Attributive Constructions, Scrambling in the AP, and Referential Types

Abstract
This paper argues for four main points that characterize attributive constructions in German: German attributive constructions, i.e. APs, participial constructions and relative clauses, share a common morphosyntactic structure. The traditional (mostly semantic) term 'attribute' can thus be given a common morphosyntactic definition. Secondly, the syntactic structure of attributive structures is quintessentially sentential, i.e. it comprises complex structures which constitute binding domains, shows phase properties etc. Thirdly, given that attributive structures parallel other sentential structures, many operations well-known from other sentence types in German are replicated in the attributive domain as well, most notably information structure-related scrambling. Last, but not least, the analysis of attributive structures supports the assumption that phasal structures cross-classify in a system of so-called Referential Types (RT): RTs define types of structures which, as far as morphosyntactic appearances go, can differ dramatically both within a single language and across different languages. Yet RTs can serve as a valid *tertium comparationis* that allows us to make interesting comparisons and connections both within individual languages and cross-linguistically.
Keywords: relative clause, participle, Case, agreement, phase, probe, scrambling

0. Outline of the article

The paper proceeds as follows: section 1 summarizes the morphosyntactic properties of attributive constructions in German. Special emphasis will be placed on the fact that all complex attributes share a morphological element that has traditionally been described as case, gender and number agreement (*CGN*). Section 2 demonstrates that information structure-related scrambling is attested in both pre- and postnominal attributive constructions. As even attributive APs allow for these kinds of structure, it seems warranted to claim that APs project a fair amount of functional structure. Section 3 then proceeds to give a uniform minimalist analysis for the observed facts, i.e. an analysis that is able to capture both properties common to the different subtypes of attributive structures and their differences as well. In the course of the analysis, the scrambling properties from section 2 will fall out as an expectable by-product of the general structure of 'attributes', insofar as complex attributive structures utilize almost the same set of functional heads as any other sentence in German, i.e. *v*P and TP, differences here being limited to the precise feature composition. For the highest functional layer, the attributive inflection in German will be labeled *CGN* (even though the traditional analysis of CGN as a case, gender and number agreement is explicitly rejected), a phase head that could be described as a 'subordinate D' in a sense to be made precise below. Section 4 then goes on to argue that the proposed functional head is not only necessary to arrive at the analysis proposed in the preceding sections: Rather, CGN is a welcome addition to the set of phase heads from a theoretical point of view, too.

1. Morphosyntactic properties of attributive structures in German

As has long been noted, German attributive constructions show a number of 'sentential' properties that this section of the paper will summarize. What really unites all these structures is that they all seem to form full predication structures internally, realizing whatever structural and referential arguments are provided by their predicate head. Then, however, this predicational structure is integrated into a matrix DP, in order to restrict the set of referents that the modified DP refers to. The common properties of attributive structures (outlined in 1.1.) hence constitute the *raison d'être* of the proposed analysis: Given that so many properties are shared by what looks like very different structures on the face of things, we should try to derive these properties in a way that prevents them from looking accidental.

However, there are differences between the various attributive subtypes, too: Relative clauses can be differentiated from participial structures in that the former, but not the latter, include a full set of φ-features, the set of 'relativizable' arguments is different etc. These properties will be duly noted (in 1.2.), in order to take stock of the potential problems that a unified analysis has to address.

1.1. Common properties of attributive structures

Traditionally, attributive constructions have been defined by the 'additional information' that the structure provides for the modified structure: adjectives, participles and relative clauses all add to the description of the referents, in that the properties encoded in their respective lexical heads are added to the description of the referents of the modified DP as a whole.[1] In many contexts, it is entirely irrelevant which subtype of attributive construction is used, e.g. participial attributes can often closely replicate the function of relative clauses:

(1)

present participle	past participle
die schlafende Frau	*der besiegte Feind*
the sleeping-CGN woman	the defeated-CGN enemy
die Frau, die schläft	der Feind, der besiegt ist
the woman who sleeps	*the enemy who defeated is*
'the woman who is sleeping'	'the enemy who is defeated'

Likewise, relative clauses containing adjectival predicates can be expressed with prenominal adjective structures, and the same set of adverbials can be used:

(2)

die schon etwas ältere Frau	die Frau, die schon etwas älter ist
the already a-little older woman	*the woman who already a-little older is*
'the woman who is already a little older'	

Syntactically, all attributive structures are islands, along the lines of Ross' *Complex NP constraint* (67: 70):

(3) *Wen$_i$ hast du den [Mann [der t_i schlug]] gesehen?
Who have you the man who beat seen
'You have seen the man who beat WHO?' (intended)

*[Den Hund]$_i$ hat [der [t_i überfahrende] Mann] nicht gesehen.
the dog has the running-over man not seen
'The man who ran over the dog did not see it (the dog)' (intended)

Complex attributive constructions also constitute binding domains, i.e. anaphorical arguments are licensed inside the attributive construction, and arguably bound within the structure itself (cf. Fanselow '86):

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[1] In this article, I will disregard the differences for adjectival interpretation pointed out by, e.g. Vennemann & Bartsch '72, as these differences do not lead to any morphosyntactic differences that I am aware of. The differences should be handled by a theory of attributive semantics, which is not the topic of this paper.

(4) der sich selbst sehende Mann
the him-self seeing man
'the man who is seeing himself'

On the morphological side, all attributive subtypes employ one common affix, which is traditionally labelled as a case, gender and number agreement (henceforth, CGN) between the attributive adjective or participle and the head noun. Relative pronouns, but not nouns, seem to employ the same kind of suffix.[2] Consider the table in (5), which compares prenominal CGN (*PR*), postnominal CGN (*PO*), and the suffixes of N (*N*):

(5)

	Masc, Sg PR / PO / N (e.g. 'Mann', *man)*	Fem, Sg PR / PO / N (e.g. 'Frau', *woman*)	Neuter, Sg PR / PO / N (e.g. 'Kind', *child*)	Plural PR / PO / N
Nominative	-r/ -r/ -Ø	-e/ -(i)e/ - Ø	-s/ -(a)s/ - Ø	-e/ -(i)e/ various
Genitive	-n/ -n/ -es	-r/ -r/ - Ø	-n/ -n/ -es	-r/ -r/ various
Dative	-m/ -m/ -e (or – Ø)	-r/ -r/ - Ø	-m/ -m/ - Ø	-n/ -n/ various
Accusative	-n/ -n/ - Ø	-e/ -(i)e/ - Ø	-s/ -(a)s/ - Ø	-e/ -(i)e/ various

Phonologically, only minimal differences between strong pre- and postnominal CGN exist: The former find themselves in an unstressed position, as the word stress is placed on (one of) the syllable(s) preceding CGN. Postnominal instances of CGN occur either stressed or unstressed, depending on the kind of relative pronoun used: relative pronouns such as *der, die, das* have to assign CGN word stress, because these pronouns are monosyllabic. Hence, word stress invariably falls on CGN, resulting in full vowels (i.e. CGN is pronounced [e:ʁ], [ɛs], [e:m], [e:n], [i:], [as]). However, as (5) shows, this only affects the vowel quality, not the consonants. In this sense, the distinctive substance of CGN remains unchanged between stressed instances of postnominal CGN and unstressed instances of prenominal CGN. Also, postnominal CGN can, as a matter of fact, be unstressed in other contexts: There is another relative pronoun, *welcher, welches, welche* etc.[3] This (disyllabic) relative pronoun is stressed on the first syllable, and the second, unstressed CGN syllable perfectly mirrors the strong prenominal suffixes (so that both pre- and postnominally, CGN can be pronounced as [əʁ], [əs], [əm], [ən], [ə], [əs]). These facts warrant the suspicion that CGN, morphosyntactically, could really be the same element pre- and postnominally.[4]

From the morphophonological point, it is interesting to see that the CGN paradigm employs the form *-em* (dative sg. m., dative sg.n.: *d-em, welch-em*). This element is, for the most part, not found in the paradigms

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[2] There is an alternation of strong and weak suffixes, depending on the choice of the modified DP's head. These distinctions are ignored here, as they do not affect the morphosyntactic properties of the element under discussions here. All CGN forms in this paper are taken from the strong paradigm.

[3] Differences between the welch- and the d- type of pronouns are subtle and of no concern here.

[4] The phonological form of the suffixes can be explained by the fact that they developed from demonstrative pronouns.

of nouns.[5] Apart from inflecting prenominal attributes, it occurs in the paradigms of D elements: personal pronouns, relative pronouns and determiners.[6] Morphophonologically, then, CGN seems to be best characterized as a D-related suffix - an assumption I will come back to at the very end of this paper. [7]

1.2. Differences between attributive subtypes

Not all attributes are alike in German: Adjectival, participial and relative clauses differ with respect to a number of properties. These will be contrasted in the following subsections.

1.2.1. Relative clauses

Relative pronouns, as shown above, can be analysed to be suffixed with CGN. However, unlike prenominal attributes, CGN on relative clauses need not agree with the modified noun: the relative pronoun's case is determined by its function inside the relative clause, while the modified noun's case depends on the matrix sentence.

Relative clauses always comprise a finite verb in German. The verb can project all its arguments, including nominative subjects and accusative objects, which sets apart relative clauses from all other subtypes of attributive constructions: No prenominal structure can project an (overt) nominative subject, and only present participles can project accusative objects. Any proposed analysis hence has to be able to account for the fact that only relative clauses are unrestricted with regard to the projection of (overt) arguments.
Furthermore, it is only relative clauses that allow for any argument, and even adjuncts to be relativized:

(6) der Garten, [[in den] ich gehe]
the garden into which I go
'the garden I enter'

*der [(in den) (ich) gehende] Garten
the into which I going-CGN garden
'the garden I enter' (intended)

Thus, the analysis has to explain why German pre- and postnominal attributes behave differently with regard to the accessibility hierarchy of relativizable arguments (cf. Comrie '82).

As has long been noted, relative clauses, in German, are prone to extrapose to the right periphery of the sentence, whenever they are phonologically 'heavy' (cf. Behaghel '23-'32). As a matter of fact, sufficiently 'heavy' specimen often sound awkward in their base position. On the other hand, extraposition is entirely restricted to postnonimal relative clauses. Prenominal attributes cannot extrapose:

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[5] Exceptions, although rare, can be found: Nouns like *Bote* (messenger) seem to inflect rather like adjectives, which, however, makes them stand out from the other nominal paradigms.

[6] Which, again, follows from their development from common roots, cf. Oubouzar '92: 72, Heinrichs '54: 10.

[7] The strong/weak distinction ignored in this article can also be explained by this close relation between D and CGN.

(7) Ich habe den schläfrigen Mann gesehen. *(adjectives occur DP-internal)*
I have the sleepy man seen
'I have seen the sleepy man' *(and cannot extrapose:)*

*Ich habe den Mann gesehen schläfrigen.

(8) Ich habe den schlafenden Mann gesehen. *(present participles DP-internal)*
I have the sleeping man seen
'I have seen the sleeping man' *(no extraposition:)*

*Ich habe den Mann gesehen schlafenden.

(9) Ich habe den betäubten Mann gesehen. *(past participles DP-internal)*
I have the sedated man seen
'I have seen the sedated man' *(no extraposition either)*

*Ich habe den Mann gesehen betäubten.

For 'lightweight' relative clauses, extraposition is optional (10), but becomes increasingly likely for 'heavier' clauses (10'):

(10) Ich habe den Mann [der schläft] gesehen Ich habe den Mann gesehen [der schläft]
I have the man who sleeps seen *I have the man seen who sleeps*
'I've seen the sleeping man'

(10') ??Ich habe den Mann [der mir gestern Pillen gegeben hat] gesehen.
I have the man who me yesterday pills given has seen

Ich habe den Mann gesehen, [der mir gestern Pillen gegeben hat].
I have the man seen who me yesterday pills given has
'I have seen the man who gave me pills yesterday'

1.2.2. Adjectives

Adjectives can appear with the same set of arguments attributively that they take predicatively. However, this set, in comparison to verbs, is rather restricted: Adjectives in German cannot assign accusative case as a rule

of thumb.[8] As mentioned above, nominative subjects cannot be projected in the attributive position. Arguments with lexical cases, and PP arguments, can be freely projected:

(11) der ihm treue Freund
the to-him loyal friend
'the friend who is loyal to him'

der auf seinen Sohn stolze Vater
the of his son proud father
'the father who is proud of his son'

Given that adjectival attributes can have a complex argument structure in this sense, it has to be pointed out that it is invariably the highest argument of the adjective that has to be interpreted coreferentially with the head noun:

(12) *der (auf) der Mann stolze Sohn
the of the man proud son
'the son whose father is proud of him' (intended)

The analysis has to explain why prenominal adjectives only allow for their highest argument, not their oblique object, to be interpreted coreferentially with the modified noun.

1.2.3. Participles

Participles are morphologically complex elements, composed of a verb stem and the suffixes *-end* (for present participles) or either *-t* or *-en* (for past participles). Past participles are also often, but not always, prefixed by *ge-*.[9] Present participles are 'active', in that they allow for the modified noun to be interpreted as their subject argument, while past participles are 'passive' (or 'unaccusative') in that it is their internal argument that is coreferential with the head noun.

In attributive contexts, participles, like adjectives, inflect for CGN. It is this property that has given them their peculiar 'hybrid' status with respect to their part of speech: Given that CGN is interpreted as a quintessentially nominal (i.e. [+N]) affix, it was often assumed that participles are in fact derived adjectives (cf. e.g. Duden '98: 193, Quintin '94: 93). However, the complex argument structure of participles (including accusative objects for present participles), their aspectual morphology, the range of adverbials they accept, and their steadfast refusal to accept other adjectival morphology (such as comparative/ superlative forms and prefixation with the adjectival negation *un-*) has made

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[8] There is a set of adjectives, such as *hoch, breit, dick*, etc. which do, but the cases that these adjectives assign do not pass standard tests for accusative (e.g. the respective arguments cannot be replaced by the accusative wh-word *wen* in echo questions). Given that only 14 adjectives are attested for this "accusative by mistake" (cf. Abraham 95: 241, my translation), and also given the mysterious nature of the phenomenon, I will disregard this type of adjectives here.

[9] The choice between *-t* and *-en* is irrelevant for the morphosyntax. Likewise, the prefix *ge-* can be waived in certain phonological contexts, which also does not affect the grammatical properties of the participle. See Wiese '96, Zifonun et al. '97 for details.

them stick out from the adjective class like a sore thumb. Given that all verbs can productively be turned into the most problematic category, the present participle, this analysis was hardly satisfying.[10] As for participles, then, the analysis has to provide an explanation for their allegedly 'hybrid' status: Why is it that participles can be suffixed with CGN, given their quintessentially verbal properties?

The different properties of attributive constructions pointed out above hence constitute the empirical hurdle for the minimalist analysis proposed in section 3 of this paper: why is it that attributes look so differently on the surface of things, when the analysis portrays them as variations on the same theme? As section 3 will show, all these differences can be explained easily, and without recourse to stipulative new machinery.
Before we come to the analysis, however, it is necessary to point out yet another important property of attributive constructions: in attributive constructions, the possibility of information structure-driven *scrambling* exists. Given that scrambling is an important feature of German word order on the sentence level, it should not go unaccounted in a comprehensive analysis of attributive constructions either. Hence, the information structural properties of attributes in German will be discussed in the next section.

2. The Information Structure of Attributes in German

Complex attributive structures fully parallel sentential structures in German[11]. Does the parallelism extend to other phenomena that have been observed for 'sentences' in this language? One aspect of German syntax that has received ample discussion is the variable word order properties, explained by so-called *scrambling* movements.[12] In 2.1., I will give a (very short) overview of what properties scrambling movements have. Subsection 2.2. will demonstrate that most aspects of scrambling are replicated in attributive constructions as well.

2.1. Scrambling movements in German: A quick overview

Scrambling, in German, is an operation that permutates the order of arguments and adjuncts in the so-called *Mittelfeld* of the German sentence, i.e. within TP. To give a very brief survey, consider the following diagram:

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[10] Past participles can also occur in truly 'adjectival' uses. In which case, they do accept adjectival morphology and lose their verbal arguments. As these cases can be considered clear-cut cases of derivation, they are not considered in the remainder of the paper (but cf. Lenz '93, '95, Struckmeier 2007 for details). Likewise, allegedly 'nominal' uses of participles are not discussed, as these arguably consist of attributive uses with elided head nouns (cf. Bhatt '90: 172f., Helbig & Buscha '98: 300, Kester '96, Poitou '94: 110). For typologically oriented explanations of category changes and their effects on argument structure, see, e.g. Marantz (in prep.) or Alexiadou (2001).
Investigations into category-changing morphology, 'nominalizations' etc. are thus irrelevant from this point on: the participial forms considered in this article are clear-cut verbs, i.e. no change of category occurs.

[11] Note that there is other (simplex) attributive subtypes in German: PPs and genitive DPs. These, too, can be respresented in a similar type of analysis. However, they do not show the CGN agreement discussed in this article and are thus omitted for reasons of space. See Struckmeier (2007) for some tentative analyses of simplex attributes.

[12] The phenomenon has been extensively described in the literature, cf. e.g. Krifka '98, Lenerz '77, 2002, Meinunger 2000 and Müller & Sternefeld '94.

(13)		[$_{CP}$ ... VF ... [$_{TP}$ ...	left Mittelfeld ...	[$_{vP}$ (AdvP) [$_{vP}$ ...	right Mittelfeld...] V$_{fin}$]]
	(i)	Topic	Def. DPs$_{-Foc}$ Def. DPs$_{-Foc}$		Def. DPs$_{\pm Foc}$
	(ii)	Topic	pronouns$_{-Foc}$ *pronouns$_{+Foc}$		pronouns$_{+Foc}$ *pronouns$_{-Foc}$
	(iii)	Topic	generic indefinites		existential indefinites

According to (i), definite DPs, in German, show a rather variable placement: in the right half of the Mittelfeld, i.e. following the adverbial, both focussed and non-focussed definite DPs can occur (cf. Lenerz '77):

(14) Q: Wer hat gestern den Kuchen gegessen?
Who has yesterday the cake eaten?
'Who has eaten the cake yesterday?' *(Question focusses subject)*

A: Ich glaube, dass gestern PETer$_{+Foc}$ den Kuchen$_{-Foc}$ gegessen hat.
I think that yesterday Peter the cake eaten has
'I think that it was Peter who ate the cake yesterday'

However, as (ii) shows, pronouns are somewhat less free in their distribution: For the most part, pronouns move to the so-called *Wackernagel* position, i.e. to the left part of the Mittelfeld (15). It is only stressed, i.e. focussed pronouns that can remain on the right of the adverbial (16):

(15) ??Peter hat GESTern ihm gratuliert.
Peter has yesterday him congratulated

Peter hat ihm GESTern gratuliert.
Peter has him yesterday congratulated
'It was yesterday that Peter congratulated him'

(16) A': Ich glaube, dass gestern ER den Kuchen gegessen hat.
I think that yesterday he the cake eaten has
'I think that it was him who ate the cake yesterday'

(iii) illustrates the genericity effects of scrambling indefinites (Diesing '92, Lenerz 2002): preceding the adverbial, indefinite DPs are interpreted as generic, while the same indefinite DP would have to be interpreted as existential following the adverbial:

(16) Das Gebäude ist sicher, weil ja immer ein Feuerwehrmann bereitsteht.
the building is safe because prt alwyas a fire-fighter stands-guard
'The building is safe because a fire-fighter is always on guard there'

Feuerwehrmänner schlafen nie, weil ein Feuerwehrmann ja immer bereitsteht.
Fire-figher sleep never because a fire-fighter prt always stands-guard
'Fire-fighters never sleep, because they are always on guard'

2.2. Scrambling in attributive constructions in German

As far as relative clauses are concerned, scrambling is not a surprising phenomenon: Given that relative clauses comprise the same layering of functional projections as any other clause in German, scrambling is expectable, irrespective of which precise mechanism we employ to implement it: whatever causes scrambling in, say, other V-last sentences will *ceteris paribus* do the same in relative clauses. In Struckmeier & Gonzalez (2006), however, we pointed out that scrambling also takes place in prenominal attributes. To the best of our knowledge, this phenomenon was never before analysed. Given that the existence of scrambling movements in relative clauses is not surprising, the following presentation focuses on prenominal attributes.

In the German AP, arguments of the head place variably vis-a-vis adjuncts:

(18) a. [$_{DP}$der[$_{AP}$[$_{DP}$ihr] [immer] treue] Max]
the her-DAT always faithful Max

b. [$_{DP}$der [$_{AP}$ [immer] [$_{DP}$IHR] treue] Max]
the always to-her faithful Max
'Max, who is always faithful to her'

This, of course, resembles scrambling at the sentence level: suppose that unstressed pronouns are base-generated, like any other argument, inside the lexical projection of the projecting head, as in (18b). It is obvious, then, that they have to move across the VP-adjunct in order to derive the word order in (18a). In essence, then, pronominal arguments of adjectives assume a Wackernagel-like position in the attributive context, too: to the left of adverbials[13]. They can be left behind when they receive contrastive stress (cf. 19). Stressing another constituent of the sentence leads to deviance when the pronoun remains in the base position, but is perfectly acceptable when the pronoun has scrambled:

(19) ??der IMMer ihr treue Max
der ihr IMMer treue Max

[13] One anonymous reviewer notes that this is not the traditional description of the Wackernagel position as the position directly following the left 'sentence bracket' (i.e. following C) in a sentence. As will become clear in the minimalist analysis below, the target position of the scrambled elements in attributive constructions is, in fact, outside the projection of the lexical predicate, and also below the functional projection capping off the construction. In order to highlight the parallelism between attributive constructions and sentences, I will refer to a Wackernagel position here: Even though the name might appear somewhat metaphorical at the moment, the analysis below will substantiate it.

The distribution of stressed and unstressed pronouns hence parallels the findings from other well-established sentence types (matrix and subordinate declaratives and questions, as well as relative clauses) perfectly.

Treating the inversion of adjunct and pronoun as scrambling also explains the above-mentioned effects concerning indefinites in the prenominal AP:

(20) die [$_{DP}$ einem Feuerwehrmann] [$_{Adv}$ immer] helfende Frau
the a firefighter-DAT always helping woman

(21) die [$_{Adv}$ immer] [$_{DP}$ einem Feuerwehrmann] helfende Frau
the always a firefighter-DAT helping woman
'the woman who is always helping a firefighter'

As is the case in other sentence types, scrambling of indefinites leads to genericity effects in attributive constructions: The *woman* is helping any generic *firefighter* in (20), but in (21), the *firefighter* receives an existential interpretation. Hence, the distribution/ interpretation of indefinites also parallels the findings from the sentence level[14].

It seems, then, that the basic properties of scrambling are replicated in prenominal attributive constructions. In the next section, these properties will find a simple explanation: prenominal attributes, like relative clauses, comprise (for the most part) the same set of functional layers found in other sentence types.

3. A unified minimalist analysis for the set of attributive constructions in German

No syntactic analysis common to all types of sentential attributes has ever been proposed for German in order to explain for the properties in section 1. The analysis presented here (based on Struckmeier 2007) assumes that virtually all projections known from the sentential domain can be replicated for attributes. The analysis proceeds as follows: firstly, present participle structures are analysed in 3.1. - arguably the most difficult subtype, given the problems outlined above. In 3.2.-3.4, the analysis is generalized to the other subtypes. The differences between the subtypes are then explained in 3.5..

3.1. Present Participles

In this subsection, the various structural layers that exist in sentences in German will be shown to exist in attributive present participle constructions, too. The analysis proceeds 'bottom-up', i.e. it represents the successive mergers that would apply in a dynamic derivation of the sentence:

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[14] One anonymous reviewer commented that there is the (somewhat marked) option of adding adjectives to the scrambled indefinite DPs which would seem to contradict the generic reading (e.g. *?die einem bestimmten Feuerwehrmann immer helfende Frau* ('the woman who is always helping a specific firefighter'). I do not agree, however, that the generic reading is actually absent in examples like these.
Furthermore, I do not think that the example compromises the generalization at all: On the contrary, the addition of *bestimmt* might be taken as indication that the genericity effect actually still obtains, leading to the (semantic) deviance of the utterance. The very same facts, by the way, also hold for scrambling at the sentence level, so that the parallelism discussed here is unharmed in any case.

(22) der sich sehende Mann
the himself seeing man
'the man who is seeing himself'

In this example, the present participles selects an accusative object, the anaphor *sich* in this case. Given that accusative licensing is regulated by a transitive *v* head, the first and second step in the hypothetical derivation hence merge the anaphor and the verbal root *seh-*, and, in turn, *v*:

(23) [*v* [$_{VP}$ sich$_{Acc}$ seh-$_{V}$]]

According to Burzio's generalization, "all and only the verbs that can assign theta-role [sic] to the subject can assign (accusative) Case to an object" ('86: 178). Given that the modified noun receives a subject interpretation with regard to the present participles (i.e. it is the *man*, who is seeing here) and also given the fact that the anaphor *sich* appears to be bound correctly, we must assume that a subject is present in the attributive participle construction. However, the subject does not seem to surface overtly. For the moment, the term *subj* serves as a cover term for this argument:[15]

(24) [$_{vP}$ *subj* [*v* [$_{VP}$ sich$_{Acc}$ seh-$_{V}$]]

In accordance with older analyses (cf. Toman 86, 87), I will assume that the participial suffix *-end* is located in the head position of TP. While participles are not marked for tense (or φ-features), they do signal an aspect marking, [-perfective] for the present participle.[16]

(25) [$_{T'}$ [$_{vP}$ *subj* [*v* [$_{VP}$ sich$_{Acc}$ seh-$_{V}$]] *–end*]

The binding of the anaphor, it should be noted, cannot be explained by assuming that the modified phrase itself serves as a binder for the anaphor: If the DP has the same index as the anaphor included in it, an *i-within-i* configuration arises (Chomsky '81: 212)*:*

(26) *[$_{\gamma}$ ...δ ...], where γ and δ bear the same index.

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[15] It will become clear below that *subj,* in my analysis, is an empty operator, *op*. I only use the cover term *subj* here in order to be able to point out the fact that my analysis (up to the TP projection) is fully compatible with *PRO* or *pro* analyses. However, it is precisely in representing *subj* as *op* that my analysis will differ from these older analyses.

[16] Note that nothing hinges on the label 'T' here. However, given the heavily intertwined tense and aspect system of German, the choice seems natural enough.

This *i-within-i filter* is, of course, not a desirable tool in a minimalist syntax. The empirical fact it is based on, however, is clearly found in German:[17]

(27) *der Besitzer$_i$ seines$_i$ Bootes
the owner [his boat]$_{obl}$
"the owner of a boat" (unavailable reading)

??die Feinde voneinander
the enemies of-one-another
"the mutual enemies" (cf. Fanselow 86: 344)

Given these facts, there clearly has to be a syntactic subject within the structure itself, binding the object anaphor. The specifier of the projection of the *-end* suffix in T, then, seems to be the A-position needed to host this binder for *sich*:[18]

(28) [$_{TP}$ *subj* [$_{T'}$ [$_{vP}$ ~~*subj*~~ [*v* [$_{VP}$ sich$_{Acc}$ seh-$_V$]] *–end*]

The analysis so far essentially replicates older representations (cf. Toman '86, '87 for German, Drijkoningen '87 for Dutch, Kremers 2003 for Arabic). In these analyses, an empty pronoun (PRO or pro) was used as *subj* placed in SpecTP. However, for German, it never became quite clear why *subj* should unfailingly be interpreted coreferentially with the head noun, or whether the analysis could at all be used to unify the representation of attributive structures:[19] On the contrary, this approach essentially denies any morphosyntactic similarities between subtypes of attributive constructions: How can past participles be represented, where PRO would (illicitly) have to originate as a sister of V? Also, PRO could never be used as a subject in φ- complete relative clauses at all. In this way, the representation of 'attributes' is maximally heterogeneous and threatens to void the very term itself of any morphosyntactic content.

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[17] One anonymous reviewer commented that the i-within-i filter is an obsolete theoretical tool. I completely agree. However, anaphors contained in DPs simply cannot be bound by the head noun. Thus, the anaphoric objects of participles should not be bound by the head noun, either. By invoking the i-within- filter, I do not want to resuscitate the tool, but simply point out the empirical fact that led to its invention.

[18] Note that the same conclusion could also be forced upon the analysis from a theoretical perspective, more specifically by the potentially universal EPP of T (Chomsky 2000: 13).

[19] Which mechanism ensures that PRO is always interpreted as coreferential with the modified noun? Why, more specifically, is an arbitrary PRO impossible in these structures? One anonymous reviewer suggests that "some version of locality" should be invoked to implement the reading. I think this is hardly satisfying, insofar as this would mean to essentially stipulate another subtheory to control theory for a very limited range of constructions. Operator-movement, as in my analysis, is without doubt an independently needed mechanism - even if it will ultimately be replaced by another operation more congenial to the minimalist framework.
Note that, as a matter of course, I do not wish to go back to a GB-style PRO analysis at all: Quite on the contrary, the empirical problems of the PRO analysis just mentioned will have to be answered. The analysis proposed here will simply avoid the problems by not using a PRO subject in the first place, as will become clear below.

CGN was never assigned a proper function in older analyses: As far as I understand Toman's proposal at this point, once IP is projected, a minor miracle occurs: Toman stipulates that the projected IP has the categorial feature make-up [+N], like an AP. This AP can in turn be suffixed with the (allegedly [+N]!) CGN suffixes. However, IPs do not resemble APs in German at all, as far as their distribution or internal make-up are concerned, as a matter of course. Hence, CGN is not plausibly represented at all.
Unlike the older analyses, then, I claim that CGN constitutes a C head which embeds the TP structure for attributive use: CGN embeds various types of predication structures. CGN itself is not a case, gender and number marking, and it does not exemplify a [+N] category.[20] Rather, the task of CGN is to identify an argument from the embedded structure by *its* case, gender and number features: much in the same way that φ-complete T can, by the requirement of maximal Agree, require that its specifier exemplify the features [nominative case, α person, β number, ...], CGN identifies the raised XP by the features [α case, 3rd person, χ number, δ gender, ...].
The raised element is a covert relative operator *op*, which allows for it to be identified with the modified noun. The analysis hence uses a well-established analysis to arrive at the intended reading (cf. Chomsky 81, 82, Aoun & Li 2003, Authier & Reed 2005).[21] The resulting structure then is the following:

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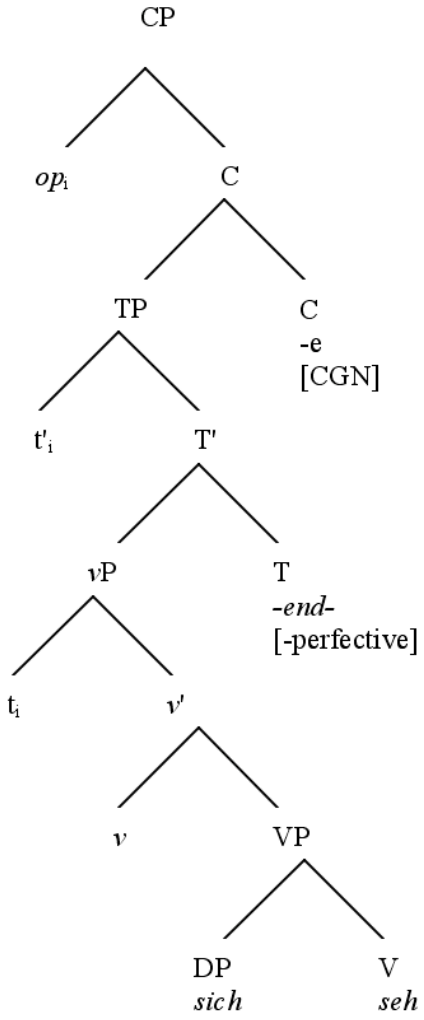
[20] Also, it should not be considered a (relativized) personal pronoun or relative pronoun, as these only rarely occur prenominally. (Keenan 85: 148f.).
This finding ties in perfectly with the general approach to CGN advocated here, i.e. treating it as *anything but* a [+N] element: As a matter of fact, the morphophonology of CGN (its 'pronominal' appearance, especially the tell-tale *-em*), its syntactic properties (depending on a matrix DP to host it and, furthermore, the phase effects mentioned below), its purely functional semantics, as well as the diachronic facts (its origin from D elements such as demonstratives and pronouns) all point to the fact that CGN is a functional element, and, more specifically, no 'nominal' category in any meaningful sense of the word (if such meaning indeed exists at all, which is rather questionable to begin with, cf. Sasse '92 on this point).

[21] Alternative conceptions, e.g. the raising analysis proposed by Kayne 94, Bianchi 2000 are not discussed here: As Borsley (97, 2001), Aoun & Li (2003) and Authier & Reed (2005) point out, not all relative constructions seem equally amenable to a raising analysis. German attributive constructions show no sign of the reconstruction effects that substantiate Kayne's analysis and hence pattern firmly with the type of relative construction that the raising analysis does not seem to explain very elegantly.

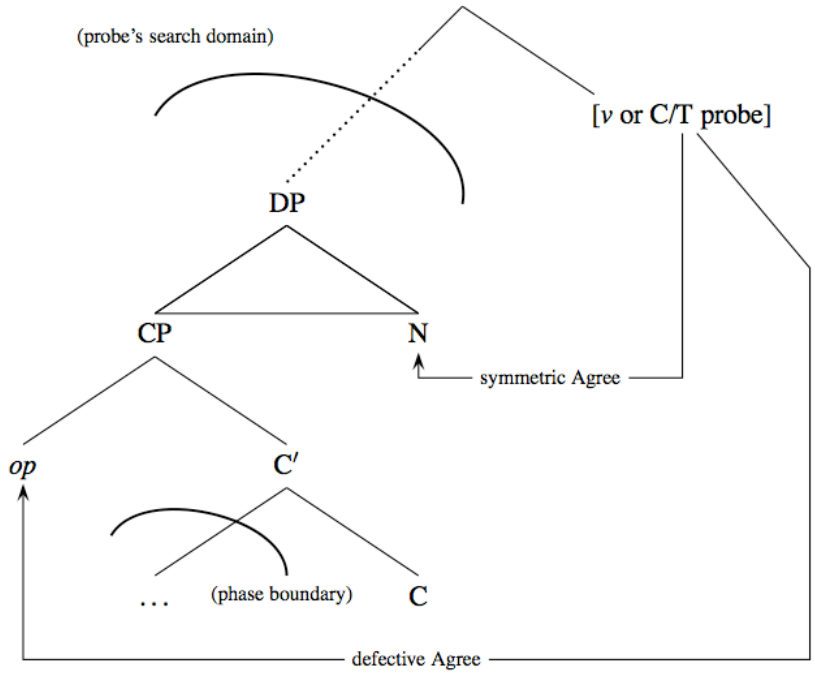
(29)



Note that, in this representation, the operator and the modified noun need not be bound in the technical sense. Consequently, no i-within-i problems arise.
Instead of using binding in the technical sense, the configuration itself is such that the operator will be interpreted as coreferential with N on LF. This coreference requirement could, for example, be implemented by CGN itself, as part of its lexical semantics: whoever raises to SpecCGN has to be interpreted as coreferential with the lexical N head of the modified NP that CGN-P is embedded in. In this way, CGN would have to be construed as an element that takes a saturated predication and turns it into a function (from sets of individuals to (sub-)sets of individuals). The structure thus also avoids the dubious coreference implementation by PRO subjects in SpecTP: there simply is no PRO to begin with. The interpretation of op can be straight-forwardly read off by LF, by inspecting the configuration that has been established.
One question that remains in this analysis concerns the empty operator in SpecCP: given that the attributive present participle comprises no φ-complete T, how does *op* license its case? *op*, being the highest argument in the embedded TP, cannot license its features by Agree with T: T, in participial constructions, contains no [person] feature. Let us assume that CGN constitutes a phase head, en par with the C head of φ-complete relative clauses. Note that *op* then winds up in the edge of the attributive CGN projection. The edge of a phase is, by standard assumptions, visible for Agree

processes from the outside. Hence, *op* could have its Case licensed by the exact same probe that also licenses N's case:[22]

(30)



This means that *op* can only license the same Case as the modified N. Given now, that CGN identifies *op* by its feature set, it becomes clear why CGN seems to 'agree' with N: 'agreement' does not take place between *op* and the modified N. Rather, as both must be licensed by the same probe, and any given probe only licenses a particular case, *op* can only receive a licensed case if it has the same case feature as N.[23] Thus, in order for CGN to identify and raise the right element, op must have the same case value that N has, and CGN must reflect this Case feature for the identification process to take place.

Normally, now, probes can only ever license one feature-complete goal each. Given that Ns alone can license their probes, *op* has to be a defective element. I propose that *op* lacks [person]. This claim is in line with the fact that *op*, unlike its English counterpart, never serves as a relative pronoun in φ-complete relative clauses, i.e. relative pronouns, in German, always have to be overt.

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[22] Note that much irrelevant structure is omitted in (30): The D head of the DP projection plays no role at this point in the derivation. Likewise, the question whether the attributive CP is merged into the DP by adjunction to N' or NP or else merged in a designated functional position is of no significance here. For an overview of possibilities, cf. Lit DISS

[23] I assume that *op* enters the derivation with a fully valued case feature. Alternative conceptions which would have the case feature of *op* valued in the syntactic derivation, rather than licensed, can easily be devised. The point of the analysis, namely the explanation why pre-, but not postnominal CGN seems to 'agree' with the modified N in Case, can be expressed in either framework.

As the structure in (30) shows, then, there are two Agree processes involved in the derivation of present participle attributes: Firstly, there is Agree between *op* and the probe. *op* being defective, the Agree process is asymmetrical and licenses *op*'s case, but does not license the probe. Hence, there has to be a feature-complete N nearby, which is licensed by the probe in a symmetrical Agree process, and, at the moment, licenses the uninterpretable features of the probe. Note that this assumption neatly explains why prenominal attributes cannot be merged anywhere except inside a DP: Only here can *op* be licensed, and only here, the probe that licenses *op* can be licensed itself, because *op* is in an extremely local configuration with a feature-complete, second goal.

In the following subsection, I will show that the derivation of past participle attributes can employ almost the same syntactic mechanisms we used for present participles, with minor changes to T and *v*.

3.2. Past Participles

Like present participles, past participles can project part of the argument structure of the underlying verb. However, past participles are 'passive' or 'unaccusative', in the sense that it is their internal, rather than their external argument, which is interpreted corefentially with the modified noun:

(31) der vom Feind besiegte König
the by-the enemy defeated king
'the king who was defeated by the enemy'

der in die Station eingefahrene Zug
the into the station in-driven train
'the train that has pulled into the station'

We can capture this behaviour by assuming that past participles do not project a transitive *v**P. Rather, they only project an passive/ unaccusative *v*P (or VP). Their T head is taken up by their participial suffix, *-t* or *-en*, respectively.[24] This T head, then, selects only for an passive/ unaccusative *v*P sister.

Note that things could well be otherwise: As Ehrhard points out, German school grammars from as late as the 19th century advise their readers to construct 'active' past participle constructions such as:

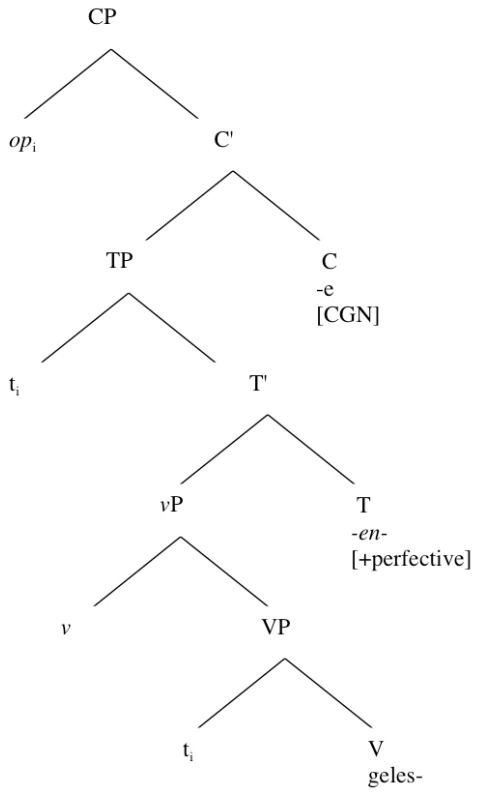
(32) *das geschlafen habende Kind* (Ehrhard 94:198)
the slept having child
'the child that has been sleeping'

These constructions have fallen out of use in contemporary German, yet they are perfectly interpretable. Thus, it seems in order to assume that the construction above exemplifies a T head with a transitive selection for constructing 'active', yet perfective participles. It seems to me to be entirely superfluous to rule out such a T head. Given the perfect interpretability of the example above, no grammatical restriction seems necessary even for today's German, and hence the absence of a tran-

[24] Recall that the difference between *-t* and *-en* is purely phonological and does not affect the participles morphosyntax in any way.

sitive, perfective T head seems, quite simply, to be either coincidental or else related to diachronic changes.
No changes seem necessary for the CGN layer of the structure: the highest argument (in this case the sister of V) raises to SpecCGN and licenses its Case in the manner described above. The resulting representation only differs in the (passive) argument projection of V, and correspondingly, the base position of *op* is now within VP, not in Spec*v*P:

(33) das [gelesene] Buch
the read *book*
'the book that has been read'

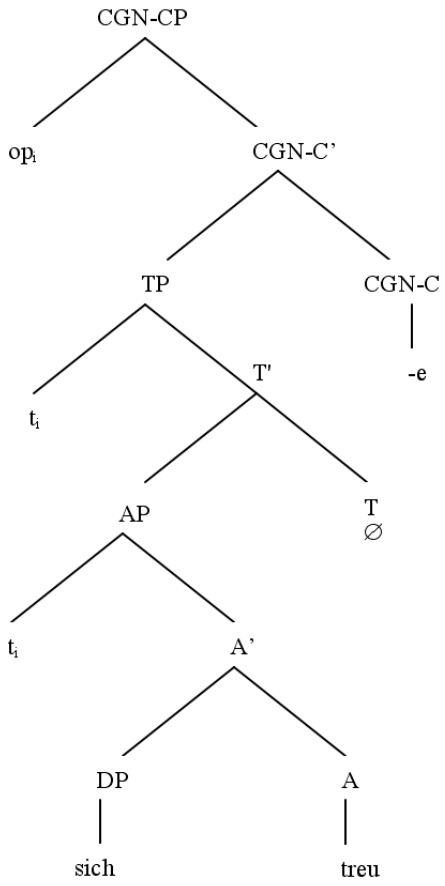


3.3. Adjectives

Adjectives do not project accusative arguments in German. In their attributive use, however, they allow for the same set of oblique arguments that they project predicatively. These arguments can be merged in the lexical projection of A, and their case is determined by the lexical properties of A itself. Hence, it does not seem necessary to assume a *v*P at first sight - nor a TP, given that adjectives do not have any morphology resembling the participles' aspectual suffixes. However, APs allow for the scrambling of their arguments vis-a-vis adverbials in their attributive use. Given that most analyses assume that functional layers above the lexical level of argument projection are responsible for scrambling at the sentence level, I propose that the exact same functional structure should be instantiated in attributive adjectival constructions as well. As a matter of fact, this seems to me to be the most economical representation, given that no new machinery has to be stipulated, specifically for one particular type of construction. I will assume, then, that APs are embedded in (impoverished) TPs as well: These minimal T heads lack tense, aspect and φ-features, and consist of the (universal) EPP feature and the information structure feature set that is needed to derive the scram-

bled orders. In this way, T in adjectival attributes is maximally impoverished, but still retains enough interpretable substance to be justified as a syntactic head.[25]
The CGN layer functions just like in the other attributive subtypes, so that the representation for attributive APs looks like this:

(34)



3.4. Relative clauses

Relative clauses, unlike any other attributive construction in German, comprise a finite verb. It is this difference, I claim, that lies at the heart of virtually all differences between the prenominal attributes described above and relative clauses. This is, of course, good news from a theoretical perspective: Given that the observable variation can be attributed to the presence (or absence) of a φ-complete T, no extra syntactic machinery has to be stipulated, and the locus of variation is the feature composition of the C/T system, i.e. a phase head.

In order to save some trees here, let us assume that the structure of relative clauses up to the TP level simply equals that of declarative sentences, as is commonly assumed. The CGN layer caps off the structure. As for the specifier position of CGN, an overt operator *d- (*or *welch-*) is used in φ-complete clauses:

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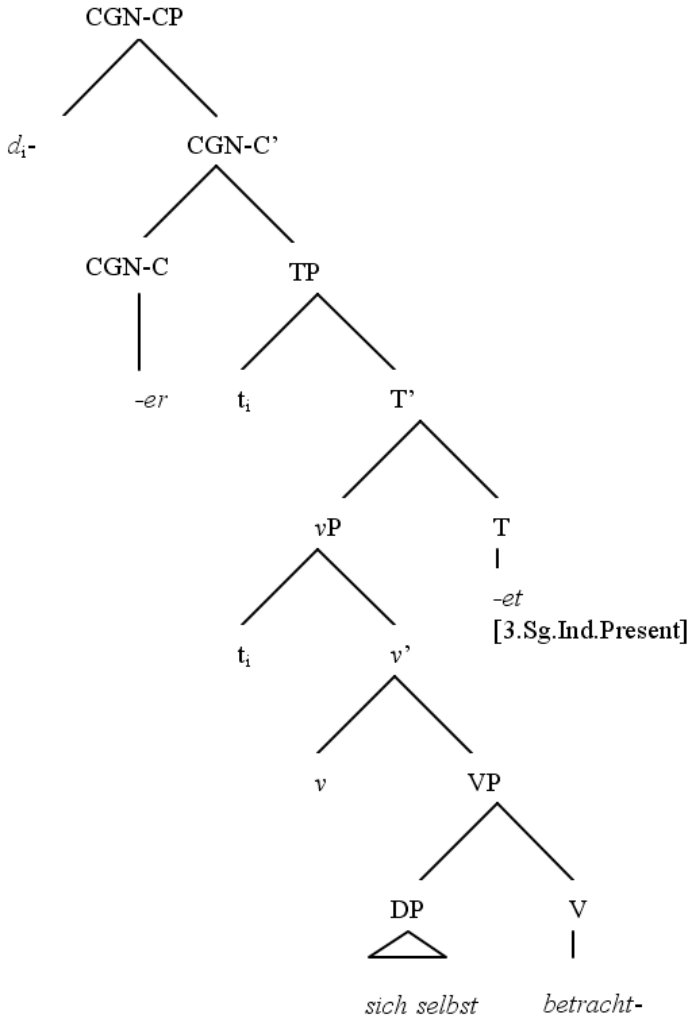
[25] It should be obvious from these remarks that the precise label for this head will ultimately be determined by research on scrambling. Given that neither φ-features nor aspect/tense are located in T here, the label T may well look like a misnomer in this case. However, nothing at all hinges on the label and I will use it in order not to introduce a confusing variety of functional layers here.

(35)



3.5. Differences between subtypes explained

It does not come as a surprise that no element of a φ-complete relative clause needs to employ the defective case licensing mechanism outlined for the empty operator of prenominal attributes above: All arguments' cases can be licensed in the regular manner, i.e. by V, *v*, or C/T. From this assumption, almost all differences between pre- and postnominal attributes follow without further stipulation.

First of all, CGN in relative clauses, unlike in prenominal attributes, does not have to co-vary with the modified N in case:

(35) der Mann, der$_{NOM}$ kommt
the man who comes
'the man who comes/ is coming'

der Mann, dessen$_{GEN}$ gedacht wird
the man who thought is
'the man who is remembered'

(35, cont'd) der Mann, dem_{DAT} ich Geld schulde
the man who I money owe
'the man whom I owe money'

der Mann, den_{ACC} ich sehe
the man who I see
'the man I see'

The modified noun in this example is invariably nominative, yet the relative pronoun changes its case according to the argument role it serves in the relative clause. Given that no argument needs for its case to be licensed by the same probe as the modified N (rather, all probes are included in the relative clause), CGN has to pick up on the case features its goals have - independently from N.

From the fact that all arguments are already case-licensed and no element needs to obtain case in the specifier of CGN, another important difference follows. In postnominal attributes, all arguments and adjuncts that can raise to SpecCGN syntactically can also be relativized, and even adjuncts, often pied-piping prepositions, as in:[26]

(36) das Haus, [in d-em] ich wohne
the house [in which] I live
'the house I live in'

das Haus, das ich verkauft habe
the house that I sold have
'the house I have sold'

das Haus, dem ein bischen Farbe fehlt
the house that a little paint lacks
'the house that could need a little painting'

Other differences are of little morphosyntactic importance: CGN, in relative clauses, precedes the TP it embeds. I assume that the linearization of syntactic tree structures is uniformly handled in the mapping to PF (cf. e.g. Chomsky 2001, 2005): The matter at hand is language-specific, yet immediately detectable in the phonological material that serves as positive data in language acquisition. In this way, it does not have to be represented as an integral part of UG. On the assumption that UG should be approached "from below", moreover, it shouldn't be, insofar as core syntax would be spared a (little) bit of complexity that can be safely delegated to an interface system (cf. Chomsky 2006).

For PF, two representations seem possible to ensure the proper linearization:

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[26] Recall that in prenominal attributes, it was invariably the highest argument of the embedded predicate that had to raise.

Firstly, CGN, just like C, can contain a full set of φ-features or else a defective one. Thus, we could quite simply state the linearization facts as lexical properties of different versions of CGN. This analysis, however, does not seem very enlightening.

A more interesting possibility is to actually come up with a mechanism that handles the linearization of the syntactic tree that is handed over to the PF branch of the derivation. Given the nature of PF, a plausible implementation could, for instance, be based on the phonological properties of the elements contained in the syntactic tree. A PF-device to this effect can easily be devised: Given that the relative operator *d-* (and also the alternative *welch-*) acts as a phonological host for CGN, the order *d-CGN T* is justifiable. As a matter of fact, given that *d-* and *welch-* themselves have to be morphologically bound, no other order is feasible:[27]

(37)

Relative clause:		
correct order:	*d-* -CGN T,	(and also: *welch-* -CGN T)
incorrect order:	* *d-* T- CGN	(*d-* is not bound)

The linearization for the empty operator, likewise, follows from similarly simple morphophonological assumptions:

(38)

Prenominal attribute:		
correct order:	*op* T -CGN	
incorrect order	* *op* -CGN T	(CGN has no (overt) host)

Given the linearization requirements introduced by the elements themselves (*d-*/ *welch-* and CGN, respectively[28]), it even seems possible to assume that no mechanism at all is in place to implement the linearization, leaving the linearization unresolved: A linearization that, if only by chance, does not conform to the elements' requirements will propably lead the derivation to crash on PF anyway. In this way, little more than the elements' linearization requirements, and the potential of the PF branch to determine the linearization of syntactic trees is minimally needed to insure that only the observable orders of operator, CGN and T are actually derived.[29]

---

[27] Note that all specifiers in German invariably branch to the left. Hence, the position of *d-* and *welch-* is fixed, unless one wanted to needlessly exoticise the structure. However, no stipulation to this effect is needed, either: *d-* and *welch-* need their hosts to their right, hence cannot occur in an outermost specifier branching to the right. The position of the empty *op* is irrelevant, as it can never serve as a phonological host anyway.

[28] But not op, which should not play any role on PF, being a covert element.

[29] The matter is clearly of no importance to the syntactic part of the analysis, so I will leave the matter to be resolved by independent research on morphology, and PF and its properties. Note that in the worst possible scenario, we could actually equip φ-complete and φ-defective CGN with different linearization requirements lexically. Adding some such feature to two (!) lexical items would certainly place no unrealistic complexity the lexicon. Given the representation above, even those 2 bytes of memory space might not be necessary.

For core syntax, we have arrived at a unified analysis for all complex attributive structures in German: CGN is the common head that takes different types of predications as its complement:

(39)

	adjectives	past participle	present participle	relative clause
T head	{EPP, information structure,...}	{EPP, information structure, +perfective...}	{EPP, information structure, -perfective...}	{EPP, information structure, tense, ϕ-features...}
argument structure	oblique arguments only	oblique and internal arguments	full argument structure of V	full argument structure of V
argument-projecting head	adjective	verb	verb	adjective or verb

4. Referential types: Is CGN expectable?

It is by now common to assume that CPs and DPs share many important structural properties (cf. Abney '87, Adger 2003, Alexiadou 2001, Wiese '97, Zamparelli 2000). How do phases projected from CGN fit this picture?

CGN re-maps predicational structures of all types into the nominal domain. Like subordinate CPs, then, attributive structures serve to specify a matrix structure (DP, in this case), rather than referring autonomously. CGN hence acts as the equivalent of a complementizer in the DP domain: namely, as some sort of *attribut-izer*. Given these parallels with the sentential domain, the question then is whether the nature of the CGN head is, after all, expectable. The following cross classification illustrates that CGN completes a system of what I call *referential types*:

(40)

	CP	DP
Matrix structure	matrix Clause head = finite verb = φ-features	DP head = Determiner = case features
subordinate structure	sub clause head = complementizer	attributive construction head = CGN

The primary semanto-syntactic property associated with DP and CP projections is that they can be used to refer autonomously, i.e. they do not have to be integrated into larger structures in order to specify them (like subordinated CPs and CGNPs must). With this, admittedly basic, typology at hand, how can we determine, which heads serve to implement which function?

For German, the system is actually rather simple: In matrix clauses, the finite verb (or Aux) moves to C. In DPs, an article, pronoun or proper name is the primary exponent of Case features in D.

Hence, autonomous referential projections in German all contain their lexical heads' (i.e. V's and N's) uninterpretable features in the head positions of their topmost functional layer, CP and DP, respectively.
As for subordinated expressions: in subordinate clauses in German, the C position is taken up by a subordinating complementizer. Hence, V-last word order ensues, and the uninterpretable features on V do not move to the topmost functional layer of the structure. Likewise, CGN acts as a subordinating head in the nominal domain - as a 'subordinating D', so to speak[30]. Consequently, relative clauses are Vlast (as are participial constructions) and no (matrix) determiner can take up the maximal head position, which then does not contain a Case feature, but a CGN feature set. Recall that morphophonologically, CGN resembles elements from the pronominal (=D) paradigms. However, CGN clearly cannot be used to refer independently, i.e. it has to be integrated into a larger DP structure. Given the historical development of CGN from D elements (pronouns, determiners) up to this differentiation, the classification of CGN as an 'subordinating D' seems rather natural altogether, completing the typology of referential types in (40).[31]

Referential types can differ dramatically as far as their morphosyntax is concerned, as we have seen: Attributive adjectives and relative clauses, e.g., do not seem to be structurally parallel, on the face of things. However, given that CP structures refer to sets of indices, and DPs to sets of individuals, the classification can be anchored in the semantic properties of structures to be classified. Unlike parts-of-speech systems, then, referential types might be used in order to compare structures that do not seem comparable (at first glance): Hence, free relative clauses, by their referential type, should be headed by D-like elements, although they select for a φ-complete sister: As we have seen, CGN can select for both φ-complete and φ-defective complements, so why wouldn't D? Under this assumption, a free relative clause might be assigned the following structure:

(41) [Wer das gemacht hat] soll sich was schämen
who that made has should self something be-ashamed
'Whoever did this should be ashamed of himself'

$[_{DP}\ W_i\text{-}\ [_{D'}\ er_D\ [_{TP}\ t_i$ das gemacht hat]]]

Likewise, puzzling constructions from typologically distant languages might turn out to be rather expectable under this view: Cayuga employs complex morphological structures including inflected verbs in order to refer to sets of individuals (both examples Sasse '92: 18, my translation from his German gloss and translation):

(42)

enestanyá'ktha'	teká:teh
you-let-it-cut-boards	*it-lifts-off-habitually*
'saw'	'plane'

---

[30] It is in this sense, by the way, that scrambled elements in attributive constructions move to the Wackernagel position: they leave the projection of the lexical predicate, but stay below CGN - just as they would stay below C in the various sentence types for which scrambling has been described.

[31] Another approach to similar problems is discussed in Marantz (in prep.): Phase heads, according to Marantz, could be merged both syntactically and morphologically. Given that CGN can be considered an affix, it might be an interesting example for a phase head that is merged morphologically. However, my analysis differs from Marantz' proposal in that CGN is defined as a simple bundle of identification features, with no recourse to questions of categories and category changes that Marantz discusses (which, I tend to think, needlessly complicate syntactic descriptions).

Given their referential type, can these structures be analysed as something like 'morphologically complex pronouns'? To be more precise, should we not assume that these elements simply have the same referential type as D elements in English and German, but are simply morphologically made up from a verbal stem and its complements?

Of course, these questions will require a whole lot of much more careful analyses before we can answer them. However crude the current typology of referential types may be, I would like to think that it might provide us with an interesting research agenda: to analyse and compare structures that would not seem comparable right away from a purely morphosyntactic point of view at first glance.

5. Conclusion

To come to a conclusion, the following points can be summarized for the analysis of German attributive structures in this paper:

- All complex attributive structures in German receive a common structure, i.e. they constitute predications that are embedded under a CGN phase head with probe features.
- The analysis explains why CGN is unaffected by case loss: as an element with D-like properties, it is expectable that CGN should retain its paradigm.
- No 'hybrid' categorial status for participles: participles can project VPs/ *v*Ps attributively, too. CGN is available for participial attributes without problems.
- Relative clauses are not 'headless' anymore: CGN is the head of the attributive projection.
- Differences between pre- and postnominal attributive constructions can mostly be reduced to lexical differences (presence or absence of a φ-complete T head), or else to PF effects (linear order).
- In German, the set of arguments that can be relativized from participial and φ-complete attributive structures follows from considerations of Case licensing.

At the moment, extensions for the system of referential types seem to me to be a worthwhile topic for future research, insofar as variation is placed in the feature make-up of a phase head, and at least some difficulties that beset older analyses can be avoided. However, if the analysis presented, and the system of referential types that follows from it, work in no other language whatsoever, I submit that at least they provide a complete and unified analysis for all complex attributive constructions in German.

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