The internal syntax of jeder ‘every’

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In this paper I explore the elements that make up the German distributive universal quantifier jeder, and the structural relationships among them. I argue that jeder consists of three overt morphemes je-d-er, which are heads in an extended adjectival projection (xAP). Their relative order is derived by movement [xAP je d er tjeP]. Je corresponds to the adjectival stem, -d- is an adjectival article (which in turn is analyzed as a relative complementizer) and -er is an agreement head, AgrA. The xAP further contains movement traces/copies of the nominal which jeder quantifies over. One of these copies is in the complement of je where, I claim, it supplies the restriction (distributive key or range). The components of the proposal are all motivated independently of jeder: (i) its morphology identifies jeder as adjectival, hence an analysis of it must incorporate an (independently motivated) adjectival syntax; (ii) a comparison with the distributive dual quantifier beid- ‘both’ further informs the syntactic analysis internal to the word jeder; and (iii) a comparison of je in jeder and in other je-words suggests that je takes an N(P) complement, a fact that confirms the expectations regarding the selectional properties of je raised by the preceding discussion. Finally, a comparison of jeder with counterparts of it in other languages, as well as with other complex determiners in German, will broaden the scope and corroborate important aspects of the present proposal.

Keywords: Determiners; quantifiers; adjective phrase; subword syntax; (Swiss) German

1. Introduction

In recent years, the intuition that morphological structure is syntactically derived (Chomsky, 1957; Baker, 1985; Halle & Marantz, 1993) has come to drive work on the internal structure of function words. In this paper I propose an analysis of the internal structure of German jeder ‘every’ based on morphological and syntactic considerations.

The starting point of a syntactic analysis of German jeder ‘every’ is its obvious morphological complexity. It consists of at least three morphemes: je-d-er. The rightmost morpheme is an instance of strong adjectival inflection, AgrA.
The voiced coronal stop -d- preceding the AgrA morpheme looks like a definite marker. We find it in the definite article d-er, d-ie, d-as 'the' as well as in non-article determiners such as definite demonstratives like d-ieser 'this (one)', the dual quantifier bei-d-e 'both', in relative pronouns, and in the finite complementizer d-ass 'that'. Finally, je is not unique to jeder either, but is also found in e.g. je-weils 'each(time)', and by itself je 'ever'/per'.

(1) a. jed-er Wein
    every-agra wine
b. gut-er Wein
    good-agra wine

(2) a. Jeder Junge mag Schokolade.
    every boy likes chocolate
b. Die drei Jungen haben je(weils) zwei Bücher gekauft.
    the three boys have each two books bought
    “The three boys bought two books each/each time.”
c. Der Preis beträgt 100 Franken je Kilogramm.
    the price is 100 francs per kilo

"Jeder, I will claim, contains yet another element, namely an indefinite article ein, which can sometimes be overt."

(3) ein jeder Mensch
    an every human

Since ein enters the derivation rather late, I will set it aside during the discussion of the earlier derivational stages and come back to it in Sections 3.2.3 and 7.

Hence je-d-er is a unique composition of elements that also occur in other contexts. This makes jeder a complex syntactic object (by hypothesis). The focus of inquiry falls on the constituent structure of these elements in jeder. We expect the way in which the elements combine, i.e. the operations that syntax performs on these elements, to be of a familiar sort. Specifically, we will identify the elements of je-d-er and their syntactic behavior with that of their counterparts in other contexts. In other words, the kind of evidence that can and must inform our quest extends beyond occurrences of jeder, and includes general morphosyntactic properties of adnominal adjectives, the properties of another similar quantifier, beid- ‘both’, and properties of other je-words.

The basic proposal I will make is represented in tree form in (4). A step by step derivation will be sketched in Section 6.1.

(4) a. jeder Junge
    every boy
In (4), the quantificational morpheme je takes a bare nominal complement which is interpreted as the distributive key (DistKey). The result \([je+N(P)]\) is embedded in an ordinary extended adjectival structure, xAP, a structure that is analogous to that of a reduced relative clause (Chomsky (1957); Smith (1961); Kayne (1994), specifically for German cf. Fanselow (1986); Leu (2009), for determiners cf. Koopman (2003); Leu (2007, 2008a)).

This xAP contains an agreement head, AgrA, host of the strong agreement morpheme, and an adjectival article -d- in the left periphery. The nominal (Junge ‘boy’ in (4)) extracts from jeP and ultimately from the xAP, akin to the head of a relative clause on the promotion analysis of relative clauses (Vergnaud, 1974; Kayne, 1994; Bianchi, 1999). The jeP containing je and a trace/copy of Junge fronts to the left periphery of the xAP, as an instance of Q-movement, akin to beid- ‘both’ (Section 3). Finally the xAP moves to the left periphery of the containing DP, which is the norm for definite xAPs in Germanic.

The paper is organized as follows. In Section 2, jeder is identified as adjectival, and part of our view on the syntax of adjectival modification is presented and applied to jeder. Section 3 discusses the syntax of the quantifier beid- ‘both’, supporting the proposal and introducing one movement step specific to quantifiers. Section 4 clarifies the relation between the xAP and the modifyee N(P), arguing that xAPs are reduced relative clauses. In Section 5, other occurrences of je are discussed, with an assimilation of je in jeder to those as the target. Section 6 states the proposed derivation of jeder N and explicates the individual steps. Section 7 presents a preliminary probe into the scope of the present proposal from a cross-linguistic and from a cross-determiner perspective. Section 8 summarizes the paper and concludes that all the ingredients of the present analysis of jeder, both in terms of elements as well as syntactic operations, are well motivated independently of jeder. Hence jeder is syntactically complex in a perhaps surprisingly regular way.
2. Jeder is an extended adjectival projection

Na(t)ive speaker intuitions as well as spelling conventions suggest an analysis of *jeder Junge* 'every boy' as in (5).

\[\text{(5) jeder Junge} \]
\[\text{every boy} \]
\[\text{jeder Junge} \]

The syntactic decomposition of *jeder* into the obvious three parts *je-d-er* is not incompatible with such a view, but it may also suggest a different analysis, as in (6b), where *der* is identified with the definite article that precedes the noun in a plain definite DP (6a).

\[\text{(6) a. der Junge} \]
\[\text{the boy} \]
\[\text{b. jeder Junge} \quad \text{(to be rejected)} \]

(6) represents the proposal in Kallulli and Rothmayr (2008) (cf. also Sauerland, 2004). The quantificational morpheme *je* is merged outside the DP, and takes a full definite DP complement. This, Kallulli and Rothmayr (2008) point out, instantiates the more general proposal by Matthewson (1998, 2001) based on Salish, that (certain) quantifiers take DP complements rather than NPs.\(^1\)

In this section I argue for (5). I argue that *jeder* in (5) is a phrasal constituent, concretely an extended adjectival projection, xAP. (Adnominal) xAPs in turn, I will argue in Section 4, should be analyzed as reduced relatives. In other words, *jeder* has an internal structure akin to that of a relative clause.

2.1 Jeder has adjectival inflection

The proposal in (6b), while a priori attractive, encounters two major obstacles: One concerns the selectional properties of *je*, which will be addressed in Section 5, the other concerns *-er*: According to (6b) *der* in *jeder* is an ordinary definite article. I.e. we do not expect the inflectional material between *d-* and the noun to be sensitive to the presence versus absence of *je*. This, however, seems wrong.\(^2\)
The internal syntax of jeder ‘every’

The agreement suffix on jeder (7b) must be distinguished from that of the immediately prenominal definite article (7a). Jeder inflects like a (strong) adjective (7c).

(7) a. Article-inflection: d-er Mann, d-ie Frau, d-as Kind
the man, the woman, the child

Adjective-inflection: jed-er Mann, jed-e Frau, jed-es Kind
every man, every woman, every child

c. Adjective-inflection: fad-er Wein, fad-e Milch, fad-es Bier
bland wine, bland milk, bland beer

The nominative singular forms of jeder, the definite article, and a strong adjective in Standard German and in Swiss German, are listed in Table 1.

Table 1. singular nominative forms

<table>
<thead>
<tr>
<th>Gender</th>
<th>German</th>
<th>Swiss German</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>‘every’</td>
<td>‘the’</td>
</tr>
<tr>
<td>masculine</td>
<td>jed-er</td>
<td>d-er</td>
</tr>
<tr>
<td>neuter</td>
<td>jed-es</td>
<td>d-as</td>
</tr>
<tr>
<td>feminine</td>
<td>jed-e</td>
<td>d-ie</td>
</tr>
</tbody>
</table>

A particularly clear instance of this is the feminine nominative/accusative form in Swiss German. The immediately prenominal definite article in the feminine DP (8a) is not followed by any overt inflection. The strong adjective in (8b) is followed by -i. Jed- patterns with the adjective (cf. (8b) and (9b)), rather than with the definite article (cf. (8a) and (9a)).

(8) a. d rosä
the rose

b. ä rot-i rosä
a red-fem rose

(9) a. *jed rosä
Every rose

b. jed-i rosä
every-fem rose

I conclude that the right analysis of jeder must involve an (extended) adjectival structure, xAP, which at least -er is part of. Assuming that adjectival phrases (including adjectival inflection) sit in a specifier position relative to the noun, jeder Junge has the partial representation in (10).
The question arises of whether -er is the only overt element in the adjectival structure. In what follows I present evidence for the idea that -d- in jeder is also part of the adjectival structure. Finally je will be argued to correspond to the adjectival stem.

2.2 *Jeder* contains an adjectival article

Continuing to assume a morphological decomposition of jeder into je-d-er, and having shown that -er is an instance of strong adjectival agreement, AgrA, we arrive at the following conjecture. The analysis of jeder involves an adjectival structure that contains an AgrA immediately preceded by a -d-. In German d is the (typical) realization of the definite marker. A possible hypothesis, which I will explore, is that the -d- in jeder is a definite marker that is part of the xAP.

(11) je- d- er Junge
    je the- AgrA boy

The presence of a definite marker inside a specifier (as opposed to the head D) is well attested for (other) determiners/quantifiers and adjective phrases. I first illustrate this with definite demonstratives (2.2.1). Subsequently, I extend the claim to adjectival phrases in definite contexts more generally (2.2.2). Section 2.3 discusses evidence from the distribution of adjectival agreement in Germanic, and some consequences. Section 2.4 summarizes the implications for the analysis of jeder.

2.2.1 Definite marker inside of determiners

Let us begin by noting that English has the demonstratives this, that, these, and those, in which we can readily identify the definite marker morpheme th- as a common component. This is, of course, no different in German (e.g. dieser, stressed der) (even though it is not surface-universal, e.g. French cette maison ‘this house’ versus la maison ‘the house’, cf. also (17) below).

Further enlightening is Greek. The Greek demonstrative aifo is morphologically complex containing af- and -to.4

(12) a. aifo to vivlio
    this the book

b. to vivlio aifo
    the book this

The latter is a definite article that is present in addition to the definite article that immediately precedes the noun. Definite demonstratives quite generally
are morphologically, syntactically, and semantically complex (Vangsnes, 1999; Elbourne, 2005; Leu, 2007). Specifically, they are typically composed of a definite marker (e.g. English *th-*), and a counterpart of English *here/there*. In Colloquial Norwegian (13a), for example, the *here/there* part is overt and transparent, and exhibits adjective-like morphology (Bernstein, 1997). In Afrikaans (13b), the *here/there* part is also overt and transparent (Donaldson, 1993). But unlike Norwegian *herre*, Afrikaans *hier* precedes the definite marker, similar to Greek *af*.

(13) a. det *her(r)e* huset \\
    the *here.infl* *house.def*  \\
    ‘this house’ \\
    Colloquial Norwegian \\

    b. *hier-die* huis \\
    here-*the* *house* \\
    ‘this house’ \\
    Afrikaans

The minimal pair in (12) suggests that *af* and *to* form a constituent. Assuming this to be the case, (12a) plausibly has a structure along the lines of (14).

(14) \[afto\]
    \[D\]
    \[XP\]
    \[to\]
    \[vivlio\]

In Greek (12) the (overt) occurrence of the (additional) immediately prenominal definite marker is obligatory. The occurrence of the leftmost definite marker in (13a) as well as in (12a) is contingent on the presence of *her(r)e* and *af*-, respectively.

(15) a. (afto) *to* *vivlio* \\
    Greek \\

    b. (det *her(r)e*) huset \\
    Colloquial Norwegian

Assuming that (14) is essentially correct, and that *her(r)e* in (13a) is like *af* in (12a), except that it follows the definite marker (cf. (13b)), I propose the representation of (13a) and similarly English *this house* as in (16), differing from Greek (14) in that definite D is not overt.

(16) \[[det *her(r)e*]\]
    \[D\]
    \[Ø\]
    \[huset\] \\
    house

The absence of an overt immediately prenominal definite article in (16) can be related to the presence of the definite XP to its left (possibly in Spec,DP).\(^5\)

The absence of an overt immediately prenominal definite marker in the presence of a DP initial demonstrative is reminiscent of the situation in Spanish (17). In Spanish, demonstratives can occur postnominally or prenominally (Brugè, 1996;
Giusti, 1997). When the demonstrative is postnominal, the noun is preceded by a definite marker (17a). When it is prenominal, no prenominal definite marker is overt (17b).  

(17)  
\[
\begin{align*}
& a. \text{el libro (este)} & \text{Spanish} \\
& \quad \text{the book (this)} \\
& b. \text{este libro} & \\
& \quad \text{this book}
\end{align*}
\]

I conclude that it is plausible that the immediately prenominal definite marker and the definite marker that is (sometimes) an overt component of the demonstrative are distinct morphosyntactic objects. This is most evident in Greek, where both can be overt simultaneously.

2.2.2 Adjectival articles

Greek *afte to vivlio* is an instance of a more pervasive phenomenon, namely that of poly-definiteness, also known as determiner spreading (Androutsopoulou, 1996, 2001; Alexiadou & Wilder, 1998).

(18)  
\[
\begin{align*}
& a. \text{to megalo (to) vivlio} & \text{Greek} \\
& \quad \text{the big (the) book} \\
& b. \text{to vivlio *(to) megalo} & \\
& \quad \text{the book (the) big}
\end{align*}
\]

In Greek definite modified DPs, multiple definite markers are possible. The view I adopt here is that (in definite contexts) an adjectival constituent, xAP, contains its own definite marker (Leu (2009), cf. also Marušić and Žaucer (2006) for Colloquial Slovenian). The xAP may be postnominal, or prenominal. When it is prenominal it can have the effect that no immediately prenominal definite marker can appear (akin to Germanic (16) and Spanish (17) demonstratives). Assuming that in (18) the postnominal position of the adjectival modifier is more basic than the prenominal position (Ioannidou & Dikken, 2006), we are led to a representation of (18a) as in (19).

(19)

\[
\begin{array}{c}
\text{xAP} \\
\text{to megalo} \\
\text{D} \\
\text{to} \\
\text{vivlio} \\
\text{t}_{xAP}
\end{array}
\]

The idea, suggested by Greek poly-definite DPs, that the left periphery of an adjectival constituent is a possible locus for a definite marker morpheme is strongly supported by Scandinavian “double definiteness” (20) (an instance of which we
have already encountered in (13a)). In Mainland Scandinavian, plain definite DPs do not exhibit a prenominal definite article, but (in the typical case) when an adjectival modifier is present, it is preceded by a pre-adjectival definite marker (Delsing, 1993; Vangsnes, 1999; Julien, 2005).

(20)  a. huset            Swedish
     house.def
     ‘the house’
  
     b. det stora huset
     the big house.def

The same wording also correctly captures the situation in Colloquial Slovenian. CS does not have an immediately prenominal definite article, but has a pre-adjectival definite marker (Marušič & Žaucer, 2006).7

(21)  a. (*ta) svinčnik       Coll. Slovenian
     the pencil
  
     b. ta nov pes
     the new dog (nom)

Examples (18), (20), and (21), and hypothesis (16) above are directly compatible with the view that pre-adjectival definite markers have an embedded source as heads in the left periphery of the extended projection of the adjective, as proposed in Leu (2007, 2009).

(22)  xAP  
     D  
     [det stora]  
     [ta nov]  
     [to megalo]  

2.3  Adjectival agreement and the structure of xAP

The idea that the pre-adjectival definite marker is a head in the extended projection of the adjective xAP is supported by the way it interacts with the position of the adjective relative to the (strong) adjectival inflection in German and Swiss German.

2.3.1  The d/di-alternation

In Swiss German there is a contrast, with regard to inflection, between the immediately prenominal definite marker and the pre-adjectival definite marker. The contrast (overtly) obtains in feminine and in plural (nominative and accusative)
noun phrases, where the pre-adjectival definite article (23b) exhibits an inflectional suffix -i that is not possible in plain definites (23a).

(23) a. d rosä Swiss German
   the rose
b. d-i rot rosä
   the-fem red rose

In other words, the presence of this -i is contingent on the presence of an adjectival structure, xAP. This can be visualized as in (24).

(24) d(-i rot) rosä

Furthermore, this element is formally identical to the strong inflection on the adjective, i.e. the inflection that an adjective exhibits in non-definite noun phrases.

(25) a. ä rot-i rosä Swiss German
   a red-fem rose
b. fein-i suppä
tasty-fem soup

Let me emphasize that the -i suffix on the pre-adjectival definite marker and the -i suffix on the adjective are in complementary distribution. The former is restricted to definite noun phrases (23b), the latter to non-definite noun phrases (25). I conclude that the post-adjectival -i in (25) and the pre-adjectival -i in (23b) are instances of the same syntactic head (Milner & Milner, 1972; Leu, 2009). Its variable position relative to the adjective will be discussed shortly.

(23)–(25) strongly suggest that this -i is an instance of (strong) adjectival agreement, AgrA, i.e. the head that is spelled out as -er in German xAPs in masculine nominative singular environments. This leads to a partial representation of xAP as in (26), cf. (10).

(26) xAP rosä
    ...-i rot...

2.3.2 Germanic weak/strong adjectival declension

The evidence for the claim in (22), that the pre-adjectival definite marker is a left peripheral head in the xAP, as presented above, has so far involved languages which either (a) have no immediately prenominal, but do have a pre-adjectival definite marker (e.g. Colloquial Slovenian, Mainland Scandinavian), or (b) can have multiple definite markers overt in the presence of an adjective (e.g. Greek). A different kind of evidence in favor of that idea comes from the distribution of strong adjectival inflection AgrA in German and Swiss German.
As mentioned above, in German, an adjective preceded by an indefinite article precedes the so-called strong agreement suffix (27a). An adjective preceded by a definite marker, on the other hand, follows that strong agreement suffix (27b).  

\[(27) \quad \text{a. ein [sehr gut]-er Wein} \quad \text{German} \\
\quad \text{a very good-AGRA wine} \\
\quad \text{b. d-er [sehr gute] Wein} \\
\quad \text{the-AGRA very good wine} \]

The Swiss German \(d/di\)-alternation (23) clarifies that even when the adjective follows the inflectional suffix, the latter is an instance of adjectival agreement and hence part of the adjectival constituent \(xAP\). The fact that the string \(sehr\) \(gut\) ‘very good’ (including the degree modifier \(sehr\) ‘very’) sometimes follows and sometimes precedes the AgrA morpheme (27) suggests that the process involved in manipulating the relative order of AgrA and the adjective is sensitive to hierarchical structure. Thinking of this process as involving syntactic displacement, the alternation can, in principle, be captured in different ways. One way would involve rightward movement of AgrA, as originally proposed by Milner and Milner (1972) (akin to Chomsky’s (1957) affix hopping analysis of English Tense). Another possibility to capture the fact that the adjective sometimes follows and sometimes precedes AgrA involves leftward movement of a phrase containing the adjective, e.g. DegP (28).

\[(28) \quad xAP \quad \begin{array}{c}
\text{[DegP sehr gut-]} \\
\text{-er} \\
\text{DegP}
\end{array} \]

Apart from being compatible with the ban on downward movement, (28) highlights and allows us to capture the parallelism of \(xAP\) with the behavior of the finite verb in tensed clauses (Section 2.3.3). It is further supported by the fact that the relative order of \(AP\) and AgrA correlates with scope capabilities of \(AP\) (Section 3).  

Besides finding a mechanism that derives the two ordering possibilities between AgrA and the adjective, a more ambitious goal is to simultaneously embrace its correlation with the nature of the preceding article, i.e. to unify the weak/strong declension with the \(der/ein\) contrast. Descriptively speaking, \(AP\) (or DegP) movement to the left of AgrA applies if no definite marker is present (27a), but fails to apply if a definite marker is present (27b).

Extending the earlier proposal in (22), that in Swedish, Slovenian, and Greek, the pre-adjectival definite marker is a head in the left periphery of the \(xAP\), to German, we arrive at the proposal that \(AP\) movement to the left of AgrA is in
complementary distribution with merger of the pre-adjectival definite marker (29). A possible rationale is that these are two ways of lexicalizing a certain left peripheral projection (cf. Koopman, 1997).

(29)  
\[ \begin{align*} 
&\text{a. Indef: } [x_{\text{AP}} \text{ AP} \ldots \text{ AgrA} \ldots t_{\text{AP}} \ldots] \\
&\text{b. Def: } [x_{\text{AP}} \ q_{\text{AP}} \text{ AgrA} \ldots \text{ AP} \ldots]
\end{align*} \]

I claim that the pre-adjectival indefinite article is not part of the xAP (unlike the definite marker). This is supported by the fact about Greek that while the same ordering permutations between (multiple) adjectives and the noun are possible in both indefinite and in definite modified noun phrases, no additional indefinite article is possible in non-definite noun phrases (Alexiadou & Wilder, 1998). Compare (30) and (18) repeated as (31).

(30)  
\[ \begin{align*} 
&\text{a. ena megalo (*ena) vivlio Greek} \\
&\text{a book (a) big} \\
&\text{b. ena vivlio (*ena) megalo} \\
&\text{a book (a) big}
\end{align*} \]

(31)  
\[ \begin{align*} 
&\text{a. to megalo (to) vivlio Greek} \\
&\text{the big (the) book} \\
&\text{b. to vivlio *(to) megalo} \\
&\text{the book (the) big}
\end{align*} \]

Hence on this view, the German(ic) weak/strong adjectival declension alternation rests on the same properties of the adjectival left periphery as the fact that e.g. Greek has poly-definiteness but no poly-in-definiteness (Leu, 2009).

2.3.3 Adjectival agreement and V2

The analysis of the distribution of AgrA in (29) makes the weak/strong adjectival declension alternation directly comparable to another word order alternation which German (and West Germanic more generally) is known for, namely that between the matrix verb second and embedded verb final order in the finite clause.

As a general rule, German (and Dutch and Swiss German) puts the finite verb in second position in matrix clauses, i.e. preceded by one and only one constituent. The traditional and influential analysis, based on Den Besten (1977), holds that the finite verb in German matrix clauses moves to C, and one constituent moves to Spec,CP.

In embedded clauses in German the finite verb surfaces clause finally (and/or in a verbal cluster at the end of the clause Koopman & Szabolcsi (2000)).

10
   every morning reads Hans now again the newspaper

   b. ...dass Hans die Zeitung nun wieder jeden Morgen liest.
   that Hans the newspaper now again every morning reads

In recent years, an alternative view on V2 has become prominent in which the V2 verb forms a constituent with the constituent preceding it. There are different concrete proposals which converge in this respect (Nilsen, 2002; Müller, 2004; Bentzen, 2007; Wiklund et al. 2007). Following Müller (2004) I will call this the vP first analysis of V2.

I claim that in this respect the xVP (i.e. CP) and the xAP are parallel. The V2 as vP first view and the strong declension as AP movement view (29) make the parallelism between the xAP and the clause look very crisp in varieties of West Germanic with complementizer agreement (Bayer, 1984; Haegeman, 1992; Carstens, 2003). A particularly nice example is Lower Bavarian, which has two sets of verbal agreement Gruber (2008, p.28).

(33) a. Mir fahr-ma/*-n noch Minga.
   we go-1.pl.ca/-1.pl to Munich

   b. … das-ma mir noch Minga fahr-n/*-ma.
   that-1.pl.ca we to Munich go-1.pl/-1.pl.ca

The Lower Bavarian clause exhibits an agreement alternation on the tensed verb in these contexts that is syntactically parallel to the weak/strong declension alternation in adjectives. Compare (33a–b) and (27a–b). In both merger of a d-element in the left periphery (i.e. to the left of a certain agreement head) alternates with fronting of the bottom layer (AP/vP) of the extended projection to the left periphery of the respective extended projection (xAP/xVP).¹¹

2.4 Implications for jeder

The combined evidence from definite demonstratives (Section 2.2.1), Greek poly-definiteness (18), Scandinavian “double definiteness” (20), Slovenian ta (21), the Swiss German d/di-alternation (23), and the Germanic weak/strong adjectival declension alternation (27), strongly suggests an analysis of the pre-adjectival definite marker as being structurally embedded as a head in the left periphery of the extended adjectival projection xAP. This leads to the following proposal with regard to the constituent structure of a definite modified DP such as der gute Wein ‘the good wine’.

(34) xAP noun
d ... AgrA ... adjective
Recalling that *jeder* contains strong adjectival inflection AgrA preceded by a morphemic *d*, it is tempting to identify the *d* in *je-d-er* with the *d* inside the extended adjectival projection xAP in (34).

\[(35)\]

<table>
<thead>
<tr>
<th></th>
<th>gut-<em>er</em> Wein</th>
<th>je.*d-<em>er</em> Wein</th>
<th>d-er gute Wein</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>good-<em>AGRA</em> wine</td>
<td>*every-<em>AGRA</em> wine</td>
<td>*the-*AGRA wine</td>
</tr>
</tbody>
</table>

The identification of *-er* in (35a) and (35b) seems well motivated. The identification of the *-er* in (35a) and that in (35c) as the same morphosyntactic object was argued for above, and I will assume it to be correct. The decomposition of *jed*- into *je-* *d-* is intuitive and supported by the discussion in Sections 5 and 7. Against this background, I will hypothesize that *d* in *jeder* is the “pre-adjectival” definite marker that occupies the left periphery of an xAP. Hence we arrive at the partial representation of *jeder Junge* as in (36).

\[(36)\]

\[
\text{xAP} \ldots-d-\ldots-er\ldots \text{Junge}
\]

This raises two questions: What and where is the “adjective” in the xAP containing *d-er* of *jeder*? And secondly, how is *je* structurally related to this xAP? Section 3 on *beid-* ‘both’ below suggests, by analogy, that *je* is the “adjective” and that it moves into the left periphery of the xAP, leaving a trace in the complement of AgrA.

3. *Beide ‘both’*

German has the distributive quantificational determiner *beid-* ‘both’ which shares much of its morphosyntax with *jed-. Beid-* belongs to those elements that have what is sometimes called a determiner use (37a) and an adjectival use (37b).

\[(37)\]

<table>
<thead>
<tr>
<th></th>
<th>Beide Philosophen haben eine Flasche Wein getrunken. German both philosophers have one bottle wine drunk “Each of the two philosophers drank one bottle of wine.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Die <em>beiden</em> Philosophen haben eine Flasche Wein getrunken. the <em>both</em> philosophers have one bottle <em>wine</em> drunk “The two philosophers shared a bottle of wine.”</td>
</tr>
<tr>
<td>b</td>
<td></td>
</tr>
</tbody>
</table>
The two uses can be distinguished on syntactic, morphological and semantic grounds. In (37a) beid- is (i) DP-initial, (ii) it exhibits determiner-inflection, and (iii) it distributes over the predicate drank one bottle. In (37b) beid- is (i) preceded by a definite article, (ii) it inflects like a weak adjective (i.e. like an adjective preceded by a definite article), and (iii) it does not distribute over the predicate. Of course, by hypothesis, the right analysis will identify these contrasts as three sides of the same coin.

The traditional/standard view assigns the constituent structure in (38) to the two uses.

(38) Traditional analyses:

a.  

\[
\text{both} \quad \text{roses}
\]

b.  

\[
\text{the} \quad \text{both} \quad \text{roses}
\]

I will argue against (38b), in favor of the structures in (39).

(39) Present proposal:

a.  

\[
\text{both} \quad \text{roses}
\]

b.  

\[
\text{the} \quad \text{both} \quad \text{roses}
\]

Strong support for (39b) comes from the previous discussion of adjectival inflection and the adjectival article in Section 2. Another important argument involves the (DP-internal) scope taking properties of beid-, which we will turn to next.

3.1 The scope properties of beid-

3.1.1 DP-external scope

Determiner beid- and adjectival beid- have distinct scope properties (Pafel, 1995). Let me start from the discussion in Pafel (1995), representing a variant of (38). Pafel (1995, p.247ff) discusses the two (uses of) German beid-, terminologically distinguishing between a “quantificational” (37a) and a “referential” (37b) noun phrase. He notes a scopal contrast between the two uses of beid- with regard to their respective interaction with negation (40)–(41) and with other quantifiers (42)–(43).

Consider first the interaction of DP-initial beid with negation (40). Pafel notes that (40a) and (b) are not logically equivalent. In a situation in which one of the philosophers was invited, and one wasn’t, (40b) is true, while (a) is false.

(40) a.  

\[
\text{Es sind beide Philosophen nicht eingeladen worden.}
\]

\[
\text{it are both philosophers not invited been}
\]

b.  

\[
\text{Es ist nicht der Fall, dass beide Philosophen eingeladen worden sind.}
\]

\[
\text{it is not the case that both philosophers invited been are}
\]
With non-initial beid-, by contrast, the two variants are logically equivalent. In the situation described, they are, Pafel states, more or less false.

(41) a. Die beiden Philosophen sind nicht eingeladen worden. 
the both philosophers are not invited been

b. Es ist nicht der Fall, dass die beiden Philosophen eingeladen worden sind. 
it is not the case that the both philosophers invited been are

Similarly the two uses contrast in the way they interact with an additional quantifier in the sentence. With DP-initial beid-, topicalization of the direct object quantifier across the beid- subject in (42b) has truth-conditional effects, cf. (42a).

(42) a. Beide Philosophen haben vielen Gästen die Hand gegeben. 
both philosophers have many guests.acc the hand given

b. Vielen Gästen haben die beiden Philosophen die Hand gegeben. 
Many guests.acc have the both philosophers the hand given

Imagine a party for faculty and friends at the (Humboldt) University of Berlin in the 1820th, with 102 guests, say 50 women and 52 men, if Hegel shook all and only the women's hands and Schopenhauer shook hands with 50 men and no woman, (42a) would be true, but (b) would be false. This is because 50 surely counts as “many” in the given context, hence (42a) is true, yet, there are not many (in fact not a single person) who shook hands with both Hegel and Schopenhauer, hence (42b) is false. With non-initial beid- (43), by contrast, no truth-conditional difference arises from the otherwise equivalent topicalization (43b).

(43) a. Die beiden Philosophen haben vielen Gästen die Hand gegeben. 
the both philosophers have many guests.acc the hand given

b. Vielen Gästen haben die beiden Philosophen die Hand gegeben. 
Many guests.acc have the both philosophers the hand given

Pafel correlates the scope contrast with a syntactic and lexical contrast, postulating two lexically distinct beid-. He analyzes DP-initial beid as “the adjectival part of a complex quantificational determiner with an empty head” (44a).
A weakness of this proposal is, in my opinion, the fact that the correlation between the scope contrast and the syntactic contrast is not instrumentalized, but rather stipulated. It may be preferable to derive the scope contrasts in structural terms without recourse to distinct lexical properties. I.e. the scope facts should follow from the difference in position between non-initial beid- and initial beid-. Let us hence assume that beid- is originally merged in a low position within its xAP and can move to the xAP-left periphery from where it scopes out of the containing DP, or it can fail to move, in which case it will fail to take the relevant scope.

This, per se, may still be compatible with a syntax like (44). However, there are important shortcomings of (44). (44a) faces a number of problems, which we will turn to shortly. But first let me note a crucial issue with (44b) regarding scope.

3.1.2 DP-internal scope
The scope taking properties of the two uses of beid- not only differ DP-externally but also DP-internally. I assume that the distributive operator associated with beid- (and jed-) takes the two membered set created by beid- + NP, applies each member to the material in its scope, and conjoins the results. Hence (45a) can be paraphrased roughly as (b).

(45) a. Beide Buben kauften drei Bücher.

    both boys bought three books

    ‘The two boys are such that one of them bought three books and the other bought three books too.’

With this in mind, consider examples (46) and (47), which show that DP-initial both and embedded both have distinct scope possibilities with regard to modifiers of the noun they quantify over. This is predicted by the present proposal (39), but not by the standard view (38).

(46) a. di bäidä mäitli wo sich kännet

    the both girls who sich know

    “the two girls who know each other”

b. #bäidi mäitli wo sich kännet

    both girls who sich know
In (46a) the anaphor *sich* is interpreted as a reciprocal, which is possible only with a plural antecedent. In (46b) this interpretation is not available. (46b) somewhat marginally allows a reading with *sich* interpreted as reflexive. The distributive operator associated with *beid-* applies the material in its scope to each of the two members of the set picked out by the quantifier individually. In other words, in (46b) *sich* does not have an antecedent with a plural meaning, i.e. it fails for the same reason English “*Every student likes each other*” does.

Similarly in (47). The relational predicate *verwandt* ‘blood-related’ necessarily relates two (or more) (sets of) individuals, i.e. it has two participant roles to assign. In order to do so it requires either a plural subject or a PP complement (as does English *related*). In (47a) *bäid* is on a right branch in its xAP and hence (by hypothesis) cannot take scope over the xAP containing *verwandtä* to its right. Therefore *verwandtä spiler* is not distributed over, and *verwandtä* in effect has a plural subject. The DP refers to two players that are blood-related (to each other). In (47b), on the other hand, *bäid* scopes and hence distributes over *verwandtä* with the effect that *verwandtä* in effect has a singular subject: “The two boys are such that each one of them is blood-related #(to John)”. This is acceptable if only one participant role is assigned to the subject and the other to the PP. If no PP is present, the predicate ends up not being able to assign one of its participant roles, which leads to the degradation in (47b). These considerations favor (48a) over (48b).

Pafel’s proposal that the two *beid-* are lexically distinct (such that adjectival *beid-* is not distributive, while determiner *beid-* is) could a priori capture the contrast. But the question would arise of why this is so, and not e.g. the other way around? – Herein lies an immediate advantage of the present proposal, namely that it predicts the obligatorily distributive nature of DP-initial *beid-. Given that in German adjectives quite generally can occur DP-initially, bearing strong inflection, it is not clear what would prevent a potential non-distributive *beid* from occurring in that position. Hence the existence of a non-distributive DP-initial *beid-* would be predicted, but is not attested. I conclude that (48a) is the correct (partial) representation of non-initial *beid.*
3.2 The syntax of determiner *beid-*

Let us next turn to determiner *beid*. I would like to take issue with Pafel’s complex head proposal for DP-initial *beid*-(and complex determiners more generally), repeated from above.

(49)
```
  DP
   /\                  
  D  NP
 /\  /                /
 D A |     | Philosopher
 e  beide
```

Pafel’s (1995) proposal is part of a larger discussion of German determiners. He identifies a number of “complex determiners,” to which he assigns the head-adjunction structure. These include (50).

(50) a. das-selbe b. die-meisten c. ein-jedes d. Ø-beide e. all-die German
    the-same  the-most   an-every  Ø-both   all-the

In his proposal, the adjectival part typically right adjoins to D. But there is the option of left-adjunction, as exemplified by *all-die* (50e). (The very relevant (50c), where *jed-* is analyzed as the adjectival part of a complex head, is discussed in Sections 3.2.3 and 7).\(^1\)

My criticism has several components: The first argument casts doubt on the validity of the analogies drawn in (50). The second argument specifically targets the null D to the left of *beid-* proposed by Pafel. And the third argument specifically targets the status of *ein* in *ein-jed-*.

3.2.1 Realigning the analogy

The motivation for postulating a null D to which *beid-* attaches rests on the idea that the *das-*-, *ein-*-, *die-*-, -*die* and (the hypothetical) Ø parts of the complex determiners in (50) are syntactically the same. I will argue that this hypothesis, while partly right, is wrong with regard to *ein-jed-* and Ø-*beid-*.

The correct analysis of *ein jed-* has important consequences for the analysis of *beid-*, assuming that it is significant that these two (as opposed to *das-selbe* and *die meisten*) (a) involve a quantificational morpheme preceding a definite marker *je-d-* and *bei-d-*, and (b) this definite marker takes strong adjectival inflection. In this respect they fall together with *all-die*, where a quantifier also precedes a definite marker morpheme, which in turn precedes strong adjectival inflection. This is witnessed by the example from Swiss German, where in plural DPs the adjectival article takes an *i-* suffix while the plain definite article does not (see Section 2.3.1 for discussion).
If Pafel is correct in analogizing the \(d\) component in *das-selbe, die meisten*, and *all-die*, and if I am correct in analogizing the \(-d\)-component in *je-d-, bei-d-, and all-d-*, we arrive at the (simplified) schematic pictures in (52).

\[
\begin{align*}
(52)\quad &a. \quad \text{je/bei}(d)/\text{all} \quad d- \quad \text{agra} \quad \cdots \quad \text{NP} \\
&b. \quad d- \quad \text{agra} \quad \cdots \quad \text{selb-}/\text{meist-} \quad \cdots \quad \text{NP}
\end{align*}
\]

The important conclusion is that the syntactic status of *ein* in *ein jed-* is distinct from that of *d-* in e.g. *das-selbe*. And there does not seem to be a good reason for assuming a null \(D\) to the left of determiner *beid-*. Rather the fact that *selb-* in *dasselbe* follows and *all* in *all-die* precedes the sequence \(d + \text{AgrA}\) should be analyzed in terms of a movement contrast.

\[
\begin{align*}
(53)\quad &[\quad \cdots \quad x \quad \cdots \quad d- \quad \cdots \quad \text{AgrA} \quad \cdots \quad y \quad \cdots \quad ]
\end{align*}
\]

*Selb-, meist-* do not move, while *je-, beid-, all-* can/do. Given that this movement to the xAP left periphery crosses two heads without affecting their order it must be an instance of phrasal movement. And given that it takes place in the presence of an adjectival article \(d-\), it must be different from AP-fronting in non-definite contexts. Let me refer to it as xAP-internal Q-movement.

### 3.2.2 Tracing null \(D\) with dative morphology

The second argument against (49)–(50) has to do with P-D contraction and directly disfavors the idea of a null \(D\) to the left of determiner *beid-*. Let me start by noting that determiner *beid-* has a use with neuter singular morphology and obligatory NP-ellipsis, anaphoric on split antecedents (54a).\(^{16}\) Adjectival *beid-* on the other hand, is not compatible with singular morphology (54b).

\[
\begin{align*}
(54)\quad &a. \quad \text{Es ist nicht so klar, ob er Wein will oder Bier. Beides ist vorstellbar.} \\
&\quad \text{it is not so clear if he wine wants or beer. both-STR} \\
&\quad \text{is.sg imaginable} \\
&\quad \text{“It's not clear if he wants wine or beer. Either is conceivable.”}
\end{align*}
\]

\[
\begin{align*}
(54)\quad &b. \quad *\text{das beide …} \\
&\quad \text{the.sg both}
\end{align*}
\]

Given this, only determiner *beid-* can cooccur with singular morphology, such as dative -\(m\). Now German exhibits the phenomenon of P-D contraction
(Van Riemsdijk, 1998), which describes, roughly speaking, the fact that, under certain dative case assigning prepositions, the d- of the definite article remains unpronounced (in masculine and neuter contexts), and the case suffix -m amalgamates with the preceding preposition (55b), (56).

(55) a. von ein-em Baum/an ein-em Bach 
    from a-DAT tree/ at a-DAT stream
b. vo-m Baum/a-m Bach 
    from THE-DAT tree/ at THE-DAT stream

Notice that the relevant noun phrases are definite. It is not generally the case that in the absence of an overt article dative -m suffixes to the preposition, as illustrated with the modified bare noun phrase in (56b).

(56) a. vo-m Guten und vo-m Schlechten 
    of-DAT.DEF good and from-DAT.DEF bad
b. Das zeugt von gut-em Geschmack. 
    that witnesses of good-DAT taste

Die meisten ‘the most’ behaves as expected (57), parallel to (55b). The phonetic absence but semantic (and presumably structural) presence of the definite marker d- between the preposition and meist correlates with -m suffixing to the preposition.17 Determiner beid-, on the other hand, intervenes between the preposition and the dative suffix -m (57).18

(57) a. a-m meisten/ (*)an meist-em 
    on-DAT.DEF most / on most-DAT
b. von beid-em / vo-m beiden 
    from both-DAT / from-DAT both

This suggests that the position of determiner beid- is different from that of the adjectival part of a complex determiner in the sense of Pafel. In other words, initial beid- is not preceded by a non-overt article.

I take the evidence discussed in this section to be in favor of the proposal in (39) repeated (more explicitly) as (58).

(58) Present proposal:

a. 
   \[ \text{xAP bo(th)the-AGRA roses} \]

b. 
   \[ \text{xAP the-AGRA both} \]

3.2.3 ein-jeder and inflection

The third argument against (49)–(50) concerns ein-jed-. Pafel (1995) analyzes this as an instance of a complex determiner, parallel to die meisten ‘the most’ and
*dieselbe 'the-same'.* Pafel notes that these complex determiners consist of an article part (definite or indefinite) and an adjectival part, where the adjectival part inflects like an adjective after the respective article (p.240ff.). Hence Pafel seems to expect (59a) and (59b) to be parallel with regard to the inflection on the adjective.

(59)

a. ein jed-er Leopard
   an every-STR leopard

b. ein gross-er Leopard
   an big-STR leopard

While (59) gives the appearance of this being the case, an important fact, not considered by Pafel, is that while (59b) is morphologically non-definite all the way down, (59a) is not. This can be shown by adding yet another adjective to the immediate left of the noun (60). In (60a) jed- determines the inflectional behavior of the adjective to its right in a way definite determiners do.\(^{19}\)

(60)

a. ein jed-er wütend-e/*-er Leopard
   an every-STR angry-wk/-STR leopard

b. ein gross-er wütend-er Leopard
   a big-STR angry-STR leopard

Hence we can at least state that *ein* in *ein jed-* does not determine definiteness with regard to DP-internal material to the right of *jed-* . This then argues against Pafel's structural proposal (61).

(61) (Rejected)

\[
\begin{array}{c}
\text{D} \\
\text{NP} \\
\text{D} \\
\text{A} \\
\text{Blume} \\
\text{eine} \\
\text{jede}
\end{array}
\]

Rather *jed-* is a definite projection in the complement of *ein*, scoping over DP-internal material to its right, determining definiteness (at least inwardly) in the same way a definite demonstrative does.

(62)

\[
\begin{array}{c}
\text{eine} \\
xAP \\
\text{nP} \\
\text{jede} \\
\text{Blume}
\end{array}
\]

The questions arise of whether and how the two variants of *jed-* (the one with and the one without preceding *ein-* ) are related. Given that the two variants have essentially identical meanings,\(^{20}\) let us try and model them as close to identical in the syntax. Concretely, I propose that there is always an *ein* present with determiner *jed-* , albeit not always overt (cf. Section 7 for comparative evidence). In the
derivation of *jed-* without overt *ein-*,-je- moves to the left of *ein*, with the effect that *ein* can no longer be pronounced (represented by capitalization).

(63) \[ \text{je EIN [ t, der NP} \]

This is supported by interesting facts noted by Roehrs (2007) who compares *ein jed-* with other *ein Adj* sequences in NP-ellipsis, de-accenting, and split NP contexts. Roehrs makes a nice point, showing that *ein jed-* behaves differently from “ordinary” *ein Adj* sequences in the relevant respects. I am adapting Roehrs’s examples of NP-ellipsis here.

(64) a. Ich habe ein frisches Brötchen von diesem Tisch gegessen …  
I have a fresh roll from this table eaten  
“I ate a fresh roll from this table …”

b. … und Du eins von dem da.  
and you one from that there  
i. “… and you ate a fresh roll from that one.”

ii. “… and you ate a roll from that one.”

With a predicative adjective such as *frisch ‘fresh’*, the interpreted elliptical structure associated with *eins* in (64) can either take as its antecedent only *Brötchen ‘roll’* or the modified noun phrase *frisches Brötchen ‘fresh roll’*.

With *ein jed-* , on the other hand, *jed-* cannot be interpreted as part of the antecedent, as illustrated in (65) (attributed to Klaus Abels). The elliptical constituent in (65b) can only be interpreted as containing *Brötchen ‘roll’, without jedes.*

(65) a. Ich habe ein jedes Brötchen von diesem Tisch gegessen …  
I have a every roll from this table eaten  
“I ate every roll from this table …”

b. … und Du eins von dem da.  
and you one from that there  
i. # “… and you ate every roll from that one.”

ii. “… and you ate a roll from that one.”

It is conceivable that this contrast is syntactic. Specifically, the impossibility of ellipsis containing *jed-* can be analyzed as being due to a syntactic mismatch between the positions associated with *jed-* and those included in the elliptical constituent. This is partly a consequence of the proposal in (63), that *je* of *jed-* is associated with a position to the left of *ein*, say Spec,*ein*. The association of *je* with Spec,*ein* is typically established in the overt syntax in a way that involves movement of *je*, with the PF-effect of leaving *ein* unpronounced (in a way familiar from the notion of Doubly Filled Comp, cf. Chomsky & Lasnik (1977); Giusti (1997); Koopman (1997)).
Assuming further that ellipsis as in (65) prevents je- from establishing the necessary association with the relevant pre-ein position, the impossibility of jedes Brötchen as the antecedent of NP-ellipsis in (65) is accounted for.\textsuperscript{22}

3.2.4 Summary of both

The discussion of beid identifies beid as adjectival. It strongly supports the proposal that the pre-adjectival definite marker and the adjective are part of a constituent excluding the (overt) NP. This constituent is an extended adjectival projection xAP. Secondly, beid can move to the xAP left periphery. Such xAP internal beid fronting is different from AP-fronting in that it is independent of the definiteness of the xAP (and of d merger in the left periphery of xAP). Beid fronting further changes the scope of beid. I therefore call it an instance of Q-movement.

3.3 Implications for jeder

The previous discussion showed that the quantificational element beid- can surface to the immediate right of d+AgrA or to the immediate left of d+AgrA.

\begin{equation}
\text{bäid}-d-i\hspace{1cm}\text{both-the-AGRA}
\end{equation}

It was suggested that the latter position is derived from the former by movement.

The morphological structure of initial bäidi in (66) is exactly the one we had hypothesized for jeder, and were looking to find independent motivation for. This morphological structure has been argued to be syntactically derived. Extending the proposal for DP-initial bäid- to je in jed- derives (67).

\begin{equation}
\begin{array}{l}
\text{a. je-d-i frau}\hspace{1cm}\text{Swiss German}\\
\text{every woman}\\
\text{b. [[je] d-i tje ] frau}\\
\text{every the-AGRA woman}
\end{array}
\end{equation}

\textit{Jeder} differs from beid- in that je must obligatorily front xAP-internally.\textsuperscript{23}

Hence jeder involves a definite xAP, i.e. an xAP with an adjectival article d, similar to beid and to definite demonstratives. This proposal correctly predicts the inflection that jeder “triggers” on a following adjective. Adjectives following definite xAPs inflect weakly (68a).

\begin{equation}
\begin{array}{l}
\text{a. jed-es / dies-es gut-e Wort}\hspace{1cm}\text{Swiss German}\\
\text{every-AGRA / this-AGRA good-wK word}\\
\text{b. ein gut-es Wort}\\
\text{a good-AGRA word}
\end{array}
\end{equation}
Hence the xAP whose overt material produces *jeder* acts like a definite xAP. In Section 5, we turn to *je* and discuss evidence that *je* takes a bare N(P) complement as its restriction. But before that it is important to clarify our assumptions with regard to the syntactic relation between xAP and the modifyee N(P).

4. Adjectives as relatives and the xAP-internal origin of N

4.1 Adjectives as relative clauses

The analysis of adnominal adjective phrases developed in Section 2 converges in part with the tradition that regards adnominal adjectives as underlyingly (reduced) relative clauses (Chomsky, 1957; Smith, 1961; Fanselow, 1986; Kayne, 1994; Alexiadou & Wilder, 1998). One suggestive point is the parallelism between xAP and CP (i.e. xVP) discussed in the previous subsection.

At this point, let me review an argument from Fanselow (1986) for the analogy of adnominal adjective phrases and relative clauses. Fanselow argues that prenominal adjectives in German must have a structure akin to that of a relative (small) clause, which he represents as in (69b), (the labels are updated).

(69) a. die tapferen Helden
    the brave heroes

At this point, let me review an argument from Fanselow (1986) for the analogy of adnominal adjective phrases and relative clauses. Fanselow argues that prenominal adjectives in German must have a structure akin to that of a relative (small) clause, which he represents as in (69b), (the labels are updated).

Fanselow’s argument is in part based on considerations from anaphora binding. He notices that German allows anaphors in prenominal adjective phrases.

(70) a. die sich treue Frau
    the refl faithful woman
    "the woman who is true to herself"

b. die einander verachtenden Männer
    the each other despising men
    "the men who despise each other"
Crucially, the anaphor appears to be bound by the containing DP. Furthermore, this configuration is not only possible but obligatory, as illustrated in (71a,b) compared to (71c).

\[
\begin{align*}
\text{(71) a. } & \quad [\text{Peters}_k \left[ \text{sich}_k^{j/k} \text{treue} \right] \text{Frau}]_j \\
& \quad \text{German} \\
& \quad \text{Peter’s refl faithful wife} \\
& \quad \text{“Peter’s wife who is true to herself”} \\
\text{b. } & \quad \text{Wir}_k \text{schätzen } [\text{die } \left[ \text{einander}_k^{j/k} \text{treuen} \right] \text{Politiker}]_j, \\
& \quad \text{we esteem the each other faithful politicians} \\
& \quad \text{“We appreciate those politicians who are faithful to one another.”} \\
\text{c. } & \quad \text{Peters}_k \text{Bild von sich}_k \\
& \quad \text{Peter’s picture of refl} \\
& \quad \text{“Peter’s picture of himself”}
\end{align*}
\]

The impossibility of coindexation with the possessor in (71a) and the sentential subject in (71b) suggest that the prenominal adjective phrase (here labeled XP) must constitute its own binding domain, unlike PP-modifiers (71c).

\[
\begin{align*}
\text{(72) Peters}_k \quad [\text{sich}_j^{j/k} \text{mehr und mehr steigernde} ] \text{Empörung}_j^{j/k} \\
& \quad \text{more and more rising indig} \\
& \quad \text{nation about refl}
\end{align*}
\]

Fanselow points out that in this respect prenominal adjective phrases pattern with relative clauses, and concludes that this is evidence for an analysis of prenominal adjectives in German as reduced relative clauses.

\[
\begin{align*}
\text{(73) a. } & \quad [\text{der Mann, der sich}_j^{j} \text{mag}, ]_j \\
& \quad \text{German} \\
& \quad \text{the man who refl likes} \\
\text{b. } & \quad [\text{Peters}_k \text{Frau, die sich}_k^{k/j} \text{mag}, ]_j \\
& \quad \text{Peter’s wife who refl likes}
\end{align*}
\]

The important factor, for Fanselow, is that the modifier constituent is a binding domain, i.e. it contains an accessible subject (perhaps AgrA). Furthermore this subject is identified with the modifyee.

4.2 The xAP-internal origin of N

The analysis that I am proposing for German prenominal adjectives agrees with Fanselow’s, but is, more specifically, in the tradition of the reduced relative analysis combined with the promotion analysis of relatives (cf. Vergnaud (1974); Kayne (1994), see De Vries (2002) for detailed discussion). Since this point is of some importance to the analysis of jeder, I will give two suggestive arguments for postulating a trace/copy of the N(P) modifyee inside the xAP: (i) based on agreement, and (ii) based on interpretation.
Consider first the logic of the argument: If the proposal for the weak/strong adjectival declension alternation in Section 2 is correct, the surface position of the noun must be external to AgrAP in (74), because the noun always follows AgrA, independently of whether AP also follows AgrA or precedes it. Hence, to the extent that the arguments that at some point the noun must be inside the AP are convincing, it must be the case that the noun extracts from the AP in the course of the derivation.

(74)  
xAP  
  (d) AgrAP  
    | AgrA  AP 
      adj

One argument comes from agreement. It is a standard assumption that agreement requires a c-command (or Spec-Head) relationship between the Agr head (or Probe) and the controller (or Goal) at some point in the derivation. As for adjectival agreement, AgrA, we have seen evidence that AgrA is embedded within the xAP, yet it co-varies with gender features of the modifyee nominal. Therefore an xAP internal origin of N(P) seems called for.27

A second argument comes from interpretation. While an adjective like blue can equally well be analyzed as combining with N(P) or with DP (whereby both options may co-exist at some level, possibly differing with regard to the restrictive or non-restrictive nature of the modification), there are adjectives that must combine with N(P). These include so-called non-predicative adjectives such as former which operate on the intension of the noun (Siegel, 1976; Oltean, 2007). Such adjectives exhibit the same inflectional behavior as attributively used predicative adjectives (e.g. of color, size etc). Hence they can occur inside the xAP to the right of AgrA (75).

(75)  
[xAP d-er frühere] Rocksänger  
the-agra former rock.singer

If it is correct to think that adjectives like former are functions that take N(P) arguments and operate on their intension at a level before D is merged, then there must be a trace/copy of Rocksänger inside the xAP to the right of AgrA in (75).28

Structurally the same point can be made with reduced participial clauses used adjectivally.

(76)  
eine [xAP XP] neulich vom Finanzamt veröffentlicht tStatistik  
a recently by.the finance.office published  
[\(\text{Agr}_{AP}\) e t\(_{XP}\)] tStatistik  
AgrA statistics
Statistik is interpreted as the object of veröffentlicht ‘published’. Hence, it is structurally associated with the complement position of veröffentlicht. This association may be thought of in terms of movement. If so, examples like (76) also have an xAP internal trace/copy of the modifyee nominal. I conclude that there is at least suggestive evidence that the modifyee nominal originates inside the xAP.

4.3 Implications for jeder

If we adopt a relative clause analysis of prenominal adjectives, combined with the promotion analysis of (such) relatives (Kayne, 1994; Alexiadou & Wilder, 1998), we arrive at a representation of prenominal adjectives as in (77).

(77)  
```
DP
  xAP
  der gute t_{W ein}
  D
  XP
  ... Wein ...
```

This implies that jeder contains a copy of the modifyee N(P), i.e. the restriction of the quantifier, as the complement of je, cf. 3.3.

5. je takes a bare-N(P) complement as restriction

In this section I discuss a different set of considerations which converge with the previous ones and involve the comparison of different contexts which the universal quantifier je appears in.

In the preceding discussion I argued that jeder is an xAP (Section 2), that je corresponds to the adjectival head/stem (Section 3), and that the modifyee N(P) originates in the xAP, more precisely in a local relation with the adjective (Section 4). Taken together, this essentially amounts to saying that je merges with the noun.

(78)  
```
je Junge
```

In the present section I compare je in jeder with other occurrences of this je-, i.e. occurrences that do not end up as jed-. We will see that this je always takes a bare nominal restriction. Hence the present proposal makes an important step toward a unified analysis of the distributive universal quantifier je across these contexts.
5.1 Je-words

*Je* can occur in a number of morphosyntactic contexts, including the following.\(^{30}\)

i. je-weils\(^{31}\) ii. je-weilig iii. bare je iv. je-der

*Je* in (i)–(iii) can be and/or has been argued to take a bare N(P) complement as its restriction. For (iv) such a claim is neither obvious nor has it been made, as far as I am aware. (But we are, of course, led to think so by our previous discussion.) Let me start with *jeweils*.

5.1.1 Distance-distributive jeweils

German has the adnominal quantifier *jeweils* which is close (though not identical) to English binominal *each* (Zimmermann, 2002).

\[(79) \text{Drei } \text{jungen } \text{haben gerade } [\text{jeweils } \text{zwei Bücher}] \text{ gekauft.} \]
three boys have just each two books bought

"Three boys just bought two books each."

Zimmermann motivates a decomposition of *jeweils* into *je-weil-s* (80), and proposes (81):\(^{32}\)

\[(80) \]
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\[Q \]
\[N(P)\]
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Es gibt ein Buch zum Kurs, mit Literatur zu den jeweiligen Themenbereichen.

“There’s a book with literature for each topic accompanying this course.”

In (82) the antecedent of weil is Themenbereich. I assume that this does not change anything regarding the internal structure of jeweil-

5.1.3 Adverbial jeweils
Jeweils can also be used adverbially (Zimmermann, 2002).

Hans hat jeweils gelacht.
Hans has each.time laughed
“Hans laughed at each relevant occasion.”

The antecedent of weil is a discourse salient set of events. In the Example (83), for instance, one could imagine as the previous sentence something like Fritz made funny jokes.

5.1.4 Bare je
Of particular interest is the fact that German je can also combine with a bare count singular to form an adverbial.

Die Partei hat 100’000 Dollar je Wahlveranstaltung ausgegeben.

The DistKey Wahlveranstaltung is the sister/complement of je. It must be a bare nominal. Despite the fact that Wahlveranstaltung is a singular count noun, it is impossible to have an article preceding it in (84). This strongly suggests that je not only can, but must take a bare N(P) as its restriction/complement.

5.2 Implications for jeder
Given that the form je is identical across je, jeweils, jeweilig, and jeder, and taking seriously the intuition that the semantic contribution of je is the same across these “words,” we are likely dealing with one and the same element. If this is correct, we conclude that je in jeder plausibly also takes a bare N(P) as its restriction.
On the surface however, *je* and *Junge* are non-adjacent. Hence there must be movement. This converges with the proposal we arrived at in the previous discussion. The next section summarizes my concrete proposal.

### 6. Proposal

Assuming a (syntactic) decomposition of *jeder* into *je-d-er*, the considerations in Section 5 suggest the following picture.

(86) \[ [je \ t_{Junge} \ d-er \ Junge] \]

This converges with the considerations discussed in Sections 2 and 3 regarding definite demonstratives, adjectival articles, the weak/strong adjectival declension alternation, and the quantifier *beid- 'both’*, and with the promotion view on relatives, discussed in Section 4, leading to the proposal represented in (87b).

(87) a. jeder Junge     German  
every boy

A step by step summary and derivation culminating in (87b) is provided below.

#### 6.1 Step by step derivation

6.1.1 *je-N(P) merger*

The first step constitutes a key property, namely that the adjective in general, and *je* specifically, enters into a syntactic relation with the noun (possibly phrasal).
This step provides the quantificational morpheme *je* with its restriction argument, interpreted as DistKey.

\[(88)\]
\[
\begin{array}{c}
\text{je} \\
\text{jeP}
\end{array}
\]

\[\text{Junge}\]

### 6.1.2 Agra-jeP merger, N(P) mvt, and Spec-Head agreement

Once argumental relations have been established, an inflectional head is merged, AgrA. This head is identified with the strong adjectival inflection in German. Since AgrA agrees in phi-features with the N(P), and since the N(P) must eventually have moved into an xAP external position, I assume that N(P) moves into Spec,AgrA at this point.\(^{36}\) In this configuration Spec-Head agreement may occur.\(^{37}\)

\[(89)\]
\[
\begin{array}{c}
\text{AgrAP} \\
\text{Junge} \\
\text{AgrA} \\
\text{jeP} \\
\text{je} \\
\text{t_{Junge}}
\end{array}
\]

### 6.1.3 d-AgrAP merger

Subsequently, the adjectival article is merged. This merger makes xAP definite. In German, if no adjectival article is merged at this point, the AP will move and lexicalize the left periphery. This complementarity between merger of *d* - and movement of AP was proposed to underly the Germanic weak/strong declension alternation. I further suggested that it is the adjectival counterpart to the complementarity found in German between a complementizer *dass* introducing a verb-final tensed clause,\(^{38}\) on the one hand, and a V2 clause, analyzed as vP-first (or similar), on the other.

\[(90)\]
\[
\begin{array}{c}
\text{d} \\
\text{AgrAP} \\
\text{Junge} \\
\text{AgrA} \\
\text{jeP} \\
\text{je} \\
\text{t_{Junge}}
\end{array}
\]

### 6.1.4 xAP-internal Q-movement

Quantificational adjectives, q-APs, (sometimes) move to the left periphery of xAP. This Q-movement is presumably independent of merger of the adjectival article,
and (hence) independent of the definiteness of xAP. This movement is relevant for the scope capabilities of the quantifier.

(91) \[
\text{xAP} \\
\text{jeP} \\
\text{d} \\
\text{AgrAP} \\
\text{Junge} \\
\text{AgrA} \\
\text{\text{-er}}
\]

In the case of je in jeder this movement step is obligatory, while in the case of beid-it is not.

6.1.5 \textit{N(P)-extraction (from xAP)}

It is clear that the noun \textit{Junge} must move. First of all, it must move out of the complement of \textit{je}, and secondly out of Spec,AgrA, since it is pronounced in a position that is overtly to the right of AgrA.

(92) \[
\text{Junge} \\
\text{xAP} \\
\text{jeP} \\
\text{d} \\
\text{AgrAP} \\
\text{\text{-er}}
\]

Assuming that movement is exclusively to the left (Kayne, 1994), \textit{Junge} must move to a position to the left of fronted \textit{je}. This movement may be thought of as analogous to the extraction of the “head of a relative” from the relative clause.

6.1.6 \textit{xAP-fronting}

Given the observable word order, the xAP must move leftward, past the noun \textit{Junge}. While in Greek both the postnominal and the prenominal position of xAP are overtly attested, in German, (inflected) adjectives are exclusively prenominal, hence the movement in (93) is an instance of a more general parametric choice.
7. **Scope of the proposal**

Postulating that a given function word, e.g. the quantificational determiner *jeder*, has a complex internal structure is only of any real interest to the extent that these structural/derivational properties are assumed to also (partly) characterize other “function words,” either counterparts of *jeder* in other languages, or other determiners within a language, or both.

In Section 3 we saw that *jed-* and *beid-* share most of their properties and furthermore most of these properties are inherited from the syntax of ordinary adjectival phrases. In this final section, I will note some preliminary evidence suggesting (a) that the counterparts of *jeder* in Greek, Russian, and Romance also involve a reduced relative clause, and (b) that the presence of an indefinite article with *jeder* extends to its counterparts in English, Romance, and Malayalam. And lastly, I will show that the particular way in which the syntax of *jeder* includes *ein* is also found outside of *jeder* in German, namely in the *what for* construction.

7.1  *Ein je-d-er beyond German*

Some of the components of *jeder* are unsurprising and we would expect to find counterparts of them in translation equivalents of *jeder* in other languages. These are (a) an element like *je*, which is associated with universal quantification, and (b) a component contributing the DistKey (restriction). Other elements that we identified are less clear, such as the adjectival article (i.e. relative complementizer) and the indefinite article. Especially finding both together may seem bewildering, which may contribute to the ease with which the meaning of *jeder* is sometimes thought to be non-compositional. Therefore finding counterparts of these more surprising components in translation equivalents of *jeder* in other languages is
significant. In what follows I will attempt to argue that (relative) complementizers and the indefinite article are found in counterparts of *jeder* in other languages.

7.1.1 *Adjectival article – relative complementizer*

I analyzed the *-d-* in *jeder* as an adjectival article, which in turn I analyzed as the complementizer of a reduced relative clause. In fact, there is preliminary suggestive evidence that the presence of a relative clause structure is involved in distributive universal determiners across a good range of Indo-European languages, including Greek, Romance, and Slavic, in addition to Germanic.

Starting with Greek, we observe with Giannakidou (2004) that the Greek counterpart of English *every/each* co-occurs with (or really: contains) a definite article.

\[(94) \ q\ \ \text{kathe}\ \ \text{fititis}\]

the.masc.sg every student

“each student”

Viewing this as an adjectival article is, at least, a possibility, and is in fact expected given the discussion in Section 2 and in Leu (2009). If this is correct, then *o* in *o kathe* is directly analogous to *-d(er)* in *jeder*, differing from it in that *kathe* follows its article, whereas *je* precedes it.

In German and English the parallelism between C and D is morphologically transparent, both being typically realized as *d-/th-*. Hence it may be unsurprising that the adjectival article (i.e. complementizer in the adnominal xAP) is also realized as *d-/th-*. In the Romance languages, on the other hand, there is a morphological mismatch between the definite article *-l-* and the finite complementizer, which I will note as the French *que*. While French superlatives (95a) suggest that French too may have an adjectival article that is formally identical to the immediately prenominal definite article (cf. Kayne (2008a)), we should not forget the *que* complementizer in the relative clause in (95b).

\[(95) \quad a.\ \ \text{la}\ \ \text{rose}\ \ \text{la}\ \ \text{plus}\ \ \text{belle}\]

the rose the most beautiful

b. \ \text{la}\ \ \text{rose}\ \ \text{que}\ \ \text{j’ai}\ \ \text{achetée}\]

the rose that I have bought

With this in mind, we may find it relevant to observe that the distributive universal quantifier *chaque ‘each’* consists of two overt components *cha-que*. According to Buck (1949), *chaque* derives from a blend of Vulgar Latin *cisque* (cf. Latin *quisque*, the substantive and adjectival pronoun *each (one)*, ‘every (one)’, in early use also relative ‘whoever’) and Vulgar Latin *cata* (cf. Spanish *cada ‘every’*), which in turn is related to Greek *kathe* (94). This suggests an analysis of *chaque* as involving a
quantificational component *cha*, related to *kathe*, and the complementizer *que*. In other words, it seems possible that *cha-* in *chaque* is the counterpart of *je-* in *jeder*, and (importantly) -*que* in *chaque* is like -*d-* in *jeder*.

(96) German: je -d-
French: cha -que

An analogous, and in fact perhaps clearer case comes from Russian. Russian has the distributive universal quantifier *kazhdyj* ‘every’ (97a). In addition to *kazhdyj*, Russian also has the form *vsyakiy* ‘every’ (97b).

(97) a. kazhd-yj raz Russian every-masc.sg.nom time
b. vsyak-iy raz every-masc.sg.nom time

*Vsyakiy* contains several morphologically isolable components: *vs-ya-k-iy*. The first and the last of these can be identified rather straightforwardly. *Vs* is the stem from *vse* ‘all’ followed by what looks like feminine singular inflection -*ya*. The nature of this (invariable) inflection in *vsyakiy* is not immediately clear. The rightmost component -*iy* is adjectival agreement. Hence this quantifier has a component with universal force, and it is morphologically an adjective. That leaves -*k-*.

Given the discussion of German *jeder* and French *chaque* above, it is tempting to think of this -*k-* as related to the one in the relative pronoun *k-otoriy* ‘which’ and in *k-to* ‘who’, which can be used as relative pronoun. I will follow a suggestion by Vlad Rapoport (p.c.) that this -*k-* is a complementizer akin to French *que* (its etymological cousin). In other words, -*k-* in *vsyakiy* is like -*d-* in *jeder*.

(98) German: je -d-
French: cha -que
Russian: vsya -k-

Summarizing briefly, there is preliminary morphological evidence suggesting that the reduced relative analysis of *jeder* put forth in this paper extends to counterparts of *jeder* in Greek, Romance, and Slavic.

### 7.1.2 The ein in *jeder*

Recall that the co-occurrence of *ein* with *jeder* has sometimes been taken as an argument against deriving the meaning of *(ein)*jeder compositionally from its (immediately identifiable) parts (Pafel, 1995). It is crucial to note here, though, that the indefinite article, or to put it more carefully: an element related to the numeral ‘one’, is found as an overt part of counterparts of *jeder* in a variety of lan-

Let us start with French, which can use *chaque* with an overt noun following it, or with an indefinite article instead.\(^49\)

(99) a. *chaque étudiant*  
   each student  
   French

b. *chac-un*  
   each-one

(100) *Entre chasc-une tour estoit espace de troys cens*  
      between each tower was distance of three hundred  
      Middle French  
      douze pas.  
      twelve steps

While in modern French an overt restriction nominal is incompatible with the overt indefinite article following *chaque*, older variants of French allowed these elements to co-occur (as in the example from Rabelais *Gargantua*, 53; Junker (1995, p.32) here taken from Zimmermann (2002, p.44)).

Similarly the Italian cognate of *chaque*, *ciasc-* co-occurs with an indefinite article (Kayne, 2007).

(101) *ciasc-un libro*  
     each-a book  
     Italian

Turning to English, Jayaseelan (2005, p.9ff.) notes that *every* is historically derived from a combination of *‘ever’* and *‘each’* (cf. also Postma & Rooryck, 1995), and that *“each”* was often followed by the number word *one* or a weakened form thereof before the noun. (Example from Langlands *Piers Plowman*, CE 1393, here taken from Jayaseelan (2005))

(102) *He dronk of eche a diche.*  
     he drank of each a dish  
     “He drank from each dish.”  
     Middle English

Jayaseelan (2005) discusses this in the context of attempting to give an isomorphic analysis of English *every* and its counterpart in Malayalam (103).\(^50\) Relevant for us is the fact that Malayalam (also) features a numeral/article *oor ‘one’* as one of the components of its distributive universal quantifier, along with the disjunction operator *-oo* and the conjunction operator *-um.*

(103) *oor-oo N-um*  
     *one-DISJ N-CONJ*  
     Malayalam
I will not discuss Jayaseelan’s concrete proposal here, but simply note the this fact further adds support to the idea that the *ein* in *(ein) jeder* should be taken seriously both from a syntactic and from a semantic perspective.

Leading over to the next subsection, let me note that the relative order of *eche* and *a* in (102) is the opposite of that of *ein* and *jeder* in *(ein) jeder*. It is thinkable that (102) involves movement of *eche* across *a*. In fact this corresponds in essence to the claim for *jeder* without overt *ein* in the next subsection (cf. also Subsection 3.2.3).

7.2 Determiners with *ein* beyond *jeder*

Coming back to comparative syntax within a language, let me address the role of *ein* in German *jeder* from the perspective of other German determiners, including was für ‘what (kind of)’.

Part of the traditional wisdom about the indefinite article is that it (a) is indefinite, (b) count, and (c) singular. There are, however, potential counter examples to all of these. In reaction to such counterexamples, one can take different stances. Either (i) these putative counter examples are something else, or (ii) they are ultimately explicable exceptions, or (iii) they are crucial evidence that should make us revise our ideas about the indefinite article. – Notice, incidentally, that (iii) is really a radical variant of (i).

An example of the first reaction is Bennis et al. (1998), henceforth BCD. Dutch has certain complex nominals in which an indefinite article precedes plurals or mass nouns (or proper names). BCD argue that the derivation of these nominal phrases involves a predicate inversion movement step, which is licensed by domain extending head movement. The so created complex head receives a pronunciation, which (by accident) is identical to that of the indefinite article, owning it the name “spurious article.”

Van Riemsdijk (2005) and Leu (2008b) propose an alternative approach, corresponding to (ii), namely the attempt to explain the seeming exceptions in familiar terms. Concretely, Van Riemsdijk and Leu propose that in those complex nominals, the indefinite article is associated with an unpronounced nominal (which is neither plural nor mass). Hence as far as the indefinite article is concerned, it is well behaved (in the relevant respects).

In the present context, I want to outline reasons to believe that (iii) is the right way to go, i.e. we should radically revise our ideas about the indefinite article, in a way that generalizes aspects of BCD’s proposal.51 I will essentially make the following vague proposal.52

(104) *Ein* is a functional head whose specifier is the movement target of certain quantificational or discourse-deictic elements.
Let us start with some examples in which *ein* occurs.

(105) a. **Ein** Hund hat mich angebellt.
   a dog has me at.barked
   b. Daran habe ich **keine** Freude.
   thereon have i no joy
   c. Es sind **keine** Leute gekommen.
   it are no people come
   d. **Dein** Bier wird warm.
   your beer gets warm

In (105a), *ein* is part of an indefinite count singular noun phrase, as indeed expected. The occurrences in (105b)–(105d), on the other hand, are a priori unexpected. In (105b) *-ein-* precedes a non-count noun, in (105c) *-ein-* precedes a plural noun, and in (105d) *-ein-* is in a definite DP. While it is certainly possible to think that the occurrences of *-ein-* in (105b)–(105d) are not related to the one in (105a), an attempt to unify the occurrences of *ein* in (105) seems more interesting.

Let me start by formulating the observed facts as follows: In (105a), *ein* is not overtly preceded by anything, with the interpretive effect of introducing a new discourse referent. In (105b)–(105d) *ein* is overtly preceded by something. In (105b) and (c) it is preceded by *k-* with the interpretive effect of being associated with negation (cf. Penka, 2007). In (105d) it is preceded by a second person morpheme, with the interpretive effect of invoking possession (whereby the referential index of the second person morpheme is associated with the possessor role). From this it is a small and familiar step to thinking that in (105a) *ein* is also preceded by something, with the relevant semantic effect, but with no pronunciation. In other words, the presence of *ein* is contingent on the presence of a certain kind of element to its left.53

We may now extend this proposal to *(ein) jeder* (cf. Section 3.2.3). However, there are two aspects in which *(ein) jeder* differs from (105). First of all, movement across *ein* is not obligatorily overt, and secondly, in the cases in which this movement is overt, *ein* is not pronounceable.

(106) *ein* [je-d-er Junge] \(\Rightarrow\) movement of *je*

   \[je [EIN [t\_e, d-er Junge]]\]

This again is not unique to *(ein) jed-* , but it can in fact be observed in the Germanic *what for* construction (Den Besten, 1981; Corver, 1991; Pafel, 1996). The “*what for* construction” is a certain kind of wh-noun phrase, whose determiner is essentially
an adjectival constituent made up of *what, for, and an (often silent) kind nominal (107a) (Leu, 2008b; Vangsnes, 2008a,b). In other words, *was and *für in (107) originate as part of an xAP, modifying *Buch 'book'.

(107) a. **Was für ein Buch** hast du gelesen?  
   *German*  
   *What (kind of) book* did you read?  

   b. **Was hast du für ein Buch** gelesen?  
   *what have you* for a *book* read  
   *What (kind of) book* did you read?

An interesting property of that construction is that the wh-noun phrase can surface in a discontinuous fashion (107b). This is usually called “*what for split,” and has received some amount of attention in the literature. One property that has received virtually no coverage, on the other hand, is the fact that *what in *for can be preceded by an indefinite article in Swiss German, German, and Dutch (at least for some speakers for each of these languages), cf. (108). This looks a lot like *(ein) jeder.

Recalling the evidence presented in Section 3.2.3 that *jeder without overt *ein is derived by movement of *je to Spec,*ein, it is interesting to note that there is evidence for an analogous movement step of *what in *for. The argument involves two crucial observations and one assumption. The assumption is that *was and *für are part of an xAP not containing the (overt) noun (Leu, 2008b). The first observation is that the overt initial article is strongly incompatible with *what for splitting (108b,c). The second is that splitting necessarily involves a (leftward) movement step of *what from the position in which it occurs in (108a).

(108) a. [es *was für* es velo] hesch kauft?  
   *Swiss German*  
   a *what for a bicycle* have-you bought  
   “What kind of bicycle did you buy?”

   b. [(es) *was] hesch *für* es velo kauft?  
   (a) *what* have-you for *a* bicycle bought

   c. [was] hesch (*es) *für* es velo kauft?  
   *what have-you* (a) *for a bicycle* bought

I propose that *was moves into Spec,*ein, with the effect that *ein is not pronounced. *Was (perhaps crucially, cf. note 52) remains frozen in Spec,*ein. The actual split hence does not involve extraction of *was from the wh-DP. This is compatible with the proposal in Abels (2003).

Abels shows (based on split *what for PPs in German) that *what for split is (at least sometimes) derived by fronting of *for a book across *what followed by wh-movement of the remnant constituent containing *what and the trace of *for a book (illustrated schematically with English words in (109).)
(109) what for a book ⇒ for-NP fronting
   [for a book] [what $t_{forNP}$] ⇒ remnant wasP movement
   [what $t_{forNP}$] … [for a book] …

This then accounts for the pattern in (108) in a way that is analogous to the proposed treatment of *ein jeder* versus *jeder*: What “optionally” extracts from xAP into Spec,*ein*, with the effects that (i) *ein* remains unpronounced, and (ii) *for* and *a book* are part of a constituent excluding *what*, hence allowing for the splitting derivation in (109).

7.3 Summary

In this more speculative section I compared German (*ein*) *jeder* with counterparts thereof in other languages and with other complex determiners in German. I discussed evidence from Greek, Romance, and Russian, that suggests that the counterparts of *jeder* in these languages also contain a complementizer in non-initial position, with a constituent associated with universal quantification, to its left (in Romance, Russian, and German). Hence, the proposal that the distributive universal quantifier involves a reduced relative clause may extend beyond German.

With regard to *ein jeder*, I argued that *ein* in (110a) does not form a constituent with the following *jeder*. Secondly, I argued that this *ein* is also present in (110b), albeit unpronounced. Third I argued that the non-pronunciation of *ein* in (110b) is related to an independently motivated movement step of *je* across it (see (65) and (108)), and suggested that *je* moves into Spec,*ein*, leaving *ein* unpronounced *EIN*.

(110) a. *ein jeder* N
    b. *je EIN* der N

The derivation for (110b) is represented in tree form in (111).

(111) a. *jeder* Junge
       every boy

b. *jeP*
   *je $t_{junge}$*
   *ein*
   Ø
   xAP
   tje-d- er
   XP
   Junge

If this is on the right track, and given that the numeral/article ‘one’ is a component of the distributive universal quantifier beyond Germanic, we might expect to universally find an indefinite article in the counterparts of *jeder*. From the morphosyntactic side, the search for such an article may prove difficult, given the
possibility that it is typically unpronounced in a given language. From a semantics perspective, the question that arises is whether there is only one or several avenues, within the bounds of UG, to derive a meaning equivalent to that of German (ein) jeder (cf. Szabolcsi, in press, ch.12).

8. Conclusions

I showed that a decomposition of jeder ‘every’ into three overt syntactic heads je-d-er is plausible. Je-d-er was argued to be adjectival. Specifically, the suffixal inflection -er is an instance of (strong) adjectival agreement. Je is the adjectival stem, whose surface position is the result of movement across -d-er. The element -d- is an adjectival article, i.e. a definite marker merged in the left periphery of the extended adjectival projection, xAP. This adjectival article, in turn, I took to be the complementizer of a reduced relative. I further identified an indefinite article as being part of (ein) jeder. Finally, I discussed evidence that the proposal may extend beyond German (to Greek, Russian, and Romance), and beyond jeder (to was für).

Important arguments for the proposed analysis of jeder derive from analogizing je of jeder to other occurrences of universal je and to bei(d)- ‘both’, on the one hand, and from detailed considerations of adjectival morphosyntax, on the other. The discussion suggests that at least certain quantifiers/determiners (e.g. jeder ‘every’ and beide ‘both’) have a complex internal syntax akin to that of extended adjectival projections. The proposal for (ein) jeder, if it is by and large correct with regard to the level of granularity and/or the proposed derivation, has important consequences for the compositional semantics of determiners/quantifiers, and for the syntactic analysis of “function words” more generally.

Notes

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1. Cf. also the earlier proposal by Cardinaletti and Giusti (1992) based on Romance.

2. The final derivation I will arrive at in Section 7 is a priori by and large compatible with the constituency in (6), but derived from that in (5), crucially taking the two above mentioned issues into account.

4. (12a) and (b) differ from one another in ways beyond the linear order of elements. For instance *afto* can be stressed in (a), but not in (b) (Alexiadou et al. 2007).

5. Notice that Colloquial Norwegian (and Mainland Scandinavian more generally, with the notable exception of Western Jutlandic, cf. Delsing (1993)) also lacks an immediately pre-nominal definite marker in plain definites (15b). Plausibly Mainland Scandinavian never has an overt definite D. For plain definites like *huset ‘the house’* this claim is subsumed by the proposal in Julien (2003, 2005) that *huset* moves as a phrase, nP, to Spec,DP. In DPs with an initial *det* on the other hand, the standard view is that this *det* is the realization of definite D (Delsing, 1993; Kester, 1996; Vangsnes, 1999; Julien, 2005; Holmberg & Platzack, 2005), a view that I believe is mistaken (Leu, 2009).

6. We will set aside the important question of why *este* does not contain a definite marker morpheme -l-. This question relates to the broader question regarding the difference between Germanic d-/th- and Romance l-. Cf. also Section 7.

7. The morphosyntax and semantics of Greek, Scandinavian, and Colloquial Slovenian modified DPs is complex and the languages differ in a number of ways (see for instance Marušič & Žaucer (2006)). I will focus on the commonalities that are relevant to the analysis of German jeder.

8. The situation is obscured in dative and genitive environments. For a discussion about the way in which dative and genitive morphology in German should be understood see Leu (2008a, ch.7).

9. Other treatments of German adjectival inflection include Bierwisch (1967); Zwicky (1986); Pafel (1995); Gallmann (1996); Schlenker (1999); Müller (2002); Roehrs (2009). All of these assume that dative and genitive morphology belong to the strong adjectival paradigm, an assumption which causes severe complications and crucially may be mistaken (Leu, 2008a, ch.7). Furthermore, none of these lends itself readily to capture the parallelism with the tensed verb in the German clause (Section 2.3.3), or to an account of the Swiss German d/di-alternation.

10. The position of the finite verb in V-final clauses as well as that of the participle in periphrastic constructions marks the right edge of the *Satzklammer*, to the right of which there is the so-called *Nachfeld* in which we find “extraposed” material and complement clauses.

11. The picture that emerges builds on insights in Szabolcsi (1983/84); Abney (1987) for N/V and Corver (1997) for A. The extended projections of V/N/A, i.e. xVP/xNP/xAP, are parallel in interesting respects, one of which is the possibility of an identical left peripheral head which is realized in German as *d*- and whose presence alternates with movement of a projection containing the lexical head of the extended projection (i.e. V/N/A) to the left periphery, in a way familiar for the DP from Longobardi (1994).


13. Recently Etxeberria & Giannakidou (to appear) have made a structurally similar proposal, in which definite D incorporates into Q, returning the structure [[o kathe] *fititis*]
'the every student' for Greek. The complex constituent which both Pafel and Extebarria & Giannakidou obtain by means of head-head adjunction or incorporation is derived here as a phrasal constituent.

14. A LIVY reviewer points out that initial beid- is one of the elements that block a restrictive interpretation of postnominal relatives (Fanselow, 1986, p.371). But independently of this, the reciprocal interpretation of sich is available in (46a) on both a restrictive and a non-restrictive reading, and is (for me) entirely impossible in (46b).

15. Pafel (1995, p.263) mentions the possibility of giving an analogous treatment to manch ein 'many a', welch ein 'which a' etc. It seems to me to be correct to analogize these and ein jed-, with manch ein t_{manch} derived by movement, along the lines of Leu (2008a, ch.6). The problem with (50) lies, in my opinion, in assigning the same category to ein and to the definite marker.

16. The obligatory phonetic absence of the modifies in combination with the neuter morphology is reminiscent of adjectival modification of indefinite pronouns (Leu, 2005; Roehrs, 2008).

(i) öper gschit-s Swiss German someone smart-neu

17. A google search for "an meistem" gets 297 hits, compared to 10,9 million for "am meisten". While strictly speaking an meistem may have an acceptable derivation as a bare indefinite, the google examples I verified, do, judging from the context, have the intended interpretation of am meisten 'most of all', which for me is impossible.

18. There are a few google hits with the contracted form am preceding a variant of beid-. Several factors may be at play here. First of all, there are 2'240 google hits for am beiden. Beiden can only be plural. And indeed the examples for which I verified the context, all have an intended plural reading, i.e. the target variant sanctioned by standard orthography is an beiden, which gets 2'040’000 hits. The morpheme -m is a singular form however. This may lead to the hypothesis that the 2'240 hits for am beiden are the result of representing the effect of a phonological assimilation process (common in the spoken language) in (non-standard) spelling. If so we would also expect to find hits for the singular variant with place assimilation orthographically represented, i.e. am beidem. The expectation is correct. This variant gets 206 hits. In absolute terms this is a smaller number compared to the deviant plural variant (cf. (i) and (ii)). However, when put in relation to the 21'400 hits for the variant sanctioned by standard orthography (an beidem), it reaches a ratio of 1:104, whereas the deviant plural variant occurs at a 1:911 ratio, i.e. about nine times less frequently.

(i) Plural:
  an beiden 2'040'000
  (*)am beiden 2'240
  Ratio 911:1

(ii) Singular:
  an beidem 21'400
  (*)am beidem 206
  Ratio 104:1
I take it though that the higher ratio for deviant am beid- in the singular should not be concerning here, given the very low overall frequency.

19. This is the typical pattern. According to Roehrs (2007) there are speakers who at least sometimes accept a strongly inflected adjective after ein jeder. Though this, Roehrs notes, is less frequent.


21. It seems to me that non-predicative adjectives such as e.g. früher- ‘former’ exhibit the opposite pattern, i.e. früherer must be interpreted as part of the antecedent in a comparable example.

(i) Ich habe einen früheren Weltmeister aus Frankreich fotografiert
I have a former world champion from France photographed
und du einen aus Japan.
and you one from Japan.

“I photographed a former world champion from France and you photographed a *(former) world champion from Japan.”

This is expected if non-predicative adjectives require reconstruction of the noun (NP) into their argument position (as argued in Section 4.2) and if they do not require movement to a position above ein, as opposed to jeder, as argued here.

22. A way in which ellipsis can be thought to prevent je from associating with the pre-ein position in (65) arises from the hypothesis put forth by Kayne (2006), that ellipsis derives from movement of a constituent to the left periphery of a phase, which is systematically invisible to PF, under Kayne’s hypothesis. In other words, we may think of the two readings in (64) in terms of movement of [frische Brötchen] or [Brötchen], respectively, into a Spec, PHASE to the left of eins in the second conjunct of the example. In (65), such movement of [Brötchen] is possible. A corresponding movement of [jedes Brötchen] on the other hand is not, since it would bleed-“smuggle” (Collins, 2005) je- into a position from which Spec, ein is no longer accessible. Put another way, jedes Brötchen does not form a constituent at all relevant levels of representation.

23. But see Section 5, cf. die je-weil-ig-en Sieger.

24. Hence adjectival phrases are like relatives in avoiding Chomsky’s (1981) i-within-i filter (Fanselow, 1986). See also Jacobson (1993) for an analogous conclusion in a variable free semantics framework.

25. An analogous conclusion can be reached on the basis of principle B, i.e. with modifiers containing pronouns.

26. In recent years, a dual source analysis has become popular, analyzing some adjectives as underlyingly clausal, and others as direct NP modifiers (cf. Cinque, in press). For German such a dual source analysis was proposed by Fanselow (1986). The argument against a generalized relative clause approach for adnominal adjectives rests on the (often strongly held) assumption that such an RC-like derivation cannot be correct for non-predicative adjectives. This objection was rightfully targeted at the early instantiations of that idea involving a copular
sentence and *whiz*-deletion as in Smith (1961), cf. Winter (1965). It is much less clear that this argument holds more generally. If morphological cues, as interpreted in the present paper, are indicative of syntactic derivations (Baker, 1985), then predicative and non-predicative adnominal adjectives must have a largely identical syntax (Leu, 2009), see also Marušič Žaucer (2006) for relevant discussion.

27. Strictly speaking, the argument from agreement is compatible with a matching analysis, or even an analysis with an unpronounced pro-form inside the relative, cf. note 45 on Russian.

28. It may be debatable which copy of the noun actually gets interpreted, i.e. whether a former X is an X or not. Cf. also note 21.

29. My proposal departs from Kayne (1994) and from Alexiadou and Wilder (1998) in that the modifyee fully extracts from the xAP (across the complementizer-like pre-adjectival definite marker), and it departs from Alexiadou & Wilder in that the extractee is an N(P) rather than a DP.

30. There is also the distal demonstrative *jen-*, the comparative correlative *je... je... 'the... the...', which I will presently set aside, and the NPI *jemals 'ever'* (see note 35). Further occurrences of *je*, pointed out by a reviewer, include seit je-her 'since ever', seit eh und je 'since ever', mehr denn je 'more than ever', and je nach belieben 'which ever is preferable', je nachdem 'depending on'. How, exactly, the present analysis extends to these remains to be seen.

31. The most important treatment of *jeweils is Zimmermann (2002). Other relevant literature on distance distributive quantifiers includes Choe (1987); Safir and Stowell (1989); Moltmann (1997); Link (1998); Blaheta (2003); Balusu (2006); Oh (2006).

32. Zimmermann’s concrete proposal involves a silent preposition, which, he suggests, is licensed by the genitive morphology, and which makes an important semantic contribution on his proposal. Given that I am primaraly interested in the selectional properties of *je*, i.e. aspects of the structure that do not involve the silent preposition, I will abstract away from this complication.

33. Strictly speaking it may be a functional nominal licensing a silent N, similar to *thing in something nice* (cf. Leu, 2005; Roehrs, 2008).

34. It can also take e.g. coordinated VPs as its antecedent, see Moltmann (1997); Zimmermann (2002).

35. There is also the adverbial NPI *jemain(s)*, which at first glance looks parallel to *jeweils* in its morphological composition. However, *-mals* occurs with a number of other formatives, which *weils* does not occur with. These include da-mals 'back-then', aber-mals 'many-times', ein-mal 'once', nie-mals 'never', ehemals 'formerly'. A thorough investigation of these formations in comparison with *je*-words may ultimately further our understanding of the latter. However, for present purposes I will set the *-mals* formations aside.

36. Of course, it would be possible for N(P) to eventually end up in a higher position by virtue of having been piedpiped by a larger constituent. However, in instances in which the adjective itself remains in a post-AgrA position, it seems most straightforward for N(P) to move through Spec,AgrA.
37. Hence the present proposal is compatible with applying a Spec-Head view on agreement to adjectival inflection.

38. Strictly speaking a tense-final clause.

39. The target of noun extraction from xAP may be the Spec of a little n head (suggested by Jim Wood p.c.).

40. For purposes of this section I will include quantifiers indiscriminately of whether they better match English every or each.

41. For critical discussion of the notions of complementizer and relative pronoun see Kayne (2008b).

42. I am heavily indebted to Vladislav Rapoport for the relevant observations and discussion about Russian and French.

43. The possible tension between this and the account of the scope contrast between the two uses of beid- in Section 3 will ultimately have to be addressed.

44. Matters are more complicated, thinking e.g. of the Scandinavian relative complementizer sem/som/sum (Julien, 2005; Holmberg & Platzack, 2005), and the Swiss German relative complementizer wo.

45. Thinking of Zimmermann’s (2002) analysis of je-weils ‘each(time)’, it is conceivable that Russian vsyakiy features a silent nominal akin to German weil which is an anaphoric element supplying the DistKey, and triggering agreement with an Agr head that ends up “word”-internally.

46. Buck (1949) decomposes kto into k-to, where k is an interrogative indefinite stem.

47. It is obvious that this line of argument is in need of more and more careful future work, with a focus on the relationship between que-/wh-/k- and l-/d-/t- within as well as across languages.

48. Roehrs (2007) analyzes ein not as a constitutive part of jeder Junge, but as an intensifier which jeder Junge can (optionally) combine with.

49. The variable spelling of the velar stop as -que and -c- should not mislead us.

50. See Szabolcsi (in press, ch.12) for discussion and a call for caution regarding the assumption that equivalent meanings should always have isomorphic derivations.

51. BCD relate the appearance of a spurious article to predicate inversion, an instance of noun phrase internal A-movement, as opposed to predicate fronting, which is an instance of noun phrase internal A’-movement, and which does not necessitate head movement of the small clause copula, and hence does not coincide with the appearance of a spurious article. BCD’s assumed base structure and trigger for article spell out does not immediately translate to the present proposal. It remains to be seen whether and how, exactly, the proposal by BCD integrates into the present proposal.

52. I will leave open for now the important question of what exactly determines whether ein is overt or silent. In this respect, negative k- and possessive d- contrast with universal je and the wh-element was (see below).
53. In Leu (2008a) *dein* and *kein* are analyzed as involving movement of a constituent containing *d* and *k* respectively across *ein*.

54. It should be noted that looking simply at the relative constituency of the overt elements, the tree looks very much like the proposal by Kallulli and Rothmayr (2008). However, looking at the derivation/structure as a whole, the two proposals are very different.

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