main verb inflection and auxiliary verb:

	PASSIVE PARTICIPLE	+	*werden*
	PASSIVE PARTICIPLE	+	*sein*
sich +	INFINITIVE	+	*lassen*
zu +	INFINITIVE	+	*sein*

(There is likewise a medio-passive construction with the reflexive pronoun *sich*, but this case is complicated by several other possible meanings and isn't as productive as the others.) Having identified the constructions of interest, we won't restrict our attention to just those instances in which we find an actual notional object expressed as subject. Instead, we'll examine all instances of the construction, including those (impersonal) variants which have the form of one of the items in the table above, but in which no subject is expressed.

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This paper examines the *werden* passive (henceforth: the passive) and proposes an analysis. We should note immediately that this construction comes in two varieties, *personal* and *impersonal*, as (1) and (2) respectively exemplify:

(1) Ein Haus wird gebaut.
a house AUX build(prt)
'A house is (being) built.'
(2) Ihm wird gratuliert.
him(dat) AUX congratulate(prt)
'He is (being) congratulated.'

It is easy to predict which variant will occur with a given phrase: if, in nonpassive sentences, the main verb must appear with an accusative NP complement, the personal form is used. If it must appear without an accusative complement, the impersonal variant is used. Those verbs that may appear either with or without an accusative NP complement allow both personal and impersonal forms:

(3) Kein Fleisch wurde gegessen. (cf. Er aß Fleisch
no meat AUX eat(part) he ate meat)
'No meat was eaten.'
Es wurde nicht gegessen. (cf. Er aß
it AUX not eat(prt) he ate)
'No one ate.'

Clearly, any treatment ought to reflect this conditioning. This paper proposes a treatment of passives of the sort exemplified in (1)–(3).

The paper is organized as follows: section 1 argues that impersonal passives are subjectless, and in particular that the (optional) matrix-initial *es* should not be regarded as a subject. Section 2 examines evidence that the passive is a lexical rule; this evidence includes its constituent structure, the possibility of lexical exception, and the behavior of reflexives in passives (in one variety of German). Section 3 provides an introduction to the formal framework, generalized phrase structure grammar (GPSG).[1] Section 4 formulates a passive rule and shows how the rules account for the constituent structure of passives, the behavior of matrix-initial *es*, and the evidence that indicates a lexical rule. The paper concludes with sample derivations.

1. The subjectlessness of impersonal passives

The terms 'personal' and 'impersonal' were probably chosen to describe these two variants of the passive because the former have subjects, while the latter do not. The treatment below assumes that the impersonal passive is subjectless (as is, for example, the construction *Ihm ist zu gratulieren*). This assumption will now be defended. Of course, the claim that impersonals

are subjectless is negative, and as such cannot be demonstrated conclusively. The considerations in this section are offered as illustrative support.

Personal constructions have a nominative subject which controls verb agreement:

(4) Er(NOM) ist hier.
he be here
3-sg 3-sg
'He is here.'

The subject position in personal constructions can function as a controlled position in equi constructions. In (5) the matrix subject *er* is the understood subject of the equi adjunct *ohne ... zu ...*:

(5) Er blieb hier, ohne was zu sagen.
he stay(past) here without anything to say
'He stayed without saying anything.'

Impersonal constructions include the impersonal variant of the *werden* passive, exemplified in (2); an impersonal variant of the infinitival passive, in (6); an impersonal variant of the *sich lassen* passive, in (7):

(6) Ihm ist zu gratulieren.
him(dat) is to congratulate(inf)
'He is to be congratulated.'

(7) Mit ihm lässt sich reden.
with him(dat) let self talk
'One can talk with him.'

as well as at least two sorts of basic constructions: the idiom NP[dat]+PP[an]+*liegen*, illustrated in (8); and some (archaic, though not obsolete) verbs of perception/feeling, shown in (9):

(8) Mir liegt an ihrer Haltung.
me(dat) lie on her(dat) attitude
'Her attitude is important to me.'

(9) Ihn dürstet nach Abenteuer.
him(acc) thirst after adventure
'He thirsts for adventure.'

These constructions have no nominative noun-phrase complement, and their main verbs always use third-person singular marking:

(6′) *Er ist zu gratulieren.
he(nom) is to congratulate(inf)

(8′) *Ich liege an ihrer Haltung.
I(nom) lie on her(dat) attitude
'I lie on her attitude' (implausible with literal meaning; unacceptable idiomatic meaning).

(9′) *Er dürstet nach Abenteuer.
he(nom) thirst after adventure

Although (7) is likewise impersonal, a similar (personal) construction is available:

(7′) Er lässt sich reden.
he let self talk
'He lets himself talk.'

The best indication of the divergence in constructions is the difference in meaning: the passive *sich lassen* (in [7]) denotes possibility, while the personal construction in (7′) is interpreted concessively. I hasten to add that this divergence in the constructions involving *lassen* is recognized as a matter of course among researchers (see for example Reis 1976: 17f; Harbert 1977: 143ff). It is therefore quite fair to generalize and say that no nominative complements appear in impersonal constructions.

It is similarly straightforward to demonstrate that the impersonal constructions involve no number agreement. In each of the sentences (6)–(9), we change the only realistic candidate for subject to plural and note that the verb remains singular.

(6″) Ihnen ist zu gratulieren.
them(dat) is(3s) to congratulate(inf)
'They are to be congratulated.'
(7″) Mit ihnen lässt sich reden.
with them(dat) let(3s) self talk
'One can talk with them.'
(8″) Uns liegt an ihrer Haltung.
us(dat) lie(3s) on her(dat) attitude
'Her attitude is important to us.'
(9″) Sie dürstet nach Abenteuer.
them(acc) thirst(3s) after adventure
'They thirst for adventure.'

There are NO plural impersonal constructions. Thus we never find ... *zu gratulieren sind* (3pl), NP[dat]+... *an X liegen* (3pl), or ... *dürsten* (3pl). We may find examples of *sich reden lassen* (3pl), but these will be examples of personal constructions, and as such will always have concessive meaning, never the possibility-related meaning we found associated with the impersonal construction.

Finally, we note the evidence that impersonal constructions haven't a subject position to be found by equi: NO IMPERSONAL CONSTRUCTION MAY BE USED IN AN EQUI CLAUSE:

(6‴) *Er ging, ohne (ihm/sich) zu gratulieren zu sein.
he went without (him/self) to congratulate to be
*Ihm ist zu gratulieren, ohne (ihm) zu
him(dat) is to congratulate without (him-dat) to
schmeicheln zu sein.
flatter to be
(cf. Ihm ist nicht zu schmeicheln.
him(dat) is not to flatter
'He isn't to be flattered.')

(8‴) *Sie gefällt uns, ohne (uns) an ihrer
she pleases us(dat) without (us) on her(dat)
Haltung zu liegen.
attitude to lie

(9‴) *Ihn hungert, ohne (ihn/sich) zu dürsten.
him(acc) hunger without (him/self) to thirst

Because of the (personal) concessive *lassen*, we may obtain an analogue of (6‴)–(8‴) in (7‴), but we note here, as above, that the possibility meaning associated with the passive is missing, strengthening the case that no impersonal construction may be used in an equi clause:

(7‴) Er ging, ohne mit sich reden zu lassen.
he went without with self talk to let
'He left without letting anyone talk with him.'

(7‴) is clearly concessive in meaning, and thus a personal construction.

Reis (1982: 188ff) strengthens this point, demonstrating that ALL infinitive constructions allow at most nominative complements (subjects) to be omitted. Impersonal passives are shown to differ from sentences with subjects in a range of constructions — syntactically controlled equi complements, for example involving *befehlen* 'order' or *glauben* 'believe'; the pragmatically controlled *ohne ... zu ...* and *anstatt ... zu ...* equi clauses; exclamations of the form *unterstützt werden — welche Wonne!* 'To get supported — what bliss!'; and questions in bare VP infinitive form, such as *Unterstützt werden?* 'Get supported?' Reis's paper concludes that the theoretical concept 'subject' has no purpose (in German) — that it could be replaced with 'nominative complement', so that sentences without nominative complements are subjectless. The conclusion is justified by the fact that this very thorough work turns up no indication that sentences with subjects share any properties with impersonal sentences that couldn't be described in terms of other categories generally held to be necessary in (German) grammar.

Two further points are worth noting in connection with all of the foregoing evidence for the subjectlessness of these constructions. First,

we do not find the same grammatical patterns in constructions which require idiosyncratic subjects. Consider in this connection the verb *regnen* 'to rain', which normally requires the weather pronoun *es*, 'it'. Unlike the genuinely impersonal constructions above, this has a nominative subject — *es* — with which it agrees. This is best evidenced by the unambiguous nominative we find when the verb is used with a cognate subject, as in (10a) and by the plural agreement we see when *regnen* is used metaphorically, as in (10b). Finally, there is no difficulty in binding the subject position in equi constructions, as (10c) witnesses.

(10) a. Der Regen regnete auf alle hinab.
the rain(nom) rain(3s) on all down
'The rain rained down on everyone.'
b. Steine regneten auf die Polizei hinunter.
stones rain(3pl) on the police down
'Stones rained down on the police.'
c. Es hat geblitzt und gedonnert, ohne zu regnen.
it AUX lightning and thunder without to rain
'There was thunder and lightning, but no rain.'

But impersonal constructions allow no subjects, not even cognate or metaphorical ones, and have no subject position to be bound in equi constructions, and so are systematically excluded from these.

This leads us to the second point: the examples in (6′)–(9′), etc., were constructed to probe for any possible subjects. Thus, if there were any subject in (6), then it should be either the *ihm* or some dummy element — but since neither of these is ever available for equi binding, as (6″′) indicates, there must be no subject. In fact, these examples are not merely infelicitous or solecistic; they are gibberish, which is the best one can obtain when forcing real subjects into subjectless constructions.[2]

Having established nominative case marking, controller of person and number agreement, and binding in equi clauses as characteristic of subjects, let us verify that impersonal *werden* passives are indeed subjectless:

(2) Ihm wird gratuliert.
him(dat) AUX congratulate(prt)
'He is (being) congratulated.'
(2′) *Er wird gratuliert.
he(nom) AUX congratulate(prt)
Ihnen wird gratuliert.
them(dat) AUX congratulate(prt)
'They are (being) congratulated.'

*X werden gratuliert.
X AUX(3pl) congratulate
*Er ging, ohne (sich/ihm) gratuliert zu werden.
he went without (self/him [dat]) congratulate(prt) to AUX
*Ihm wurde geantwortet, ohne ihm gratuliert
him(dat) AUX answer(prt) without him(dat) congratulate
zu werden.
to AUX
(cf. Ihm wurde geantwortet
him(dat) AUX answer(prt)
'He was answered.')

As (2') demonstrates, there is no possibility that a nominative complement be present, that the verb show agreement with a plural subject, or that any equi binding take place with any position in the impersonal passive.

Although the facts above concerning case marking and number agreement in impersonal constructions are certainly well known, and although the facts about equi are straightforward, the conclusion that these constructions are subjectless is not frequently made. This stems from the frequent use of *es* in matrix-initial position in impersonal constructions — a most deceptive indication. For example, the impersonal passive in the second sentence in (3) (repeated here for convenience) appears with just this 'dummy' *es*.

(3) Kein Fleisch wurde gegessen (cf. Er aß Fleisch
no meat AUX eat(prt) he ate meat)
'No meat was eaten.'
Es wurde nicht gegessen (cf. Er aß
it AUX not eat(prt) he ate)

This seductively resembles a subject, particularly to English ears (and eyes), used to finding subjects in sentence-initial position, but also to native German speakers, since initial position is a favorite spot for German subjects as well. Note further that the *es* in the second sentence above is identical in form to the nominative/accusative singular neuter pronoun; moreover, verb marking in impersonal passives would agree with third person singular subjects. Despite all these indications, the *es* in the second sentence in (3) probably should not be analyzed as a subject.

The difficulty with taking this as evidence of *es*'s subjecthood is that ANY declarative sentence in German may appear with matrix-initial *es*, including the first sentence in (3):

(3') Es wurde kein Fleisch gegessen.
it AUX no meat eat(prt)
'No meat was eaten.'

Moreover, this *es* and the impersonal passive *es* share a number of peculiar properties. Both are limited to matrix-initial position.[3] Thus

neither may appear postverbally in declarative sentences (11a), in any embedded sentence (11b), in questions (11c), or even in exclamations (11d):

(11)	Es wurde geredet. it AUX talk(prt) '[People] talked.'	Es ist Tom gekommen. it AUX Tom come(prt) 'Tom came.'
a.	*Dann wurde es geredet. then Aux it talk(prt) Dann wurde geredet. then AUX talk '[People] talked then.'	*Dann ist es Tom gekommen. then AUX it Tom come(prt) Dann ist Tom gekommen. then AUX Tom come(prt) 'Tom came then.'
b.	*... ob es geredet wurde. whether it talk(prt) AUX ... ob geredet wurde. whether talk(prt) AUX '... whether [people] talked.'	*... ob es Tom gekommen ist. whether it Tom come(prt) AUX ... ob Tom gekommen ist. whether Tom come(prt) AUX '... whether Tom came.'
c.	*Wurde es geredet? AUX it talk(prt) Wurde geredet? AUX talk(prt) 'Did [people] talk?'	*Ist es Tom gekommen? AUX it Tom come(prt) Ist Tom gekommen? AUX Tom come 'Did Tom come?'
d.	*Geredet wurde es! talk(prt) AUX it Geredet wurde! talk(prt) AUX [People] talked!	*Gekommen ist es Tom! come(prt) AUX it Tom Gekommen ist Tom! come(prt) AUX Tom 'Tom came!'

Let's be careful to note that the behavior of the *es* demonstrated in (11) is entirely different from that of subjects, which occur freely (a) after finite verbs, (b) in subordinate clauses, (c) in questions, and (d) in exclamations. The right side of (11) contains examples of all of these. Any treatment of the impersonal passive *es* as 'dummy' subject will require special stipulations about its thoroughly unsubjectlike syntactic distribution.

But what of the homonymy between the impersonal *es* and the pronoun *es*? Isn't this rather suspicious? In a nutshell, no. The nominative/accusative neuter singular pronoun *es* shares none of the syntactic properties displayed in (11), as is well known. There is therefore no reason to take the superficial similarity of the two words as evidence for the *es* in impersonal passives being a pronoun, much less a subject. (It is probably worth adding that the only useful alternative to *es* in constructions such as [11] is *da* — which is otherwise an adverb.) Let us furthermore conclude that a unified treatment of the *es* in the two sorts of constructions exemplified in (11) would be desirable — that is, we should prefer to account for these common peculiarities.

This leaves only the third person singular form of the impersonal passive as putative indication that we ought to find a third person singular

subject for it. But let us note that if we are indeed to favor a unified analysis for the two *es* in (11) then we must *a fortiori* favor analyses which treat the impersonal passive *es* as a noncontroller of number agreement, just as the other, 'presentational' *es* in (11) is. For this *es* demonstrably does not control number agreement:

(12) Es kamen zwei Menschen aus Bern.
it come(3pl) two people from Bern
'There came two people from Bern' or 'Two people came from Bern.'

That is, sentences using the presentational *es* may have either singular or plural verbs. It isn't the presence of this *es* which triggers third person singular number agreement on impersonal passive auxiliaries. But this may lead to a question as to the status of the agreement marking under the account of impersonals as subjectless. Why do we find this agreement — and not, say, second person plural marking? Surely we need not attribute this to an actual third person singular subject; we can equally well regard third person and singular as the unmarked cases — the default values — of the person and number features. Sentences which don't demand other person and number markings end up with these. Examples of the use of this default might include the person and number marking of sentential subjects (third singular), the number of mass nouns (singular), or the person of indefinite noun phrases such as *irgendeiner*, 'someone, anyone'.

2. The lexical nature of the passive[4]

In asking whether the passive rule is *lexical*, we are asking for the category to which it applies — oversimplifying somewhat, we ask whether it applies to words, phrases, or sentences. This section presents arguments that the rule is best formulated as applying to single lexical items (in general words), not phrases. It is in just this sense that we regard it as lexical.

There is as well, of course, a preference (within many theories) that rules with lexical exceptions be lexical rules.[5] Without endorsing this as a principle, we should at least note that the passive does seem to have lexical exceptions:

(13) Es wird heute zu Hause geblieben!
it AUX today at house stay(prt)
'[People] will [have to] stay at home today!'
*Es wird heute zu Hause gewesen.
it AUX today at house be(prt)

Both of these verbs are subcategorized to take predicative phrases, but only *bleiben* may be passivized.

Bresnan (1982) argues persuasively that the English passive must be formulated as a lexical rule. The argument holds equally well, *mutatis mutandis*, in the analysis of German. This argument notes that there is a clearly lexical rule forming adjectives from passive participles (and from [some] intransitive active participles). Thus the participles *geschlagen* 'beaten' and *erschöpft* 'exhausted' may be modified by adjectival intensifiers such as *sehr*, undergo comparative and superlative formation, and appear as the predicative complements of verbs such as *aussehen* 'appear' or *werden* 'become'. The rule of adjective formation is clearly lexical (i) since it produces single words, and (ii) since it feeds the clearly lexical rules creating comparatives and superlatives (assuming uncontroversially that only lexical rules may feed lexical rules). Since the rule of adjectival formation is lexical, and again since only lexical rules may feed lexical rules, it follows that passive ought to be formulated lexically. The argument of course cannot establish the impossibility of any syntactic rule of passive, but it seems to establish that a most frugal system ought to have a single rule of passive producing passive participles — clearly a lexical rule.

Bresnan's argument that the English passive is lexical is buttressed by a careful examination of the proposed implicational relations among basic verbs, passive participles, and passive adjectives and finds confirmation here as well. Höhle (1978) applies Bresnan's lexical approach to German, and the needed relationships seem to hold there as well.

There are further concrete indications of the lexical nature of the rule.[6] First, the combination of passive participle plus auxiliary verb may form a constituent. This is shown by its ability to appear before the finite verb, in general the most reliable test for constituency in German:[7]

(14) *Gebaut werden* müssen noch zwei Häuser.
build(prt) AUX must yet two houses
'Another two houses have to be built.'
Geholfen werden muss ihm.
help(prt) AUX must him(dat)
'He must be helped.'

(Note that the first of these is a personal passive and the second an impersonal.) If passive is a rule operating on verbs to produce passive verbs (in the form of passive participles), then there is no difficulty in allowing constituents of the form PASSIVE PARTICIPLE + AUXILIARY. If, on the other hand, passive applies to sentences (so that it's transformational), or to phrases containing oblique complements (as,

for example, Keenan 1980 advocates), then (14) shows that it will need at least the structure-building capacity of Chomsky adjunction. To the extent that this is undesirable, we should favor a lexical formulation of the rule.

Second, there are apparent exceptions to the generalization noted above that impersonal passives are found exactly with those verbs which do not take accusative objects. It is not always the case that personal passives are found in sentences with verbs which would normally take accusative NPs and impersonals in those with verbs which do not. A sizeable group of speakers accept impersonal passives with accusative reflexive pronouns, such as the following:

(15) Da wurde sich geschlagen.
there AUX self fight(prt)
'People fought there.'

The *sich* in *sich schlagen* would be clearly accusative in other persons. Thus *ich schlug mich mit ihm* 'I fought with him'. This is a puzzling exception to an otherwise very solid generalization if one ignores the lexical status of the operands of the passive rule. Attending to this, however, and noting that *sich schlagen* is a well-known lexical reflexive verb, we readily formulate the proper modification of the rule: impersonal passives are formed of those inputs — possibly lexically complex — which do not take accusative NP complements. Thus *sich schlagen* may CONTAIN an accusative NP, but since it doesn't REQUIRE one, it forms an impersonal passive.

The connection to the lexical vs. syntactic status of the passive is this: we divide up the reflexives (in what is in fact a standard way — see Curme 1922 [1905]: 338; Stötzel 1970: 23–28 or Cranmer 1976: 56–57) into the lexical and the syntactic. There are borderline cases, but many are clear. Now the lexical formulation of the passive rule predicts that passives may be formed only from lexical reflexives, such as the above, and never from syntactic ones, such as the one below:

(16) Er redete von einem Freund von sich.
he spoke of a friend of self
'He spoke of a friend of his.'

This is clearly a syntactic reflexive because it is buried in a modifier of the verb; because its meaning is predictable, given the meaning of its components; and because its meaning is reflexive, not reciprocal, medio-passive, or detransitivized (all of which are found only in lexical reflexives). The prediction that only lexical reflexives may appear in passives seems to be borne out:

(17) *Es wurde von einem Freund von sich geredet.
it AUX of a friend of self speak(prt)

A third and final detail about German syntax (concerning again those speakers who allow the use of reflexives in passive sentences) confirms the lexical formulation of the rule as well. Let us recall that only MAJOR CONSTITUENTS (*Satzglieder*, or 'sentence elements', in the sense of Bach 1962) may be fronted to the position before the finite verb. If we restrict our attention to single clauses, then we may regard 'sentence elements' as simply daughters of VP.[8] Thus a locative prepositional phrase is frontable, but not the object of the preposition alone.

(18) Er lief in dem Haus herum.
he ran in the house about
'He ran about in the house.'
In dem Haus lief er herum.
in the house ran he about
'He ran about in the house.'
*Dem Haus lief er in herum.
the house ran he in about

Besides the simple reflexive *sich*, there exists as well an emphatic reflexive pronoun *sich selbst*, and it may be fronted:

(19) Sich selbst hat er damit helfen wollen.
self self AUX he thus help want
'He wanted to help HIMSELF that way.'

Like the nonemphatic reflexive, this reflexive may appear in passive sentences, too, but then it may not be fronted:

(20) Es wurde meistens nur sich selbst geholfen, und keinen anderen.
it AUX mostly only self self help(prt) and no others
'[People] mostly helped themselves, and no one else.'
*Sich selbst wurde meistens geholfen, und keinen anderen.
self self AUX mostly help(prt) and no others

This indicates that *sich selbst* does not function as a sentence element in passive sentences, which is predicted once it is assumed that the passive operates only on lexical items — that is, where the *sich selbst* is part of a lexical verb. Since passive does not operate on the phrase *sich selbst helfen* — where *sich selbst* would be a daughter of VP — but only on the homophonous lexical verb — where *sich selbst* is a daughter of V, not VP — we can explain this initially puzzling behavior of the pronoun. *Sich selbst* is simply not a sentence element in the passive sentence. (The active sentence where it is fronted indicates that it may be added syntactically,

too, so that the emphatic reflexive, like the unemphatic one, has both syntactic and lexical variants.)

Based on these three details of the syntax of passive sentences, we should favor a lexical formulation of the passive rule: that is, one that operates on individual lexical items, rather than on phrases or sentences.

A caveat about this section may be in order: there is no canonical form for GPSG lexicons, and it would be too ambitious to try to propose one here. The lexical nature of the passive role will be reflected formally by a requirement that the rule apply to verbs before they have been combined with any of their complements. But otherwise the rule is written just like other syntax rules. Dowty (1975, 1978) has argued that in general the form and interpretation of lexical rules is exactly the same as that of syntactic rules, so that the rule may be reasonable just as is. In any case the formulation of rules cannot await a definitive decision on this point; it seems best to proceed.

3. The formal framework

I assume familiarity with the basic features of GPSG,[9] and I shall have occasion to refer to Nerbonne (this volume) for some (minor) modifications which have been adopted here. In order to make the paper as self-contained as possible, however, the most important modifications will be summarized here.

In categorial grammar, derivations proceed from the verb, to which complements and modifiers are added, usually one at a time. We might for example begin with the verb *erzählen* 'tell', to which the (accusative) direct object NP *eine Geschichte* 'a story' may be added, yielding a *partial verb phrase*, *eine Geschichte erzählen*. To this we add the (dative) indirect object *den Kindern* 'the children', to obtain *den Kindern eine Geschichte erzählen* 'tell the children a story', corresponding to the usual VP. We make a further additon to obtain the full sentence. One says then that *erzählen* 'tell' belongs to the category ((S/NPnom)/NPdat)/NPacc — which is read right to left: if we add the element of the category on the right of the slash, we obtain an element of the category on the left. Note that we can read the order in which nominal complements are added from the category label — first the accusative NP, then the dative, and finally the nominative — which is exactly the order that we read right to left in the category label: ((S/NPnom)/NPdat)/NPacc.

Once the category of an element has been specified (in the lexicon), a great deal of its syntax follows automatically in this scheme of things. It is this attractive feature of categorial grammar which I wish to smuggle into GPSG.[10] To this end, *complement features* are introduced; *erzählen* is

listed in the lexicon in the following way:

$$<6, [\begin{bmatrix}\text{PVP}\\ -\text{fin}\\ -\text{NPacc}\\ -\text{NPdat}\\ -\text{NPnom}\end{bmatrix} \text{V}], \text{V}'> \qquad \textit{erzählen, verschreiben, beweisen, ...}$$

This is the class of verbs to which one adds an accusative NP, a dative NP, and a nominative NP to obtain a sentence. Thus the features [−NPacc], etc.

Several remarks are in order here. First, the rule is listed with the lexical class as clarification. The above rule (and several others derived from it via *metarules*; henceforth: MRs) admits lexical items of the class listed.[11] The rule itself is of the same form as syntactic rules; but since it admits single lexical items, its own status — lexical or syntactic — is moot.

Second, the *complement features* [−NPacc], etc., are marked minus for verbs and phrases still lacking the relevant complement, and they are marked plus once the complement has been added. I wish to take no stand on the remaining case — the marking of the feature on verbs and phrases that do not allow the complement. The question may be formulated as follows: should, for example, *helfen* 'help', which takes a dative but no accusative complement, be marked [+NPacc], or should it be unmarked for this feature? My inclination is toward no marking because I believe this can be exploited in the description of (generally) allowable conjunctions, but the matter won't be pursued here. We will (normally) omit complement features marked '+', since this is typographically neater.

Third, the subscript 'PVP' on the rule stands for *partial verb phrase*, which is any verb or phrase lacking the complements required to constitute a VP. The new term is introduced to cover not only verbs such as *erzählen* 'tell' and VPs such as *den Kindern eine Geschichte erzählen* 'tell the children a story', but also phrases with an intermediate number of complements such as *eine Geschichte erzählen* 'tell a story'. Nerbonne (this volume) argues that these intermediate structures may function as genuine constituents in fronted position. It is probably worth noting that the designation is redundant, since missing complements are marked explicitly on all verbs and phrases, but since it is customary to provide a shorthand category label in rules of this type, it is included. By the same token, the designation 'VP' is redundant, standing for [−NPnom] (and otherwise [+COMPLEMENT]); similarly, 'CVP' or *complete verb phrase* is simply 'S', and is [+COMPLEMENT] throughout. The category labels are superfluous, but (I hope) mnemonically helpful. (They are also a bit unorthodox — but this allows rules generalizing over them to be written somewhat more neatly.)

Fourth, in somewhat the same vein, the rule number on the rule above may also be dispensable. Note that subcategorization information (that is, information about missing complements) is explicit in the verb's features (in the lexicon), so that the main purpose of rule numbering is achieved by other means. But lexical classes of verbs are not distinguished only by subcategorization class. Verbs which take identical sets of complements may be semantically distinct. For example, *versprechen* 'promise' and *befehlen* 'order' each requires a dative NP and an infinitival VP, but they differ semantically in that it is the subject of *versprechen*, but the object of *befehlen* that controls the VP complement. Rule numbers may still serve to distinguish these classes and thus serve a purpose.

A further remark is relevant here. If semantic distinctions among verb classes were somehow predictable, one could then eliminate rule numbering entirely and thus completely eliminate the near-duplication of information between rule numbers on the one hand and complement features on the other. Klein and Sag (i.p.) have proposed a system to predict semantics given subcategorization information, and Johnson (this volume) has employed it to suggest the use of complement features WITHOUT rule numbers. If the Klein and Sag proposal is successful, then Johnson's proposed elimination of rule numbers (in connection with the adoption of complement features) is a desirable modification of the system employed here. Caution and the wish to retain a reasonably familiar notation persuade me to retain the standard rule-numbering mechanism.

Fifth, note that complement features are listed vertically in the order in which they are added. In general, we assume that complements are added in a fixed order. (But I recognize the need for some flexibility here. See Nerbonne 1985: 149–151 for a discussion of the extent to which an ordering is required.)[12] Pollard (1984), who proposes a similar incorporation of syntactic information into features on lexical items and phrases, proposes a *stack-valued feature* that is 'popped' to indicate the next required complement.

Sixth, the lexical information is exploited by two very general metarules,[13] which add required complements. These are the following:

Flat adding of complements (FAC)

$$\langle n, [\begin{bmatrix}(P)VP\\(+X_a)\\\vdots\\(+X_i)\\(-X_j)\\\vdots\\(-X_m)\end{bmatrix} Y], F\rangle \rightarrow \langle n, [\begin{bmatrix}(P)VP\\\alpha\ agr\\(+X_a)\\\vdots\\(+X_i)\\(+X_j)\\\vdots\\(1-X_m)\end{bmatrix} Y, X_j \begin{bmatrix}\alpha\ nom\\\alpha\ agr\end{bmatrix}], F(X'_j)\rangle$$

Contoured adding of complements (CAC)

$$<n, [\begin{bmatrix}(P)VP\\(+X_a)\\\vdots\\(+X_i)\\(-X_j)\\\vdots\\(-X_m)\end{bmatrix} Y], F> \rightarrow <n, [\begin{bmatrix}(P)VP\\-mc\\\alpha\ agr\\(+X_a)\\\vdots\\(+X_i)\\(+X_j)\\\vdots\\(-X_m)\end{bmatrix} Y, X_j \begin{bmatrix}\alpha\ nom\\\alpha\ agr\end{bmatrix} (P)VP \begin{bmatrix}-clitic\\(+X_a)\\\vdots\\(+X_i)\\(-X_j)\\\vdots\\(-X_m)\end{bmatrix}], F(X'_j)$$

It will be easiest to illustrate the rules first and then to explain some of their details. With this in mind, let us recall the lexical class given in the *basic rule* (henceforth: BR) above. This is (12.1), to which we apply the FAC MR:

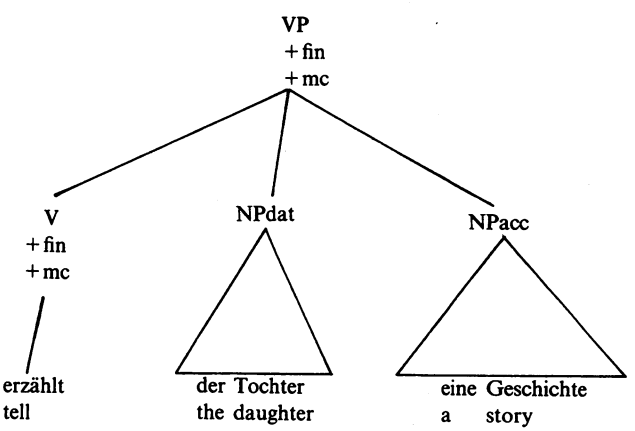
(21) 1. $<6, [\begin{bmatrix}PVP\\-fin\\-NPacc\\-NPdat\\-NPnom\end{bmatrix} V], V'> \rightarrow$ (via FAC)

2. $<6, [\begin{bmatrix}PVP\\-fin\\-NPdat\\-NPnom\end{bmatrix} NPacc, V], V'(NPa')> \rightarrow$ (via FAC)

3. $<6, [\begin{bmatrix}PVP\\-fin\\-NPnom\end{bmatrix} NPdat, NPacc, V], V'(NPa')(NPd')>$

The FAC metarule adds a single complement at a time to the partial verb phrase. Once the complement has been added, it is marked '+' and needn't be listed. Assuming a rule introducing tense (from Nerbonne 1985: 186), (12.3) will admit trees such as the following:

(22)



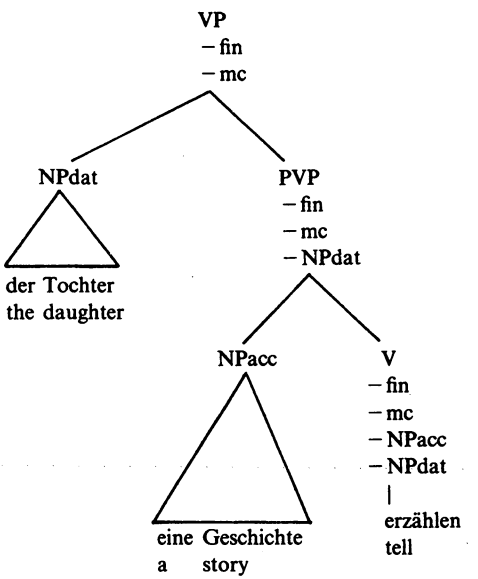
The verb phrase actually used in a sentence such as *er erzählt der Tochter eine Geschichte* will actually be a CVP/NPnom, but it will consist of the same elements as those above. We turn then to an illustration of the CAC MR:

(23) 1. $<6, [_{\text{PVP}}\ -\text{fin}\ -\text{NPdat}\ -\text{NPnom}]$ NPacc, V], V′(NPa′)> (=(21.2))→(via CAC)

2. $<6, [_{\text{PVP}}\ -\text{fin}\ -\text{NPnom}]$ NPdat, PVP$[-\text{fin}\ -\text{NPdat}]$, PVP′(NPd′)>

We illustrate the CAC MR with the same verb, noting that it creates 'contoured', rather than flat trees. The justification of this rule hinges on the use of partial verb phrases in fronted position and is taken up in Nerbonne (this volume).

(24)



We turn then to a discussion of the formalism of the rules FAC and CAC. The formulation assumes that $X_a \ldots X_m$ exhaust the complements required, and that they are added in the order in which they are vertically displayed. In both rules X_j has been added. The category label '(P)VP' is written with a parenthetical 'P' to indicate that the rule applies to both PVP and VP elements, yielding elements of categories PVP, VP, and even CVP. Recall that these labels duplicate information in the complement

features, so that no information is obscured by this vagueness of category specification.

Note that both the FAC and the CAC provide for subject–verb agreement in case the complement being added is nominative. The feature [−agr] is dormant until it takes a positive value (in the rules above, when the complement added is [+nom]). The positive value of [−agr] triggers the values of person and number to agree wherever [+agr] appears.[14] We suppose a rule to the effect that

$$[+\text{agr}] \rightarrow \begin{bmatrix} \beta\ \text{person} \\ \delta\ \text{number} \end{bmatrix}$$

Of course, this assumes that nominative complements — or subjects — are added by these same MRs, so that the nominative complement has no distinguished status among complements. (We don't therefore need to mark each verb [−NPnom] in the lexicon, however, since we may regard it as present by default. We DO have to mark the exceptions to the default in this case, such as *dürsten*, etc.)

The feature [−mc] on the CAC MR is required to prevent the application of this rule to create a constituent consisting of the finite matrix verb and one or more of its complements. The feature [+mc] is present on FINITE matrix clause verbs. Other mechanisms function here as they do in the FAC.

4. The agentless passive

Let us recall the discussion above to the effect that lexical rules be presented in the same formalism in which syntactic rules are. With this in mind, we may proceed directly to a standard formulation of the rule. Passives without agent phrases are presented here. The inclusion of agent phrases should then be straightforward.

Passive metarule

$$<\text{n}, \left[\begin{array}{c} \text{(P)VP} \\ -\text{pass} \\ -\text{fin} \\ (-\text{X}_1) \\ \vdots \\ (-\text{X}_i) \\ \vdots \\ (-\text{NPnom})(=-\text{X}_n) \end{array}\right] \text{X, V}],$$

$$\text{(P)VP}'(=\lambda x_1 \ldots \lambda x_i \ldots \lambda x_n(\text{P})\text{VP}(x_1) \ldots (x_i) \ldots (x_n))>$$

There are two cases. Either the set of complement features for this lexical class includes [−NPacc] as one (X_i), or it does not. If it does,

$$\rightarrow <n, \left[\begin{array}{c}(P)VP\\ +pass\\ +prt\\ (-X_1)\\ \vdots\\ (-X_{i-1})\\ (-X_{i+1})\\ \vdots\\ (+NPnom)(=-X_n)\end{array}\right](P)VP\left[\begin{array}{c}(-X_1)\\ \vdots\\ (-X_{i-1})\\ -NPacc\\ (-X_{i+1})\\ \vdots\\ (-X_n)\end{array}\right],$$

$$\lambda x_1 \ldots \lambda x_{i-1}\lambda x_{i+1} \ldots \lambda x_{n-1}\lambda x_i \exists x_n (P)VP'(x_1) \ldots (x_{i-1})(x_i)(x_{i+1}) \ldots (x_n)>$$

If, on the other hand, there is no complement X_i = [−NPacc], then

$$\rightarrow <n, \left[\begin{array}{c}(P)VP\\ +pass\\ +prt\\ (-X_1)\\ \vdots\\ (+NPnom)(=+X_n)\end{array}\right](P)VP\left[\begin{array}{c}(-X_1)\\ \vdots\\ (-X_n)\end{array}\right],$$

$$\lambda x_1 \ldots \lambda x_{n-1} \exists x_n (P)VP'(x_1) \ldots (x_{n-1}(x_n)>$$

There is an additional implicature of 'intendability' associated with the latter, impersonal passive; Curme (1922 [1905]) explains that impersonal passives seem to denote the actions 'of a free agent'.

Notice that the output of the passive rule is a participial phrase and that no mention has yet been made of the passive auxiliary *werden*, which is introduced by metarule below. Let us examine applications of each of the clauses of this rule before considering how well it accomplishes its task. We first examine an application of the rule to a verb which does take an accusative NP complement, *bitten*, 'to ask (for)'. This is introduced in basic rule (henceforth BR) 8:

(25) $<8, \left[\begin{array}{ll}PVP & V], V'>\\ -fin & \\ -PPum & \\ -NPacc & \\ -NPnom & \end{array}\right.$ *:bitten, betrügen ...*

$$<8, \left[\begin{array}{lll}PVP & PVP & -fin\\ -fin & +pass & \\ +pass & +prt & \\ +prt & -PPum & \\ -PPum & -NPacc & \\ -NPnom & -NPnom & \end{array}\right], \lambda x_1 \lambda x_2 \exists x_3 (V'(x_1)(x_2)(x_3))>$$

The head feature convention will ensure that the (P)VP (and consequently, the V) in subtrees admitted by this rule has the features [+pass,

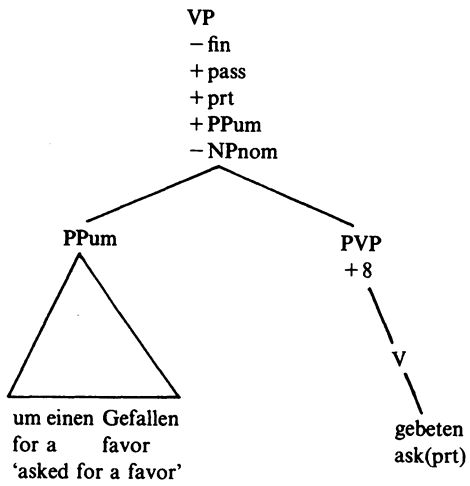
+prt]; that is, that the verb is in passive participial form. But the same convention allows us to dispense with writing the features on the internal node; the same might be said for all the features on the internal node above, save [−NPacc], which is predictable from the tacitly present rule number. We may therefore write the second rule more succinctly:

(25′) $<8, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ +\text{pass} \\ +\text{prt} \\ -\text{PPum} \\ -\text{NPnom} \end{bmatrix} \text{PVP}], \lambda x_1 \lambda x_2 \exists x_3 (V'(x_1)(x_2)(x_3))>$

To appreciate better how this rule functions in the grammar, let us apply to it the complement-adding MR, FAC. We display a subtree admitted by this rule in (27).

(26) $<, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ +\text{pass} \\ +\text{prt} \\ +\text{PPum} \\ -\text{NPnom} \end{bmatrix} \text{PPum, PVP}], \lambda x_2 \exists x_3 (V'(\text{PPum}')(x_2)(x_3))>$

(27)



The order of the subconstituents PPum–V is determined by LP rule:

$$\begin{matrix} X \\ -\text{verb} \end{matrix} < \begin{matrix} V \\ -\text{fin} \end{matrix}$$

Uszkoreit (1982, 1984: 91) first proposed *linear precedence rules* such as those above to describe German word order. The rules responsible for the expansion of PPum do not concern us here. Several other aspects of the tree above will receive comment after we have examined an application of the passive rule to a verb which is not subcategorized [−NPacc] — that is, an impersonal passive. For the sake of variety, we examine a separable prefix verb from class 15 of Nerbonne (1985):

(28) $<15, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ -\text{PPauf} \\ -\text{NPnom} \end{bmatrix}$ PREF, V], PREF + V' > :*eingehen, hinweisen, aufpassen, ...*

(Nerbonne 1985: 159ff defends the treatment of separable prefix verbs implicit in [28]. See Uszkoreit 1984: 123ff for a discussion of this treatment and the proposal of an alternative.) Since this rule doesn't introduce a category subcategorized with the feature [−NPacc], only the impersonal variant of the passive is applicable. Applying this here, we obtain

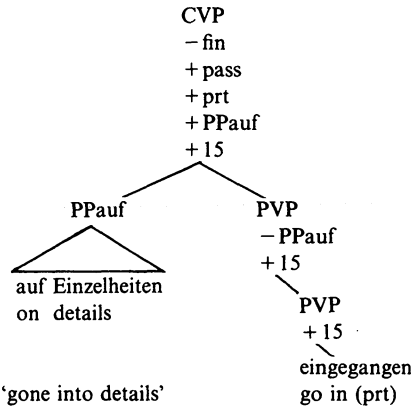
(29) $<15, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ +\text{pass} \\ +\text{prt} \\ -\text{PPauf} \end{bmatrix}$ PVP], $\lambda x_1 \exists x_2 (\text{PREF} + \text{V}')x_1)(x_2))>$

As it stands, the contoured adding of complements MR is applicable here, but we choose to apply the flat adding of complements MR instead. This admits the subtree in (31).

(30) $<15, [\begin{bmatrix} \text{CVP} \\ -\text{fin} \\ +\text{pass} \\ +\text{prt} \\ +\text{PPauf} \end{bmatrix}$ PPauf, PVP], $\exists x_2 (\text{PREF} + \text{V}'(\text{PPauf}')(x_2))>$

Postponing the introduction of the passive auxiliary *werden*, and in the hope that the examples above may have sufficiently clarified the workings of the rules, in particular the passive rule, let us turn to a discussion of their details and motivation. We note first that in making the type of passive dependent on the need for an accusative complement, this proposal reflects the conditioning of the passive rule and thus satisfies the desideratum established in the introduction to this paper. Second, we may note that impersonal passives have no subjects, and that there is no provision for the later introduction of subjects in this passive rule. Compare the tree in (31).

(31)



The generation of passive sentences has been broken down into two stages, the introduction of the passive auxiliary, to be presented below, and the passive rule, above, which creates participial phrases. This was done for two reasons. First, there are passive participial phrases which appear adnominally without the passive auxiliary *werden*. For example,

(32) das vor kurzem gebaute Haus
the recently built house

Although more must be said about tense in their generation, it seems most economical to conceive of these phrases as created by the same passive rule responsible for (1) and (2). But in this case the passive rule must be separated from the rule introducing the passive auxiliary *werden* (which is obligatorily absent from constructions such as [32]). Second, there are conjunction facts which indicate that the participial phrases created by this rule may be constituents to the exclusion of the auxiliary. Thus the (standard) VP without *werden* is subject to conjunction (33a), as are the CVP without *werden* (33b) and the PVP without *werden* (33c):

(33) a. Die Kinder wurden *ins Haus geschickt* und *dem Gast*
the children AUX in house send(prt) and the guest
vorgestellt.
introduce(prt)
'The children were sent into the house and introduced to the guest.'

b. Es wurde *getanzt* und *gefeiert*.
it AUX dance(prt) and celebrate(prt)
'[People] danced and celebrated.'

c. Ihm wurde *geschmeichelt* und *zugelächelt*.
him AUX flatter(prt) and at-smile(prt)
'He got flattered and smiled at.'

Several of the points made in section 2 above about the lexical nature of the German passive are reflected in the present rule. First, recall that the metarule applies to rules to which no syntactic complements have been added. The metarule thus applies only to (rules for) individual lexical items, and not to (rules for) phrases which the syntax has created.

Second, the system allows for lexical exceptions. We noted earlier that the verbs introduced by BR 9, repeated for convenience below, are apparently split vis-à-vis passivizability.

(34) $<9, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ -\text{Pred} \\ -\text{NPnom} \end{bmatrix} \text{V}], >$: *sein, bleiben, werden, ...*

In the present system, this simply means that the feature bundle

$$\begin{bmatrix} +\text{verb} \\ -\text{noun} \\ -\text{fin} \\ +\text{pass} \\ +\text{prt} \\ +9 \end{bmatrix}$$

is instantiated only by *geblieben*, and not by *gewesen* (nor by *geworden*). This is not a principled explanation of the failure of certain verbs to passive — merely the postulation of a system consistent with this failure. If the exceptions are indeed lexical, nothing more is reasonable.

Third, the possibility of *sich* appearing in an impersonal passive is allowed if *sich* is allowed to appear within lexical verbs. In that case, *sich schlagen* would simply be an element of the class introduced by BR 2 — the class of intransitive verbs:

(35) $<2, [\begin{bmatrix} \text{PVP} \\ -\text{fin} \\ -\text{NPnom} \end{bmatrix} \text{V}], \text{V}' >$: *schlafen, lachen, ..., sich schlagen*

The derivation of impersonal passive sentences using these verbs is quite straightforward.[15] Syntactic reflexives could not have been specifically provided for before the passive rule applies, since the passive rule requires that all syntactic complements be missing. We may plausibly assume that the attempt to add reflexives AFTER the passive rule metarule has deformed the original will be successful only in case a suitable nominative antecedent is available. Since nominative antecedents are never available in impersonal passives, no syntactic reflexives may be found there. This explains the ungrammaticality of example (17) above, repeated here:

(17) *Es wurde von einem Freund von sich geredet.
it AUX of a friend of self speak(prt)

A final point regarding the lexical status of the rule may be made before we turn to the introduction of the passive auxiliary. We noted in section (2) that one normally frontable item, the emphatic reflexive *sich selbst*, is not frontable in impersonal passive sentences, even though it may appear there. Again, given the assumption that *sich selbst* may appear in impersonal passives by virtue of its ability to function within the verb as part of a lexical unit, the fronting behavior is predicted. To see this, suppose that *sich selbst helfen*, like *sich schlagen*, is one of the verbs introduced by BR 2 (above). Then the passive rule applies to it to derive

(36) $<2, [\begin{bmatrix}\text{CVP}\\ -\text{fin}\\ +\text{pass}\\ +\text{prt}\end{bmatrix}$ VP], $\exists x_1(V'(x_1))>$

The fronting rule in Nerbonne (this volume) allows that any possible daughter of the matrix CVP may be withheld from the CVP itself and expressed in fronted position. *Sich selbst* isn't frontable in this passive construction because it isn't a daughter of the matrix CVP.

Let us now turn to the introduction of the passive auxiliary, effected by the following metarule:

(37) *Passive auxiliary metarule*

$<n, [\begin{bmatrix}(X)VP\\ +\text{pass}\\ +\text{prt}\end{bmatrix} \ldots X \begin{bmatrix}+\text{verb}\\ +\text{pass}\\ +\text{prt}\end{bmatrix} \ldots], (X)VP'> \rightarrow$

$<n, [\begin{bmatrix}(X)VP\\ +\text{pass}\\ -\text{prt}\end{bmatrix} \ldots X \begin{bmatrix}+\text{verb}\\ +\text{pass}\\ +\text{prt}\\ +n\end{bmatrix}, \text{AUX}+\text{pass} \ldots], \lambda x_1 \ldots \lambda x_n(\text{AUX}((X)VP'(x_1) \ldots (x_n)))>$

Passive auxiliaries include *werden*, and (less frequently), *gehören*. Notice that passive VPs with auxiliaries are marked [−prt] and so are distinguished from the participial phrases introduced directly by the passive rule. The notation '(X)VP' is meant to cover PVP, VP, and CVP — any phrase built up from the verb via the addition of complements. As we saw in (7a)–(7c), all of these may be combined with the passive auxiliary. Johnson (this volume) explores more systematically how modal and auxiliary verbs interact with the gamut of verb phrases.

Two technical remarks are in order. First, note that the head of the construction admitted by the input rule is the passive participle (or the phrase containing it), while the passive auxiliary is the head of the output

rule. This is why the rule must make special mention of the participles features — these are NOT inherited from the mother node in the output rule.

The second point concerns the use of a metarule to introduce auxiliaries. Gazdar et al. (1982: 598) introduce English auxiliaries by rule, and this has become the 'standard' approach. This seems inadvisable in the present instance because we want to ensure that complement features are inherited from input to output rule — exactly the sort of thing metarules accomplish well.[16]

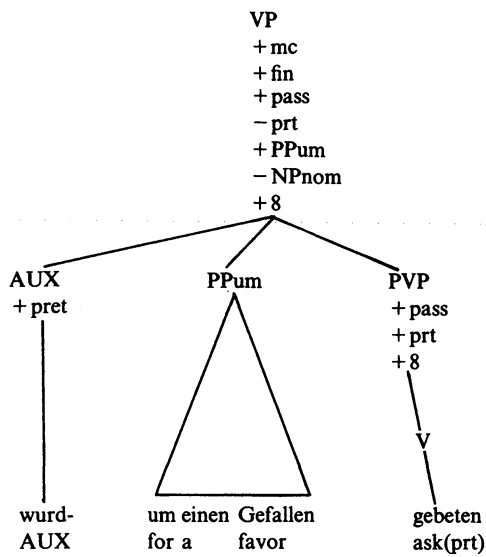
Using this rule, we may immediately extend the subtrees (27) and (31) to VP or CVP phrases. We first apply the auxiliary-introducing metarule to the rule responsible for (27), obtaining

(38) $<8, [\begin{bmatrix}\text{VP}\\ -\text{fin}\\ +\text{pass}\\ -\text{prt}\\ +\text{PPum}\\ -\text{NPnom}\end{bmatrix}$ PPum, PVP $\begin{bmatrix}+\text{pass}\\ +\text{prt}\\ +8\end{bmatrix}$, $\text{AUX}_{+\text{pass}}]$,

$\lambda x_2 \exists x_3(\text{PVP}'(\text{PPum}')(x_2)(x_3))>$

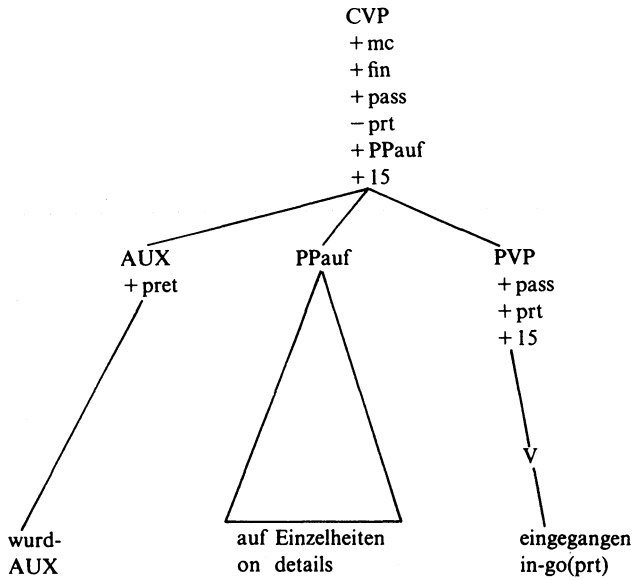
The application of the metarule to the rule in (30) is straightforward enough to be omitted here (we provide the tree [31'] below [27']). In extending the trees (27) and (31), we tacitly apply a tensing MR formulated in Nerbonne (1985: 186).

(27')



'be asked for a favor'

(31′)



'gone into details'

Since the passive auxiliary rule allows the passive auxiliary to combine with PVP phrases as well as 'standard' VPs, it allows in particular that the passive auxiliary might combine with the participle to the exclusion of the participle's complements. Let us suppose that it does so with a verb of the class admitted by BR 4, presented here:

(39) $<4, [\begin{bmatrix}\text{PVP}\\ -\text{fin}\\ -\text{NPdat}\\ -\text{NPnom}\end{bmatrix} \text{V}], \text{V}'>$: *schmeicheln, helfen, gratulieren, ...*

which, given an application of the passive, admits

(39′) $<4, [\begin{bmatrix}\text{PVP}\\ -\text{fin}\\ +\text{pass}\\ +\text{prt}\\ -\text{NPdat}\end{bmatrix} \text{PVP}], \lambda x_1 \exists x_2(\text{PVP}'(x_1)(x_2))>$

This is then a proper input for the auxiliary MR, which yields

(39″) $<4, [\begin{bmatrix}\text{PVP}\\ -\text{fin}\\ +\text{pass}\\ -\text{prt}\\ -\text{NPdat}\end{bmatrix} \text{PVP}\begin{bmatrix}+\text{pass}\\ +\text{prt}\\ +4\end{bmatrix}, \text{AUX}_{+\text{pass}}],$

$\lambda x_1 \exists x_2(\text{AUX}'(\text{PVP}'(x_1)(x_2)))>$

This is the rule which would admit the *geholfen werden* constituent which we took as evidence (in section 2) that the passive ought to be formulated lexically. Without rules introducing modals such sentences cannot be derived here, but the strategy is clear enough. If the dative NP complement were added via the contoured adding of complements metarule, the constituent Participle + Auxiliary would be preserved. If this were a subconstituent of a CVP with a finite modal, it would be subject to the fronting metarule, so that the sentence *Geholfen werden muss ihm* would be derivable. But the details of this derivation cannot be presented here.

To demonstrate the analysis of entire sentences, and the treatment of *es*, let us first note BR 100:

(40) $<100, [\begin{bmatrix}S\\+mc\end{bmatrix}$ X CVP/X], CVP/X′(X′)>

This rule is responsible for all German sentences in which a real phrase (that is, not one of the semantically empty placeholders *es* or *da*) appears before the finite matrix verb. Nerbonne (this volume) presents the rule in more detail. The alternative, the use of *es* (or *da*), may best be described via an additional basic rule:

Es introduction

$<301, [\begin{bmatrix}S\\+mc\end{bmatrix}$ Es, CVP], CVP′>

We could, if we chose, subsume this under the fronting metarule and BR 100, given the appropriate conventions about extracting. In this case, we might be tempted to attribute some complement status to the *es* — perhaps calling it a 'dummy'. The nomenclature is not too significant.[17]

What is significant here is that this treatment analyzes the *es* of impersonal passives and the 'presentational' *es* in a unified way. Both are introduced by the same rule. This is, of course, impossible in any treatment which regards *es* in impersonal passive sentences as a subject. But given their identical and very peculiar properties, tabulated in (11) above, a unified treatment is clearly most desirable.

To conclude, we provide a derivation of one personal and one impersonal passive. Given the rule in (38), we need only add the NPnom to obtain the CVP rule required for fronting or for *es* introduction. We add this using the flat adding of complements MR:

(38′) $<8, [\begin{bmatrix}CVP\\-fin\\+pass\\-prt\\+PPum\\+NPnom\end{bmatrix}$ NPnom, PPum, PVP $\begin{bmatrix}+pass\\+prt\\+8\end{bmatrix}$, AUX + pass],

$\exists x_3(PVP'(PPum')(NPnom')(x_3))>$

This might be used, as is, in conjunction with *es* introduction, to derive sentences such as *Es wurde Herr Schmidt um einen Gefallen gebeten.* Or we may apply the fronting rules (from Nerbonne, this volume), starting with the derived categories metarule and the trace introduction metarule, whose effects are shown in (38″) and (38‴), respectively:

(38″) $<8, [\begin{bmatrix}\text{CVP/NPnom}\\ -\text{fin}\\ +\text{pass}\\ -\text{prt}\\ +\text{PPum}\\ +\text{NPnom}\end{bmatrix}$ NPnom/NPnom, PPum, PVP $\begin{bmatrix}+\text{pass}\\ +\text{prt}\\ +\end{bmatrix}$, $\text{AUX}_{+\text{pass}}]$

$\lambda x_1 \exists x_3(\text{PVP}'(\text{PPum}')(x_1)(x_3))>$

(38‴) $<8, [\begin{bmatrix}\text{CVP/NPnom}\\ -\text{fin}\\ +\text{pass}\\ -\text{prt}\\ +\text{PPum}\\ +\text{NPnom}\end{bmatrix}$ t, PPum, PVP $\begin{bmatrix}+\text{pass}\\ +\text{prt}\\ +8\end{bmatrix}$, $\text{AUX}_{+\text{pass}}]$,

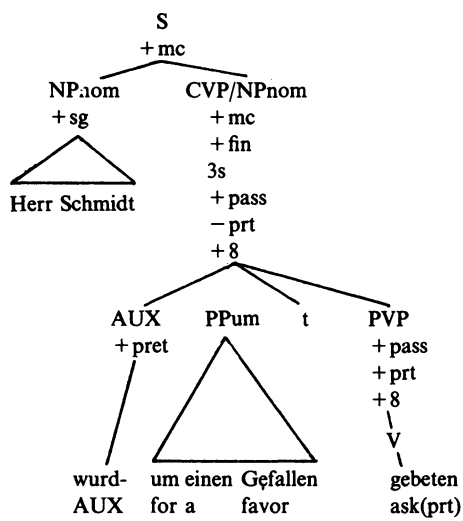
$\lambda x_1 \exists x_3(\text{PVP}'(\text{PPum}')(x_1)(x_3))>$

This may be combined with one instance of schema 100, namely,

(41) $<100, [\begin{bmatrix}\text{S}\\ +\text{mc}\\ +\text{3sg}\end{bmatrix}$ NPnom, CVP/NPnom], CVP/NPnom′(NPnom′)>

to obtain the following tree:

(42)



Herr Schmidt wurde um einen Gefallen gebeten.
Mr Schmidt AUX for a favor ask(prt)
'Mr Schmidt was asked for a favor.'

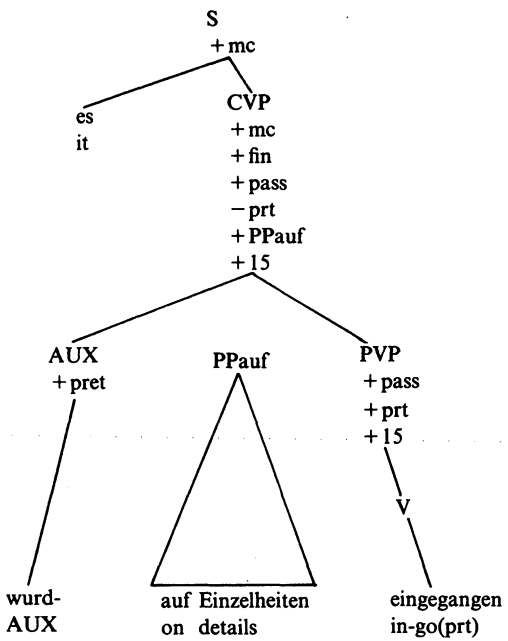
Finally, an example of the treatment of impersonal passives should be helpful. Applying the passive rule, then the contoured adding of complements metarule, to BR 15, we derived (30):

(30) $<15, [\begin{bmatrix}\text{CVP}\\-\text{fin}\\+\text{pass}\\+\text{prt}\\+\text{PPauf}\end{bmatrix}\text{PPauf, PVP}], \exists x_2(\text{PREF}+\text{V}'(\text{PPauf}')(x_2))>$

To this we apply the passive auxiliary metarule (and the tensing MR) to obtain

(30′) $<15, [\begin{bmatrix}\text{CVP}\\-\text{fin}\\+\text{pass}\\-\text{prt}\\+\text{PPauf}\end{bmatrix}\ \text{PPauf, PVP}\begin{bmatrix}-\text{fin}\\+\text{pass}\\+\text{prt}\\+15\end{bmatrix}, \text{AUX}+\text{pass}],$
$\exists x_2(\text{AUX}'(\text{PREF}+\text{V}'(\text{PPauf}')(x_2)))>$

with which the *es*-introduction rule combines nicely:



'gone into details'

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Notes

* This work originated as paper in a course on grammatical relations conducted by David Dowty and Brian Joseph at the Ohio State University, spring quarter, 1983. Thomas Wasow and two anonymous referees also criticized the paper beneficially. It has improved under their criticism, and I am pleased at the opportunity to express my appreciation to them. The usual caveats about attribution apply. Correspondence address: Hewlett-Packard Laboratories, 1501 Page Mill Road, Palo Alto, CA 94304, USA.

1. See Gazdar et al. (1985) for the most recent authoritative exposition of GPSG.
2. The lexical impersonal *hungern* is used personally by many speakers, making it a poor candidate on which to base rebuttal.

   Ich hungere.
   I hunger
   'I am hungry.'

   The impersonal *dürsten* and the idiomatic use of *liegen*, on the other hand, seem ALWAYS impersonal, as do all of the syntactic constructions examined.

   I should like to add that the claim that impersonals are subjectless is quite strong: it implies that no instances of the construction will be found within superconstructions requiring subjects. The alternative to viewing the constructions as subjectless, examined below in this paper, is to view them as having a 'dummy' subject, and then to stipulate that dummy subjects lack all the characteristics of real subjects. But this is to stipulate the properties that may be derived from the postulate of subjectlessness.
3. Curme (1922 [1905]: 338) and Breckenridge (1975) contain discussions of the restrictive distribution of the *es* found in impersonal and 'presentational' sentences.
4. There is an argument in Keenan (1980: 190ff) that purports to show generally that passive constructions may not be described by lexical rule. Roughly, he notes that the set of individuals of whom *was beaten* holds might be identically the set of whom *was kissed* holds, even while the groups *was beaten by Mary* and *was kissed by Mary* are distinct. But, the argument continues, if two semantically equivalent elements (here: the passive verbs) are arguments to the same semantic function, the principle of compositionality requires that the phrases produced also be semantically equivalent. Thus the principle of compositionality requires that passive not be formulated as a lexical (word-level) rule.

   It should be clear that this argument has little force once semantic equivalence is not identified with extensional overlap — for example in all intensional systems. In intensional systems we may simply deny the semantic equivalence postulated above. But it may be less clear that even in extensional systems the argument doesn't force a phrasal solution. The argument assumes that the passive agent phrase has the semantics of a modifier; that is, that it is a function which takes passive verb meanings as arguments. There is no semantic difficulty in regarding it as an argument to which the passive verb applies, however. In this case we merely add the stipulation that an indefinite agent phrase may be understood as an option. (We might regard this as the addition of a 'zero' element.)
5. I believe that this dates back to Bloomfield's conception of the lexicon as a repository of exception, but Baker (1979) is the best-known modern proponent of the view. Baker's view, and especially its implication that lexical rules shouldn't be overgeneralized in acquisition, is criticized in Wasow (1980), who considers the case of morphological overgeneralization.

The force of Baker's arguments is especially unclear in GPSG, where there has not been extensive work on the relation between syntax and lexis.

6. The discussion in the remainder of this section is summarized from Nerbonne (1982).
7. Drach (1939) seems to have been the first to formulate this; Heidolph et al. (1981: 181) is a recent authoritative statement of this view.
8. This may be made explicit in the treatment of fronting in Nerbonne (this volume) in the following way: we regard VP, but not its nonclausal daughters, as capable of bearing a slash feature.
9. See Gazdar et al. (1985) for the most recent systematic exposition of GPSG.
10. Pollard (1984) and Nerbonne (this volume) arrive at this idea independently.
11. Gazdar et al. (1985) explains metarules.
12. One aspect of the issue concerning ordering can be put this way: given the way in which fronting is formulated in Nerbonne (this volume), we expect that a nonfinite verb may be fronted with any initial subsequence of its complements, where 'initial' refers to the order in which complements are added. This means we should find

COMP1 + VERB
COMP2 + COMP + VERB
etc.

but never

COMP2 + VERB
COMP2 + COMP3 + VERB
etc.

There are apparent counterexamples to this prediction, however, as Nerbonne (this volume) notes. Of course, any single counterexample might be analyzed as a 'doublet' — two lexical items identical but for the order of complements. This becomes unattractive as the number of such 'doublets' rises, however.

In order to account for the full range of frontable constituents, a total strict ordering (of the sort assumed in the MRs below, and of the sort which a stack would represent) seems too strong. But we do not find all permutations of complements in these constructions, either. More investigation is needed to determine the facts here and the exact mechanism accounting for them.

It may also be worth mentioning at this point that accounting for the variety of orders may not complicate the sketch here at all. For example, if there were NO required order, this would simplify the MRs below, since we then wouldn't have to require that all complement features above the one to be added have to be marked [+comp]. We then could simply omit them from mention in the rule.

13. From Nerbonne (1985).
14. See Gazdar et al. (1985: 83ff) for the alternative, more current treatment of agreement.
15. Since the agreement of reflexives isn't relevant in the examples here, it is ignored.
16. On the other hand, Johnson (this volume) explores the introduction of auxiliaries via grammar rule, incorporating complement features as foot features.
17. 'Dummy' is normally reserved for placeholding elements, however. Furthermore, since ANY complement or adjunct can appear in initial position (recall the discussion in section 1), I see no justification for calling this a 'dummy NP'. As section 1 details, there is good reason NOT to call it a 'dummy subject'.

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