Quantification in German[*]

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1 Basic properties of German

German noun phrases (which will be referred to throughout this paper as 'DPs') are rigidly ordered, with determiners preceding adjectives preceding nouns preceding their complements and clausal adjuncts.[1] Many (D-)quantifier words in German can cooccur with a (primarily definite) determiner. In this case, they (immediately) follow the determiner. In no case can such a quantifier word be preceded by an adjective in its phrase (but see §2.1.3 for peculiarities of numeral expressions).

(1) *(die) meisten Romane
     the   most   novels

(2) (die) viele(n) Wassermelonen
     the   many   watermelons

(3) (die) drei   Fragezeichen
     the   three   question marks

Case, gender and number morphology is indicated on adjectival elements (a small class of nouns inflect as well), but predominantly on determiner elements.

Nouns belong to one of three inflectional classes (genders) in the singular, which are typically called 'masculine', 'feminine', and 'neuter'. The conjugation table for the definite determiner is given below. The plural and feminine singular paradigms differ only in the dative, the neuter and masculine singular are identical in the dative and genitive, and only the masculine singular distinguishes between nominative and accusative.

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[1]See Pafel [2005] for more discussion as to the structure of DPs, which is largely orthogonal to our purposes here.

	masc	neut	fem	plural
nom	der	das	die	die
acc	den	das	die	die
dat	dem	dem	der	den
gen	des	des	der	der

conjugating the definite article

At least some quantifiying expressions, such as the distributive universal quantifier *jed-* (every/each) to be discussed in §2.2.1, show a parallel conjugation paradigm, which suggests that structurally they are determiners in D as well.

	masc	neut	fem
nom	jeder	jedes	jede
acc	jeden	jedes	jede
dat	jedem	jedem	jeder
gen	jedes	jedes	jeder

conjugating the D-quantifier *jed-*

There are two kinds of inflectional endings; the *weak* (W) endings, which appear on elements which follow a strongly inflected element of another category in their phrase, and *strong* (S) endings, which are born by the first inflected element in the phrase (but see §2.1.3 for a systematic class of exceptions). In case there is more than one adjective in a DP, all adjectives carry the same (weak or strong) inflection.

	masc	neut	fem	plural
nom	-e	-e	-e	-n
acc	-n	-e	-e	-n
dat	-n	-n	-n	-n
gen	-n	-n	-n	-n

weak endings

	masc	neut	fem	plural
nom	-r	-s	-e	-e
acc	-n	-s	-e	-e
dat	-m	-m	-r	-n
gen	-s	-s	-r	-r

strong endings

The determiner-like paradigm of strong adjectives might suggest that they occupy the structural determiner position D, possibly after syntactic A-to-D movement. Some examples for weakly and strongly inflected adjectives are given below:

(4)   *Oh   du   kluger   schlanker   Mann!*
      Oh   you   clever$_{\text{NOM.M.S}}$ slim$_{\text{NOM.M.S}}$ man

      "Oh, you clever slim man, you!"

(5)   *Der   kluge   schlanke   Mann   starb.*
      the$_{\text{NOM.M.S}}$ clever$_{\text{NOM.M.W}}$ slim$_{\text{NOM.M.W}}$ man   died

(6) *Den* *klugen* *schlanken* *Mann* *hat* *die*
the$_{\text{ACC.M.S}}$ clever$_{\text{ACC.M.W}}$ slim$_{\text{ACC.M.W}}$ man has the$_{\text{NOM.F.S}}$
schöne *dicke* *Frau* *geküsst.*
pretty$_{\text{NOM.F.W}}$ plump$_{\text{NOM.F.W}}$ woman kissed
"The pretty plump woman kissed the clever slim man."

(7) *Ein* *nettes* *süßes* *Mädchen* *hat* *der*
a$_{\text{NOM.N}}$ nice$_{\text{NOM.N.S}}$ sweet$_{\text{NOM.N.S}}$ girl has the$_{\text{DAT.F.S}}$
schönen *dicken* *Frau* *geholfen.*
pretty$_{\text{DAT.F.W}}$ plump$_{\text{DAT.F.W}}$ woman helped
"A nice sweet girl helped the pretty plump woman."

German has three possessive constructions, a prenominal one and two postnominal ones. Prenominal possession does not iterate, and is often felt to be of a more formal register. Whereas one can have a possessive DP (in the genitive case) premodifying a noun, this possessive DP cannot itself be modified by another such.

(8) *jedes* *Mannes* *Vater*
of every man father
"every man's father"

(9) **jedes* *Mannes* *Vaters* *Schwester*
of every man father sister
intended: "every man's father's sister"

There is also a more colloquial but frequent alternative, in which a dative-marked possessor DP precedes a coreferential 3SG possessive pronoun preceding the possessed NP:

(10) *jedem* *Mann* *sein* *Vater*
every$_{\text{DAT.M.S}}$ man his father
"every man's father"

The two postnominal possession constructions are individuated by the category of the possessor phrase. In the first, it is a noun phrase in the genitive case, and in the second, a PP headed by *von* (from). In both constructions, the possessed noun may have a determiner (indeed, must, unless it is a plural or a mass term – see §2.1.2). The second construction does not iterate well, although it is not felt to be any more formal than the others.

(11) *die* *Schwester* *des* *Vaters* *jedes* *Mannes*
the sister of the father of every man
"every man's father's sister"

(12) *der* *Vater* *von* *jedem* *Mann*
the father from every man
"the father of every man"

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(13)   *die   Schwester   vom   Vater   von   jedem   Mann
       the   sister   from   the   father   from   every   man

Traditional grammars of German partition matrix clauses into three 'topological fields': the prefield, the midfield, and the postfield, which are separated from each other by two sentential brackets. In declarative main clauses, the left sentential bracket, which corresponds to the complementizer position of X-bar theory, is occupied by the (unique) finite verb, and the right sentential bracket position by all remaining verbs. The string of words occupying the prefield is typically an uncontroversial constituent. The constituent-hood of the prefield gives rise to the verb-second (V2) order of matrix sentences in German. The midfield houses the remaining arguments and adjuncts of the clause, except for certain clausal arguments, adjuncts, and post-posed material, which are canonically located in the postfield, to the right of the non-finite verbal cluster.

(14) $\boxed{\text{prefield}}$ $\boxed{\text{V}_{fin}}$ $\boxed{\text{midfield}}$ $\boxed{\text{V}_1\dots\text{V}_n}$ $\boxed{\text{postfield}}$

In X-bar theoretical terms, the linear precedence relations between prefield and midfield, and in particular of the various constituents within the midfield correspond to notions of scope and c-command (as evidenced e.g. by binding possibilities): i.e. in general, material more to the left takes scope over and binds into material more to the right. In a neutral sentence, the prefield is typically occupied by what would be the leftmost element of the midfield. (For more details see Frey [2006].)

German is verb-final in subordinate clauses.[2] Canonical subordinate clauses can be thought of as structurally identical to main clauses, but with the finite verb remaining in the right sentential bracket together with any additional verbal elements. The first element of subordinate clauses is either a wh- phrase, a relative pronoun, or a complementizer, all of which are located in the left sentential bracket or complementizer domain (CP).

(15)   Maria   ist   gestern   gestorben.
       Maria   is   yesterday   died
       "Maria died yesterday."

(16)   . . . dass   Maria   gestern   gestorben   ist
       . . . that   Maria   yesterday   died   is
       ". . . that Maria died yesterday"

In sentence 15, the finite verb *ist* (is) appears after the first clausal constituent – the subject *Maria* – and the other verbal elements (the participle *gestorben*) are clause final. In 16, the finite verb appears at the end of the clause together with the other non-finite verbal elements.[3] The verb-second moniker comes

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[2]This is an approximation. There is a rich literature on so-called 'embedded verb second' clauses, see e.g. Vikner [1995]. For a good introduction to the issues surrounding an analysis of verbal position in German see Thiersch [1978].

[3]This clause final verbal cluster is the subject of much descriptive and theoretical work [den Besten and Edmondson, 1983, Zwart, 1996, Vogel and Schmid, 2004, Bader and Schmid, 2009].

from the fact that the choice of the first clausal constituent is relatively free. In the sentences below (which are variants of sentence 15), in the prefield are the adverb *gestern* and the participle *gestorben*, respectively. No other words can occupy the initial position in these sentences.

(17) *Gestern ist Maria gestorben.*

(18) *Gestorben ist Maria gestern.*

Word order in the midfield of the German sentence is relatively free. However, as indicated above, and as discussed by Lenerz [1977], there are asymmetries across different word orders with respect to multiple parameters. For example, although both orders 'indirect object (IO) – direct object (DO)' and 'DO – IO' are permissible, only the first is acceptable if the direct object is indefinite.

(19) *Ich habe dem Mann das Buch gegeben.*
      I   have the man   the book given

      "I gave the man the book."

(20) *Ich habe das Buch dem Mann gegeben.*
      I   have the book the man   given

(21) *Ich habe dem Mann ein Buch gegeben.*
      I   have the man   a   book given

(22) *#Ich habe ein Buch dem Mann gegeben.*
      I   have a   book the man   given

In addition, if the IO is focussed (as in the answer to a wh-question), both orders are acceptable, but if the DO is focussed, only the order IO-DO is acceptable.

(23) *Wem hast du   das Geld gegeben?*
      whom have you the money given

      "Who did you give the money to?"

> 1. *Ich habe dem Kassierer das Geld gegeben.*
>   I   have the cashier   the money given
>
> 2. *Ich habe das Geld dem Kassierer gegeben.*
>   I   have the money the cashier   given

(24) *Was hast du   dem Kassierer gegeben?*
      what have you the cashier   given

      "What did you give to the cashier?"

> 1. *Ich habe dem Kassierer das Geld gegeben.*
>   I   have the cashier   the money given
>
> 2. *#Ich habe das Geld dem Kassierer gegeben.*
>   I   have the money the cashier   given

This asymmetry between IO-DO and DO-IO word order in the midfield can be explained by postulating a structural asymmetry between these two word orders, with the IO-DO order being basic, and the the DO-IO order derived. Another difference following from the asymmetry between IO and DO is that an indefinite DO, but not an IO, can occupy the prefield together with a non-finite verb in VP-focus contexts ('VP fronting').

(25) *Geld   gegeben habe ich einem Kassierer.*
     money given   have I   a   cashier

     "I gave money to a cashier."

(26) **?Einem Kassierer gegeben habe ich Geld.*
     a   cashier   given   have I   money

Furthermore, the observed asymmetries survive passivization, suggesting that they do indeed have something to do with an deep structural asymmetry.

(27) *Gestern   habe ich dem Mann einen tollen Preis gegeben.*
     yesterday have I   the man   a   great   prize given

     "I gave the man a great prize yesterday."

(28) *Gestern   wurde   dem Mann ein toller Preis gegeben.*
     yesterday became the man   a   great   prize given

     "A great prize was given to the man yesterday."

(29) **Gestern   wurde   ein toller Preis dem Mann gegeben.*
     yesterday became a   great   prize the man   given

(30) *Ein toller Preis gegeben wurde   dem Mann gestern.*
     a   great   prize given   became the man   yesterday

(31) **Dem Mann gegeben wurde   ein toller Preis gestern.*
     the   man   given   became a   great   prize yesterday

In configurational accounts, these facts suggest that indirect objects have base positions higher in the structure than do their clausemate direct objects.[4]

In the next section (2), we survey three basic classes of quantifiers; intersective (existential) quantifiers in 2.1, co-intersective (universal) quantifiers in 2.2, and proportional quantifiers in 2.3. Afterwards, we discuss a variety of selected topics (3).

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[4]There is a class of ditransitive verbs, including for example *unterziehen* (subject), for which the tests above come out with the opposite pattern of results, suggesting that these verbs project a different (DO above IO) structure.

2 Three basic classes of quantifiers

2.1 Generalized Existential Qs

There are three ways of expressing existential quantification in German: (i.) D-quantifiers with sg and pl count nouns (2.1.1); (ii.) bare NPs with pl count nouns and mass nouns (2.1.2); (iii.) A-quantifiers (2.1.6).

2.1.1 D-quantifiers

Existential quantification in German can be expressed using the indefinite determiner *ein* (a/one), or the complex quantifier *manch ein* (many a) with singular count nouns, and *manche*, *einige* and – particularly in colloquial spoken German – *(ei)n paar* (some, several) with plural count nouns.

(32) *Ein   Mann   ist   gekommen.*
     a   man   is   come
    "A man came."

(33) *Manche / Einige   Männer   sind   gekommen.*
     some   men   are   come
    "Some men came."

(34) *Ich   hab'   'n paar   Kinder   eingeladen.*
     I   have   some   children   invited
    "I invited some children."

The form *ein* is also used as a numeral expression, meaning one. In colloquial German, the two occurrences can be distinguished by the fact that indefinite determiner *ein* is typically reduced to *'n*, whereas the numeral *ein* is not.

(35) *Ich   hab'   *'n / ein   Buch   gelesen   und   nicht   zwei.*
     I   have   a / one   book   read   and   not   two
    "I read one book, and not two."

As for the plural D-quantifiers, there is a semantic difference between *manche*, on the one hand, and *einige/(ei)n paar*, on the other, in that *manche* cannot refer to coherent groups or intervals.

(36) *Seit   einigen / ein paar / *manchen   Jahren   lebt   Angela   in*
     since   some   /   a   pair   /   some   years   lives   Angela   in
    Berlin.
    Berlin
    "For the last couple of years, Angela has lived in Berlin."

Rather, it seems that *manche* is distributive in picking out individuals or points in time that are located at sufficient temporal or spatial distances from each other. Not surprisingly, distributive *manche* does not easily combine with collective predicates.

(37) *In manchen / *ein paar Jahren bauten die Winzer*
In some / a pair years cultivated the winery owners
ausgezeichneten Wein an.
excellent wine

"The winery owners cultivated excellent wine in some years."

(38) *#Manche / Einige / Ein paar Mitglieder der Partei*
some / some / a pair members of the party
bildeten eine eigene Fraktion.
formed an own parlimentary group

"Some members of the party formed their own parlimentary group."

A similar state of affairs is reported for the Dutch plural D-quantifiers *sommige* and *enkele* in de Hoop [1995].

2.1.2 Bare existential NPs

Existential quantification with plural count nouns and mass nouns is typically expressed by means of a bare NP without an overt determiner element, cf. 39 for plural count NPs and 40 for mass NPs.[5]

(39) 1. *Die Kinder fingen Frösche.*
the children caught frogs

2. *Pferde standen auf der Weide.*
horses stood on the field

(40) 1. *Die Linguisten tranken Bier.*
the linguists drank beer

2. *Wasser tropfte die Wände herunter.*
water dripped the walls down

"Water dripped down the walls."

In order to allow for a consistent semantic and syntactic treatment of all existentially quantified DPs in German, many scholars assume the existence of a covert existential determiner with bare plurals and mass nouns as well [Bhatt, 1990]:

$$[_{DP} \emptyset \ NP_{pl/mass}]$$

Evidence for this comes from several dialects of German, such as Suabian and Bavarian, which feature an overt indefinite determiner with existential mass NPs and, to a certain extent, with plural NPs (examples from Glaser [1993]).

(41) *Sãi fraint brauxad a geid.*
his friend needed a money

"His friend would need money."

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[5]It is also possible, though less frequent, to use a definite singluar DP to express a 'kind' reading.

(42) *Dǫ sàn õa Epfe drõ.*
there are an apples on it

"There are apples on it."

At the same time, the null determiner analysis has been questioned since, as is also the case in English, bare plural and mass NPs can also give rise to generic readings under certain conditions, as illustrated below.

(43) 1. *Kinder sind wild.*
children are rambunctious

2. *Zucker ist ungesund.*
sugar is unhealthy

As pointed out in Diesing [1992], the generic reading is correlated with syntactic configuration; only vP-external DPs can be interpreted generically when accented.

(44) ...*weil KINDER ja doch* [$_{vP}$ *auf der Straße spielen]*
...because children of course on the street play

"...because children play on streets, of course."

(45) ...*weil ja doch* [$_{vP}$ *KINDER auf der Straße spielen]*
...because of course children on the street play

"...because there are of course some children who play on the street."

The varying semantic interpretation of bare NPs depending on their syntactic position seems to provide evidence against a lexical ambiguity analysis that would posit two covert determiners. Instead, it is frequently taken as evidence in favour of analyses in which bare NPs have no existential quantifying force by themselves. Their sole semantic contribution is taken to lie in providing a restricted variable that is existentially closed by covert propositional quantifiers at certain points in the structural configuration [Kamp, 1981, Heim, 1982, Diesing, 1992, Kamp and Reyle, 1993]. For the sake of consistency, this type of analysis typically assumes the indefinite determiner *ein* with singular count nouns to be semantically vacuous as well. As a consequence of this analysis, there would be strictly speaking no existential D-quantifiers in German at all.

2.1.3 Numerals

The numerals for one through twelve in German are monomorphemic, and are given (in increasing order) in 46.

(46) *eins, zwei, drei, vier, fünf, sechs, sieben, acht, neun, zehn, elf, zwölf*

The numerals from thirteen through nineteen are gotten by suffixing the appropriate number name with *zehn* (ten).[6] The numerals denoting multiples of

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[6]With the exception of the number name *sieben* (seven), which reduces to *sieb*.

ten are obtained by suffixing the name of the multiple with *zig*.[7] Given such a numeral N, the numeral *n und N* denotes the number $n + N$, where n ranges between one and nine.[8]

Adnominal numerals in German do not inflect for case (or number) with the exception of the genitive. However, numerals beyond three do not inflect at all.

(47) *Ich habe den   Männern geholfen.*
     I   have the$_{\text{DAT.M}}$ men   helped

     "I helped the men."

(48) *Ich habe zwei   Männern geholfen.*
     I   have two$_{\text{DAT.M}}$ men   helped

(49) *Ich habe den Kindern der   Männer geholfen.*
     I   have the children the$_{\text{GEN.PL}}$ men   helped

     "I helped the men's children."

(50) *Ich habe den Kindern zweier   Männer geholfen.*
     I   have the children two$_{\text{GEN.PL}}$ men   helped

There is also a limited amout of inflection on bare numerals, which is not restricted to 'three'.

(51) *mit   zweien   / dreien   / vieren   / …*
     with two$_{\text{DAT.PL}}$ / three$_{\text{DAT.PL}}$ / four$_{\text{DAT.PL}}$ / …

(52) **Q:** *Wie viele   / Was für Bücher hast du   gelesen?*
           how many   / what for books have you read

     A: *Fünf(e) / Interessant*(e).*
           five   / interesting

           "Five / Interesting ones."

The numerals *hundert* (hundred), *tausend* (thousand), and their composita can be used either to denote numbers (53) or (when inflected for plural number) intervals (54). When denoting numbers, these numerals are prefixed with numerical indicators of scale (this is optional with *ein* (one), see (53)), but when denoting intervals, numerical indicators of scale are prohibited. In the latter case, they inflect, as do *zwei* and (marginally) *drei*, for genitive case (54.2).

(53)   1. *(Ein)hundert Menschen sind gekommen.*
           (one) hundred people   are   come

           "A hundred people came."

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[7]With the exception of *zwanzig* (twenty), *dreißig* (thirty), and *siebzig* (seventy).

[8]Excepting $n = 1$, in which case the form *ein* is used (instead of *eins* – cf. *ein und achtzig*). If $n = 7$, either *sieben* or the reduced *sieb* may be used.

2. *Ich musste den Müll von (ein)hundert Menschen*
I had to the trash of (one) hundred people
aufräumen.
clean up

"I had to clean up the trash of a hundred people."

(54) 1. *(*Ein)Hunderte Menschen sind gekommen.*
(one)hundreds people are come

"Hundreds of people came."

2. *Ich musste den Müll (*ein)hunderter Menschen*
I had to the trash (one)hundreds$_\text{GEN.PL}$ people
aufräumen.
clean up

"I had to clean up the trash of hundreds of people."

Common in colloquial speech is the interval denoting bare form *zig* (see above for the suffigating use of *-zig* in building complex numerals). In the domain of human individuals, intuitions vary as to whether *zig* denotes an interval on the order of tens (and thus would be smaller than *hunderte*), or is simply large and indeterminate. However, intuitions become clearer when we let *zig* range over domains of individuals that typically come in large quantities that do not allow for easy individuation. In the ant example below, only the order of tens-interpretation is available. Syntactically, *zig*, unlike *hunderte*, does not require a partitive syntax when preceded by a definite determiner (57).

(55) *Ich hab' zig Menschen getroffen.*
I have tens people met

"I met tens / lots of people."

(56) *Ich hab' zig Ameisen in meiner Wohnung.*
I have tens ant in my flat

"I have tens / *lots of ants in my flat."

(57) 1. *die hunderte *(von) Menschen*
the hundreds of people

2. *die zig (*von) Menschen*
the tens of people

The ordinal one in German is *eins*. When used as a determiner, the numeral takes the form *ein-* with an ending appropriate to the case and gender of its NP. In the masculine nominative, and the neuter nominative and accusative, the numeral appears in its bare form *ein*, and adjectives following it display strong inflection.

	masc	neut	fem
nom	ein	ein	eine
acc	einen	ein	eine
dat	einem	einem	einer
gen	eines	eines	einer

When used as a stand alone argument (in N′ deletion contexts) the form *ein* (masculine and neuter nominative, and neuter accusative) is replaced by *einer* or *eins* depending on whether the gender of the implied noun is masculine or neuter respectively.

(58) *Ein Mädchen/Eins hat mich geküsst.*
   a   girl/one   has me   kissed

   "A girl kissed me."

(59) *Ein Mann/Einer hat mich geküsst.*
   a   man/one   has me   kissed

   "A man kissed me."

The negative existential *kein* (no, see section 2.1.7), and the possessive determiners *mein, dein, sein* (my, your, his and her) exhibit the same morphological behaviour as *ein*.

Despite their relative inflectional poverty, numerals share certain properties with canonical adjectives. First, they are preceded in the DP by definite and demonstrative Ds and quantificational elements (60). Second, they can be (albeit marginally) preceded by other adjectives when these bear contrastive focus (61).

(60) *die / diese / alle zwei Mädels*
   the / these / all   two   girls

(61) *Ich nehme die TEUREN zwei Sonderkarten und nicht die*
   I   take   the expensive two special tickets and not   the
   BILLIGEN.
   cheap

   "I will take the two EXPENSIVE special tickets, and not the CHEAP ones."

On the other hand, numerals cannot in general appear in predicate position (see §3.3), which trait they have in common with more canonical determiners.

(62) **Meine Feinde sind zwei.*
   my   enemies are   two

2.1.4 Value judgement quantifiers

Another subclass of quantifiers in DPs with existential force are value judgement quantifiers, which include *wenig* (few / little) and *viel* (many / much). The

former inflects like an adjective, with a comparative (*weniger*) and superlative (*am wenigsten*) form (the paradigm of *viel* involves the suppletive *mehr* (more) and *am meisten* (most)). Both can combine with plural count and with mass nouns, and can be modified by *sehr* (very) and *zu* (too).

(63) *Wenige   Vampire   ernähren   sich   von*
      few   vampires nourish   themselves from the
      nichtmenschlichem   Blut.
      not human   blood
      "Few vampires feed on non-human blood."

(64) *Wenig   Saft   ist   drin.*
      little   juice is   in it
      "It has little juice."

(65) *Viele   Schiffe   gingen   verloren.*
      many   ships   went   lost
      "Many ships were lost."

(66) *Viel   Knoblauch   ist   vorhanden.*
      much   garlic   is   available

(67) *Viel   zu   wenige   Vampirjäger   wohnen   hier.*
      much   too   few   vampire hunters live   here

The semantic property of modifiability makes these value judgment Qs in German look like (degree) adjectives, with which they also share the essential morpho-semantic properties, such as word order relative to definite determiners and demonstratives (68), case inflection and number agreement (69), and the (limited) occurrence in predicative position (70).

(68) *die(se)   vielen   /   wenigen   /   witzigen   Demonstranten*
      the(se)   many   /   few   /   funny   protestors

(69)   1. *mit   vielen   /   wenigen   /   witzigen*
            with   many$_{\text{DAT.PL}}$ /   few$_{\text{DAT.PL}}$ /   funny$_{\text{DAT.PL}}$
            Demonstranten
            protestors

         2. *der   viele   Zucker   /   witzige   Demonstrant*
            the   much   sugar   /   funny   protestor

(70) *Die   Demonstranten   sind   aber   wenig(e).*
      the   protestors   are   but   few
      "The protestors are few, however."

However, as with numeral expressions, some of the inflectional traits of adjectives appear to be in the process of being lost. For instance, the plural inflection of *wenig* (and *viel*) is optional in colloquial German, whereas gender agreement on *wenig* and *viel* is altogether absent when occurring with mass nouns.

(71) *Hier sind nur wenig(e) / witzig*(e) Menschen.*
    here are only few   / funny   people

(72) 1. *viel(*er) / weiß*(er) Zucker*
         much   / white   sugar

      2. *viel(*e) / sauer*(e) Milch*
         much / sour   milk

Because of this, value judgement Qs are sometimes analyzed as quantifier heads in a separate functional projection Q located between D and the NP-level [Löbel, 1990].

Semantically, value judgment Qs are ambiguous between an absolute and a proportional reading, as described for English *many* in Partee [1989]. The intersective absolute interpretation only considers the absolute number of individuals that are contained in the intersection denoted by the DP-head and the VP-complement, respectively, and specifies that this number is large or small relative to a contextually given standard (again, the same as for degree adjectives; cf. Heim and Kratzer [1998]).

(73) *Viele Menschen in Pakistan sind auf der Flucht vor*
    many people in Pakistan are on the flight in front of
    den Wassermassen.
    the   water masses

    "Many people in Pakistan are on the run from the masses of water."

(74) *Wenige Studenten haben den schweren Test bestanden.*
    few   students   have the difficult   test passed

    "Few students passed the difficult test."

The proportional reading is non-intersective, and says that the number of individuals with both NP and VP properties is less than a contextually given factor multiplied with the number of individuals satisfying the NP but not the VP property. Proportional readings of value judgment Qs are discussed in section 2.3.1. In the presence of a definite determiner, only the absolute reading is available.

(75) *Die vielen Studenten haben den schweren Test bestanden.*
    the many students   have the difficult   test passed
    "The students were many, and they passed the difficult exam."
    not: "The number of students that passed the exam is large compared to the number of those who did not pass."

This suggests that the availability of a quantificational proportional reading with value judgment Qs depends on a non-definite DP semantics and/or the possibility of optionally realizing the quantifier in the structural D-position (e.g. after short A-to-D movement) [Pafel, 1994, Zimmermann, 2003a].

Another, syntactically very different, value judgement quantifier is the word *lauter* (many, but which has another use as a near synonym of only, discussed

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in §3.12). *Lauter* is in complementary distribution with determiners, cannot be modified, and does not inflect [Eckardt, 2006].

(76) *Im   Wald   sind   lauter   Pfifferlinge.*
     in the forest are   many   chanterelle mushrooms

In contrast to many other determiners or quantifier words, *lauter* cannot appear without its nominal complement (see §3.3).

2.1.5 Interrogative quantifiers

Interrogative determiners include *welch-* (which) and *wie viel-* (how many / much).

(77) *Wie   viele   Frauen fanden den   Film 'Dirty Dancing' toll?*
     how   many women   found   the   film   'Dirty Dancing' good

(78) *Welche Szene fanden sie   am   beeindruckendsten?*
     which   scene found   they at the most impressive
     "Which scene did they find the most impressive?"

German also has an ordinal interrogative quantifier *der/die/das wieviel(s)te*:

(79) *Beim   wieviel(s)ten Film   bist   du   eingeschlafen?*
     during.the how.manyest movie have you fallen.asleep
     "After how many movies did you fall asleep?"

2.1.6 A-quantifiers

Numerical adverbial quantifiers (once, twice, ...) as well as sometimes are formed by juxtaposing the (uninflected) determiner with the word *mal*.[9]

(80) *Man sollte   sich die Zähne dreimal   am   Tag putzen.*
     one   should self the teeth   three times at the day clean
     "You should brush your teeth three times a day."

(81) *Manchmal hat Peter grosse Lust   auf ein Eis.*
     sometimes has Peter big   desire on   an ice cream
     "Sometimes Peter really wants an ice cream."

The adverbial quantifiers often and never can be rendered in one of two equivalent ways; either with a simple lexical item *oft* and *nie*, or by juxtaposing said lexical item with the expression *mals*.[10] Also of this form is *mehrmals* (multiple times), which seems the juxtaposition of *mehr* (more) with *mals*.

---

[9] *Mal* is also a noun, with the meaning of occasion or time.

[10] This expression is not the plural of the noun *Mal*, which is *Male*. Diachronically, the final marker *-s*, which also shows up in the Qs *höchsten-s*, *mindesten-s*, *wenigsten-s*, and *jeweil-s* (see below), can be analyzed as a genitive marker denoting a relation variable (in place of an overt preposition).

(82)   *Silvana   schläft   oft(mals)   mit   offenem   Fenster.*
       Silvana   sleeps   often   with   open   window

       "Silvana often sleeps with the window open."

(83)   *Petra   ist   noch   nie(mals)   in   New   York   gewesen.*
       Petra   is   still   never   in   New   York   been

       "Petra hasn't ever been to New York."

(84)   *Tini   hat   Franzi   mehrmals   angerufen.*
       Tini   has   Franzi   multiple times   called

       "Tini called Franzi multiple times."

Other intersective adverbial quantifiers are *gelegentlich* (occasionally), *häufig* (often), and *selten* (rarely).

2.1.7   Negative Existential Quantification: N-words

As in English, the set of German quantified expressions contains a subclass of n-words the presence of which indicates negative existential quantification (nobody, nothing, etc.). Next to the indefinite n-words (85), which occur as free standing nominal expressions, there is also an n-determiner *kein* (no), which combines with singular or plural count NPs, and mass NPs alike (86).

(85)   *niemand* (nobody), *nichts* (nothing), *nirgendwo* (nowhere), *nie(mals)* (never)

(86)   *kein Student* (no student), *keine Studenten* (no students), *kein Zucker* (no sugar)

Morpho-syntactically, the negative existential determiner *kein* behaves like its positive indefinite counterpart *ein* in terms of inflection and word order (e.g. it precedes numeral expressions).

(87)   *Maria   hat   (k)ein   Kind   geküsst.*
       Mary   has   (no) / a   child   kissed.

       "Mary kissed no / a child."

(88)   *Maria   hat   (k)eins   geküsst.*
       Mary   has   (none) / one   kissed.

(89)   *Maria   hat   keine   zwei   Bücher   gekauft.*
       Maria   has   no   two   books   bought

       "Maria didn't buy two books."

Semantically, there is some evidence to the effect that n-words and the n-determiner should not be analysed as negative existential generalized quantifiers which introduce negation as part of their lexical meaning (e.g. Barwise and Cooper [1981]). Rather, it seems as if n-words are NPIs that signal the presence of a c-commanding covert sentential negation operator.

First, sentences with *kein* allow a 'scope-splitting' reading, which can be thought of in terms of a (semantic) decomposition of *kein* into a (covert) sentential negation part ($\neg$) and an existential quantification part ($\exists$) [Jacobs, 1980, Penka and von Stechow, 2001, Penka, 2006]. The preferred interpretation of the sentences below is the one in which the universal and modal operator, respectively, intervene between the negation and the existential force of the DP.

(90) *Jeder Arzt fährt keinen Mercedes.*
every doctor drives no mercedes

"It is not the case that every doctor drives a mercedes." ($\neg < \forall < \exists$)

(91) *Bill muss keine Wurst essen.*
Bill must no sausage eat

"It is not the case that Bill must eat a sausage." ($\neg < \textbf{MUST} < \exists$)

Second, anaphoric reference to DPs headed by *kein* is possible if the focus in the antecedent clause is located on an additional adjunct, as shown below.

(92) *Wer kein Fahrrad [im KELler]$_F$ hat, hat es auf dem*
who no bicycle in the basement has, has it on the
Balkon.
balcony

"If you don't have a bicycle in the basement, you have it on the balcony."

The possibility of anaphoric reference in the sentence above could be accounted for on the covert negation analysis in the following manner. Negation being focus-sensitive, it associates with the PP-adjunct, thus negating the existence of a bike in a particular location, but not its existence as such.

Third, sentences containing n-words and the n-determiner pattern with sentences containing the overt sentential negation operator *nicht* in terms of their ability to exceptionally license the cancellation of presuppositions, to the exclusion of morphologically incorporated negations, such as *un-* (in-) and *nicht alle* (not all) which are always presupposition-preserving [Seuren, 1991].

(93) *Peter hat NICHT zu rauchen aufgehört. Er hat noch nie*
Peter has not to smoke stopped He has still never
geraucht.
smoked

"Peter hasn't stopped smoking. He has never smoked."

(94) *Niemand hat hier zu rauchen aufgehört. Niemand hat hier*
noone has here to smoke stopped noone has here
je geraucht.
ever smoked

"Noone has stopped smoking here. Noone has ever smoked here."

(95) *#Nicht alle haben zu rauchen aufgehört. Hier wurde noch*
    not   all have to smoke   stopped   here became still

    nie   geraucht.
    never smoked

    "Not all have stopped smoking here. There was never smoking going on here."

Fourth, the behaviour of n-words under VP-ellipsis with modal expressions shows that they do not come with negative force by themselves: the elided nominal expressions *nichts* or *keine Brötchen* below are not interpreted with negative force, and their recovery must involve the bare existential NPs *etwas* and *Brötchen*, respectively.

(96) *...weil Peter nichts / keine Brötchen essen darf,*
    ...because Peter nothing / no   breadrolls eat   may,

    sondern $[_{VP}\ \emptyset\ ]$ *muss.*
    but   must

    "...because Peter is not (just) allowed to, but is obligated to eat something / breadrolls."

Again, the VP-ellipsis patterns follow directly if negation forms no part of the meaning of the elided VP, but comes in as a sentential operator above the VP (as evident in the English paraphrases).

Additional circumstantial evidence for the scope-splitting analysis of n-words/n-determiners as indicating the presence of a covert sentential negation operator comes from earlier stages of German (97) in which the sentential negation operator was still overt [Jäger, 2005], and from the fact that colloquial German (98) as well as some of its dialects (99) exhibit negative concord under emphasis [Zimmermann, to appear].

(97)   1. *inti in dougli nisprah ih ni-ouuiht*
         and in darkness NEG.spoke I neg-something
         "and in the darkness, I spoke nothing."
         (Old High German, Tatian, 300, 19)

        2. *wann Claudas engunde es im n-icht*
         because Claudas neg.granted it him neg-something
         "because Claudas begrudged him it"
         (Middle High German)

(98) *Wir wollen keine Macht für niemand.*
    we want no   power for noone
    "We don't want any power for anybody."

(99) *NÜMS / KEEN-EEN hett NIX köfft.*
    nobody / no-one   has nothing bought
    "Noone bought anything at all."
    (Low German)

Although it is not at all obvious that *kein* is polymorphemic, a semantic decomposition along the lines suggested above [Jacobs, 1980] would fit naturally with a morphological decomposition of *kein* into (the elsewhere unattested) *k-* and *ein*.[11] Difficulties for this synchronously bimorphemic view of *kein* abound, and include the fact that *kein* appears on plural and mass NPs, where *ein* is not permitted.

(100) *Bill   hat   (*eine)   Würste   gegessen.*
     Bill   has   a   sausages   eaten

     "Bill ate sausages."

(101) *Bill   hat   keine   Würste   gegessen.*
     Bill   has   no   sausages   eaten

     "Bill didn't eat any sausages."

(102) *Bill   hat   (*ein)   Wasser   getrunken.*
     Bill   has   a   water   drunk

     "Bill drank water."

(103) *Bill   hat   kein   Wasser   getrunken.*
     Bill   has   no   water   drunk

     "Bill didn't drink any water."

A possible way of accounting for the above facts while holding to the bimorphemic analysis of *kein* might be to appeal to a covert determiner analysis of bare plural and mass terms (as considered in 2.1.2), which is realized overtly when hosting the *k-* morpheme.

2.2 Generalized Universal Qs

2.2.1 D-Quantifiers

German has two ways of expressing universal quantification in the nominal domain: *alle* and *jede(r/s)*. While the two elements superficially give rise to the same semantic effects, including presupposing the non-emptiness of their semantic restrictor argument, they differ in interesting morpho-syntactic and semantic ways, suggesting a different analysis for the two items.

Morpho-syntactically, *jede(r/s)* is restricted to combine with singular count NPs (104), whereas *alle* combines only with plural and mass NPs (105).

(104)   1. *jeder Kellner* (every waiter), *jede Kellnerin* (every waitress), *jedes Kind* (every child)

       2. *#jeder Sand* (every sand),[12] **jede Studenten* (every students)

(105)   1. *alle Studenten* (all students), *aller Zucker* (all sugar)

---

[11] This decomposition appears valid historically, where *kein* > deh+ein [Jäger, 2007].

[12] This expression can be understood under a type reading – every type of sand.

2. *aller Kellner (all waiter)[13]

As demonstrated in §1 above, the inflectional properties and agreement patterns of *jede(r/s)* are the same as those found with other singular determiner heads, such as definite determiners (*der/die/das* – the) and demonstratives (*diese(r/s)* – this): *jeder* shows strong gender agreement with the head noun and is overtly marked for case. While the strong inflection pattern is also found on attributive adjectives with indefinite DPs (106.1), *jede(r/s)* differs from ordinary adnominal adjectives in one crucial respect: in combination with an additional adjective, the strong inflection is only found on the universal quantifier (106.2), whereas it is found on both adjectives in (106.3). Again, *jeder* patterns with definite determiners (106.4).

(106)   1. *ein kluger Kellner* (a clever waiter), *eine kluge Kellnerin* (a clever waitress), *ein kluges Kind* (a clever child)

   2. *jeder kluge(*r) Kellner* (every clever waiter)

   3. *ein schöner kluge*(r) Kellner* (a handsome clever waiter)

   4. *der kluge(*r) Kellner* (the clever waiter)

The data in 106 suggest that the quantifier *jede(r/s)* is not an attributive modifier, but a D-quantifier that is located in the same structural position as the definite determiner (see below for more discussion).

(107) [$_{DP}$ *jeder* [$_{NP}$ *Kellner*]]

In certain contexts, *jede(r/s)* has a reading like the English any. In these contexts, it may be replaced by the determiner *jegliche(r/s)* (any).

(108) *ohne   jedes / jegliches Zögern*
      without every / any   hesitation
      "without any hesitation"

(109) *Ihm   fehlt   jede / jegliche Erinnerung.*
      him   lacks   every / any   memory
      "He doesn't remember anything."

Alle is also marked for case (110), and with mass nouns it shows gender agreement (111.1). In this regard, it behaves like attributive adjectives that show strong inflection in the absence of an overt indefinite determiner (111.2).

(110)   1. *Peter hat allen*$_{ACC}$ / *weißen Zucker gegessen.*
      Peter has all   / white   sugar   eaten
      "Peter ate all the / white sugar."

   2. *mit   allen*$_{DAT}$ / *klugen Studenten*
      with all   / clever students
      "with all the / clever students"

---

[13]In the idiom *aller Anfang ist schwer* (all beginnings are difficult, lit. all beginning is difficult) *alle* combines with the deverbal singular noun *Anfang* (beginning, pl. *Anfänge*).

(111)   1. *alle Milch* (all$_{\text{NOM.F}}$ milk), *aller Zucker* (all$_{\text{NOM.M}}$ sugar), *alles Gold* (all$_{\text{NOM.N}}$ gold)

   2. *saure Milch* (sour$_{\text{NOM.F}}$ milk), *weißer Zucker* (white$_{\text{NOM.M}}$ sugar), *weißes Gold* (white$_{\text{NOM.N}}$ gold)

In combination with subsequent adjectives, *alle* and the adjective show the same inflection (112.1), quite unlike what was observed for *jeder* above (illustrated again in 112.2).

(112)   1. *aller guter Rat* (all good advice)

   2. *jeder gute(*r) Rat* (every good suggestion)

In addition, there is also an uninflected variant *all*, which resembles the English all in combining with full plural count or mass DPs headed by a definite determiner. In this case, *all* seems to function as a modifier on the DP, as suggested for English in Brisson [1998, 2003]:

(113) *All   die   Milch   (hier)   ist   gespendet   worden.*
      all   the   milk   (here)   is   donated   became

   "All the milk here was donated."

(114) *Ich   habe   all   die   Studenten   (hier)/   all   meine   Studenten*
      I   have   all   the   students   (here)   all   my   students

   eingeladen.
   invited

   "I invited all of the students here/ all of my students."

The modifying nature of *all(e)* is supported by its diachronic origin from an attributive modifier meaning whole [Haspelmath, 1995].

Unlike English all [Matthewson, 2001], the choice between inflected *alle* and uninflected *all die/der* (all the) does not seem to correlate with a semantic difference between episodic readings and generic or kind readings. Rather, the combination of *all*+DP seems to be preferentially used deictically in presentational contexts. Thus, there is a clear difference in meaning between the two alternative answers to the question below. See Pafel [1994] for additional morpho-syntactic differences between the two variants.

(115) How many students passed the exam?

   1. *Alle   Studenten   haben   den   Test   bestanden.*
      all   students   have   the   test   passed

   2. *All   die   Studenten   #(hier)   haben   den   Test   bestanden.*
      all   the   students   (here)   have   the   test   passed

The observed parallels with attributive adjectives and the diachronic facts suggest the structures below for the two types of universal *all(e)* in German.

(116)   1. $[_{DP}\ \emptyset\ [_{NP}\ alle\ [_{NP}\ Milch]]]$

2. $[_{DP} \ all \ [_{DP} \ die \ [_{NP} \ Milch]]]$

In 116.1, the DP is headed by a covert determiner, as considered for other instances of plural and mass expressions in §2.1.2, whereas the quantifier *alle* modifies the head NP in a lower structural position.[14]

As for the morphemic structure of the universal Qs, *alle* is clearly monomorphemic, whereas superficially, *jeder* might be thought to be a compositum of *je* (each) and the definite determiner (*der*), with a constructionally determined meaning along the lines of each of the. While perhaps tempting, there are a number of serious problems a proponent of such a morphological decomposition would need to overcome. First, the nominative neuter (*jedes*) and feminine (*jede*) forms do not contain the nominative neuter (*das*) and feminine (*die*) definite determiners. Second, any analysis along these lines will have to formulate a convoluted statement of N′ deletion, as *jeder* can function as a stand-alone argument of a predicate, whereas *der* cannot (unless it is interpreted as a referential pronoun). Finally, the proposed rendering of *jeder* as akin to each of the cannot be taken too seriously, as partitive each of the requires a plural expression as its complement, whereas universal *jeder* demands a singular count NP. We conclude that *jede(r/s)* is not complex from a synchronous perspective, independent of its diachronic origin,[15] but see Leu [2009] for a recent analysis of synchronous *jeder* as structurally complex. This conclusion is supported by the fact that *jede(r/s)* can be optionally preceded by the indefinite determiner *ein*, as illustrated below [Pafel, 1994, Roehrs, to appear, Kallulli and Rothmayr, 2008]. While this usage may have a slightly archaic tinge to it, it is certainly still productive, in particular with genitive attributes of complex DPs.

(117) *ein jeder Engel ist schrecklich.*
 an every angel is terrible

 "Every angel is terrible."   [Rilke, Erste Duineser Elegie]

(118) *im Leben eines jeden Menschen*
 in the life of an every person

 "in everyone's life"

As part of this complex construction, *jede(r/s)* does not normally show the same inflectional behaviour as when standing in isolation. Instead, it appears to exhibit the inflectional patterns of attributive adjectives in indefinite DPs (119)).

(119) 1. *jedem Studenten*
  every student

  (dative)

---

[14]Alternatively, one could assume the D-projection to be absent, or head movement of the modifying universal Q head into the D-projection.

[15]The historical forms are OHG *eo-hwedar / io-wedar* → MHG *ie-weder* [Grimm and Grimm, 1854-1960].

2. *einem jeden Studenten*
   an   every student

3. *einem klugen Studenten*
   a   clever student

Still, one might maintain that *jede(r/s)* does not have the structural status of an ordinary attributive adjective in the *ein jeder* construction. Instead, it forms a complex quantificational D-head together with the indefinite article (see Pafel [1994] and also §2.4 on complex quantifier formation).

(120) $[_{DP}$ $[_{D}$ *ein jeder*] NP]

There are two kinds of evidence for the complex head analysis. First, *jede(r/s)* optionally *does* inflect like its free-standing counterpart even in the *ein jeder* construction (121). Second, when followed by an attributive adjective, *jede(r/s)* and the adjective do not show the same inflection (122). In this, *ein jeder* behaves like free-standing *jeder* and other determiner-heads (see above) that require a following adjective to inflect according to the weak paradigm.

(121)   1. *eines jede-n/-s Mannes*
           an   every   man

        2. *eines gute-n/*-s Mannes*
           a   good   man

(122)   1. *ein jeder   gute(*-r) Baum*
           an   every   good   tree

        2. *ein neuer   gute*(-r) Baum*
           a   new   good   tree

While the inflection facts are not entirely clear, and seem subject to interspeaker variation (see Roehrs [to appear]), it appears that the addition of the singular indefinite determiner *ein* serves to stress the inherent semantic nature of *jeder* as a distributive quantifier; see also Kallulli and Rothmayr [2008] for additional empirical arguments.

Semantically, the two universal quantifiers *alle* and *jede(r/s)* behave like their English counterparts all and each/every in terms of their (non-)inherent distributivity; see Vendler [1962] and Gil [1995] for much relevant discussion: the singular count quantifier *jede(r/s)* is lexically specified as being distributive, whereas the plural and mass quantifier *alle* resembles ordinary plural DPs in not being specified as [+/-] distributive. As a result of its lexical specification, *jede(r/s)* cannot combine with inherently collective predicates, whereas *alle* can.

(123)   1. *#Jeder Soldat   umzingelte   die Stadt.*
           every   soldier surrounded   the city

        2. *#Jeder Student wog   insgesamt   500kg.*
           every   student weighed   alltogether 500kg

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(124)   1. *Alle   Soldaten   umzingelten   die   Stadt.*
            all   soldiers   surrounded   the   city

        2. *Alle   Studenten   wogen   insgesamt   500kg.*
            all   students   weighed   alltogether 500kg

Since *alle* is not lexically specified for distributivity, it is free to occur with inherently distributive predicates as well. In the same way as with ordinary plural DPs, the distributive interpretation may come about through the workings of a covert distributivity operator [Link, 1983].

(125) *Jeder   Student   hat   geschlafen.*
      every   student   has   slept

(126) *Alle   Studenten   haben   geschlafen.*
      all   students   have   slept

Finally, with ambiguous predicates, the presence of *jede(r/s)* disambiguates the predicate towards the distributive interpretation, whereas presence of *alle* leaves the matter subject to contextual resolution [Gil, 1995].

(127) *Jeder   Student   trug   drei   Koffer.*
      every   student   carried   three   suitcases
      "Each student carried three suitcases"
      not: "The students carried three suitcases together."

(128) *Alle   Studenten   trugen   drei   Koffer.*
      all   students   carried   three   suitcases
      "Each student carried three suitcases"
      "The students carried three suitcases together."

The inherent distributivity of *jeder* suggests that it builds proper generalized quantifiers of type $(et)t$, whereas *alle*-DPs denote sets of individuals or plural individuals (see Heim and Kratzer [1998] for discussion). Since *jeder*-DPs do not denote such pluralities, they cannot serve as the subject of collective predications. Furthermore, the treatment of *jeder*-DPs as generalized quantifiers also accounts for the fact that DPs headed by *jeder* can semantically bind singular pronouns, whereas *alle*-DPs cannot. The possibility of anaphoric reference with the plural pronoun *sie* below could be accounted for under this perspective as coreference with the plural individual denoted by the *alle*-DP.

(129) *Jeder   Student   hat   versprochen,   dass   er   kommt.*
      every   student   has   promised   that   he   comes

(130) *Alle   Studenten   haben   versprochen,   dass   sie   kommen.*
      all   students   have   promised   that   they   come

Another nominal strategy of expressing universal quantification is the use of so-called distance-distributive quantifiers, which will be discussed in section 3.1.

2.2.2   A-Quantifiers

Universal adverbial quantifiers include *immer* and *stets* (always). *Stets* has as adjectival counterpart *stetig* (continuous/continual), which share the same slightly archaic adjective *stet* (constant), whereas the adjectival form *immerig is not in the standard language.

(131) *In   Hamburg   regnet   es   immer.*
　　　 in   Hamburg   rains   it   always

　　　 "It always rains in Hamburg."

(132) *Er   war   stets   hilfsbereit.*
　　　 he   was   always   ready to help

　　　 "He was always ready to lend a helping hand."

　　　Additionally, the suffix *-s* may be added to the word for a day of the week to derive an adverb with a universal meaning.

(133) *Ich   kam   am   Donnerstag.*
　　　 I   came   at the   thursday

　　　 "I came on thursday."

(134) *Ich   kam   Donnerstags.*
　　　 I   came   thursdays

　　　 "I came on thursdays."

2.3   Proportional Qs

2.3.1   D-Quantifiers

Most in German is not monomorphemic, but is rather composed of a definite determiner followed by the appropriately inflected adjective *meist*, which is historically the superlative form of *mehr* (more). As in English, *d- meist-* in German selects either a plural count noun or a mass noun complement. Despite the presence of bare plurals in German, *meist* cannot modify a noun without being immediately preceded by the definite determiner.

(135) *Leute   aus   Hamburg   verdienen   *(das)   meiste   Geld.*
　　　 people   out   Hamburg   earn   the   most   money

　　　 "People from Hamburg make the most money."

　　　.

(136) **(Die)   meisten   Deutschen   essen   täglich   Wurst.*
　　　 the   most   Germans   eat   daily   sausage

　　　 "Most Germans eat sausage every day."

Given that the proportional meaning of *die meisten NPs* is not derivable in a straightforward way from the meaning of its parts (i.e. from the superlative adjective *meisten* and the definite determiner *die*), we propose that *die meisten* forms a complex quantifier in D, with the obligatory presence of the definite determiner being due to morpho-syntactic factors, namely the superlative form of the adjective. In simple instances such as 136 above, *die meisten* compares the number of the NP-individuals (here: Germans) that have the property of the VP (here: eating sausage on a daily basis) with the number of NP-individuals that don't. In more complex cases, presence of *die meisten* indicates that the number of NP-individuals with the VP property is larger than or equal to the number of NP individuals with any alternative property that is relevant and salient in the given context (here: voting for other parties). Consider the real world election example below for an illustration.

(137) CONTEXT: Election outcome: CDU = 33%; SPD = 25%; Greens = 12%; Liberals = 13%; Left = 7%

Die	*meisten*	*Wähler*	*haben*	*für*	*die*	*CDU*	*gestimmt.*
the	most	voters	have	for	the	CDU	voted

"The number of voters that voted CDU is larger than the number of voters that voted for any other party."

As already mentioned in section 2.1.4, indefinite DPs containing the value judgement Qs *viel* and *wenig* can also receive proportional interpretations. For instance, 138 is felicitous in a context in which eight of ten student takers of the exam passed it, even though eight does not normally qualify as a large number. Conversely, 139 is appropriate in a situation where 20% of the German voters (ca. 9 million) cast their vote for the social democrats (SPD) in parliamentary elections.

(138)
Viele	*Studenten*	*haben*	*die*	*Prüfung*	*bestanden.*
many	students	have	the	exam	passed

(139)
Wenige	*Wähler*	*gaben*	*ihre*	*Stimme*	*der*	*SPD.*
few	voters	gave	their	vote	to the	SPD

As described for English *few* and *many* in Herburger [2000], proportionally interpreted Qs in German are focus-sensitive: the truth conditions of the sentences below differ.

(140)
Viele	*Deutsche*	*haben*	*den*	*NoBELpreis*	*gewonnen.*
many	Germans	have	the	Nobel prize	won

"The number of German Nobel prize winners is large compared to the German winners of other things."

(141)
Viele	*DEUTsche*	*haben*	*den*	*Nobelpreis*	*gewonnen.*
many	Germans	have	the	Nobel prize	won

"The number of German Nobel prize winners is large compared to the number of Nobel prize winners from other countries."

2.3.2 A-Quantifiers

The form *meist* can be used as an adverb meaning mostly. The related *meistens* (most of the time) has a similar meaning, however the former can be predicated of an adjective to denote a property that can hold of an individual at a given moment or stretch of time.

(142) *Ich komme meist(ens) Abends nach Hause.*
      I   come   mostly   evenings to   home
      "I get home mostly in the evening."

(143) *Der Himmel ist heute meist bewölkt.*
      the sky   is today mostly cloudy
      "The sky is for the most part cloudy today."

(144) *Der Himmel ist heute meistens   bewölkt.*
      the sky   is today most of the time cloudy
      "Today, the sky has been cloudy most of the time."

2.4 Morphosyntactically Complex Qs

Number words can be modified with the comparative forms of *wenig* (little) and *viel* (much), *weniger* and *mehr*, respectively. In this construction, as in comparative constructions in general (see §3.7), the preposition *als* (than) introduces the numeral. Despite the fact that *als*-clauses in comparative constructions can normally be postposed, this is not possible in modified numeral constructions.

(145) *Mehr als   fünf Leute   sind gekommen.*
      more than five people are come
      "More than five people came."

(146) *Weniger als   drei Leute   sind gestorben.*
      fewer   than three people are dead
      "Less than three people died."

The respective duals of the above quantifiers are *höchstens* (at most) and *mindestens* (at least). The former is derived from *höchsten*, which is the superlative form of the adjective *hoch* (high). The latter has the same shape, but the adjective underlying the superlative form is no longer in common usage, although vestiges remain in nominal compounds such as *Minderheit* (minority), and verbs such as *vermindern* (lessen). The word *mindestens* leads a double life as a (similarly translated) adverb. Both words directly modify noun phrases (without the need for *als*).

(147) *Höchstens fünf Leute   sind gekommen.*
      at most   five people are come
      "At most five people came."

(148) *Mindestens drei Leute sind gestorben.*
     at least   three people are   dead
     "At least three people died."

Bounding both ends of the number line can be done with the expressions *genau* (exactly), *ungefähr/circa* (approximately), and the preposition *zwischen* (between). *Genau* and *ungefähr* are also adverbs.

(149) *Genau vier Blumen blühen.*
     exactly four flowers bloom

(150) *Ich habe ungefähr   achtzig Kekse gegessen.*
     I   have approximately eighty cookies eaten
     "I ate about eighty cookies."

(151) *Für Kaffee gebe ich zwischen fünfzig und siebzig Dollar*
     for coffee give I   between fifty   and seventy dollars
     im   Monat aus.
     in the month out
     "I spend between fifty and seventy dollars a month on coffee."

All of the above quantifiers can also modify proportion denoting expressions such as *Hälfte* (half), *Viertel* (quarter), and *Mehrheit* (majority). The preposition *von* can be used with numerals to build a proportional quantifier.

(152) *Sieben von   zehn Künstlern verhungern.*
     seven   from ten artists   starve
     "Seven out of ten artists starve to death."

Other proportional quantifiers take the form of DPs, which can be modified by another DP in the genitive case.

(153) *zehn   Prozent (der   Menschen)*
     ten   percent (of the people)

(154) *zwei Drittel (meiner Studenten)*
     two   thirds   (of my   students)

(155) *eine grosse Mehrheit (der   Bevölkerung)*
     a   large   majority   (of the populace)

(156) *eine kleine Minderheit (der   Regierungschefs)*
     a   small   minority   (of the   heads of state)

(157) *ein Zehntel (der   Griechen)*
     a   tenth   (of the   greeks)

(158) *ein kleiner Prozentsatz (der   EU Bürger)*
     a   small   percentage   (of the EU citizens)

(159) *welcher Anteil (der Fleischer)*
which proportion (of the butchers)

The quantifiers *viel* and *wenig* cannot only be (as mentioned in §2.1.4) modified by *zu* (too), *so* (such), and *sehr* (very), but also by adjectives such as *überraschend* (surprisingly) and, at least for *viel, (un)endlich* ((in)finitely). (In)sufficiency can be expressed with *(nicht) genügend* ((not) enough).

(160) *Überraschend wenig Zahlen werden von genügend Leuten in*
surprisingly few numbers become from enough people in
endlich vielen Vorträgen erwähnt.
finitely many presentations mentioned

"Surprisingly few numbers are mentioned by enough people in finitely many talks."

Exception phrases in German can be built with *außer* (except), *abgesehen von* (apart from), *bis auf* (save for), or *mit Ausnahme von* (with the exception of). These phrases can be separated from the quantifiers they modify.

(161) *Jeder abgesehen von John ist gekommen.*
everyone apart from John is come

"Everyone except John came."

(162) *Alle mit Ausnahme von zwei(en) wurden verhaftet.*
all with exception from two became arrested

"All but two were arrested."

(163) *Die meisten außer den sehr billigen wurden behalten.*
the most except the very cheap became kept

"Most of them were kept, apart from the very cheap ones."

(164) *Keiner starb außer John.*
noone died except John

Related in meaning, though not in form, are *jede(r/s) zweite* (every other) and quantifiers modified by *fast* (almost).

(165) *Jedes zweite Auto ist kaputt.*
every second car is broken

"Every other car is busted."

(166) *Fast alle Politiker sind korrupt.*
almost all politicians are corrupt

Partitives have the form of a determiner followed by a genitive DP. If the determiner would select a singular NP, it shows agreement with the gender of its genitive complement (168), though it may diverge from this in number.

(167) *Alle dieser Blumen schenk ich dir.*
　　　all　of these　flowers　gift　I　you

　　　"I give to you all of these flowers."

(168) 　1. *Ich helfe jedem dieser Männer.*
　　　　　I　help　every　of these　men

　　　　　"I will help every one of these men."

　　　 2. *Ich helfe jeder dieser Frauen.*
　　　　　I　help　every　of these　women

　　　　　"I will help every one of these women."

While the agreement facts could be accounted for theoretically by postulating that partitive constructions of the form $D\ DP_{gen}$ derive from structures of the form $D\ NP_1\ [_{DP}\ D\ NP_2]$ by obligatory deletion of NP_1 (under identity with NP_2), any analysis must deal with the fact that material from the hypothesized NP_1 may not be stranded (as is otherwise common with N-bar deletion), with the exception of *einzeln* (single) following *jede(r/s)*.

(169) **Alle roten dieser Blumen schenk ich dir.*
　　　all　red　of these　flowers　gift　I　you

　　　intended: "I give to you all red flowers from among these flowers."

(170) *Ich helfe jedem einzelnen dieser Männer.*
　　　I　help　every　single　of these　men

　　　"I will help every single one of these men."

　In contrast to other quantifiers, *alle* does not appear in the partitive construction when its complement is a possessive noun phrase. Instead, *alle* combines directly with this expression.

(171) *alle meine Enten*
　　　all　my　ducks

(172) *jede/manche/keine/viele/wenige/die meisten/zwei meiner Enten*
　　　every/some/none/many/few/the most/two　of my　ducks

Numerals and *beide* (both) may also appear inside of a possessive determiner (with a corresponding presuppositional difference).

(173) *meine beiden Enten*
　　　my　both　ducks

　　　"both of my ducks"

(174) *meine zwei Enten*
　　　my　two　ducks

　Boolean compounds of quantifiers can be made, though only certain quantifiers can be overtly negated (with *nicht* (not)).

(175) *nicht alle*
     not   all

(176) *nicht jeder*
     not   every

(177) *nicht viele*
     not   many

(178) *nicht mehr/weniger als*
     not   more/fewer   than

Negation can combine with numerals, and other DPs, but this requires a contrastive reading. Numerals can combine with *nicht (ein)mal* (not even).

(179) *nicht BEIDE*
     not   both

(180) *nicht DIE zwei*
     not   the   two
     "not THOSE two"

(181) *nicht ZWANZIG*
     not   twenty

(182) *nicht (ein)mal zwanzig*
     not   once   twenty
     "not even twenty"

(183) *nicht die MEISTEN*
     not   the   most
     "not most"

Certain quantifiers cannot be directly combined with negation at all.

(184) **nicht ein*
     not   a
     instead: *kein*

Coordination of quantifiers can be expressed with *und* (and), *aber* (but), and *sowohl ... als auch* (both ... and), and disjunction with *(entweder ...) oder* ((either ...) or). When conjoining quantifiers with incompatible selectional restrictions ungrammaticality results.

(185) *Mindestens zwei und nicht mehr als zehn Prozent der*
     at least   two   and   not   more   than   ten   percent   of the
     Hunde bellen täglich.
     dogs   bark   daily

(186) *Die meisten, aber nicht alle, Mädchen mögen tanzen.*
    the   most   but   not   all   girls   like   dance

    "Most but not all girls like to dance."

(187) *Entweder sehr wenige oder sehr viele Besucher kommen*
    either   very few   or   very many visitors come
    zum   Konzert.
    to the concert

(188) **Die meisten$_{pl}$, aber nicht jedes$_{sg}$*
    the   most   but   not   every

    A-quantifiers also have a boolean structure.

(189) *Normalerweise aber nicht immer wähle ich FDP.*
    normally   but   not   always vote I   FDP

    "I normally but not always vote FDP."

3 Selected Topics

We begin by considering dissociations between quantifiers and NPs that they are associated with – binominal each (§3.1) and floated quantifiers (§3.2). We then turn to quantifiers occuring without overt NPs in §3.3, and to noun classifiers in §3.4. Section 3.5 deals with existential sentences in German, and discusses restrictions on the DPs that can appear in them. Section 3.6 discusses relations between wh-phrases, universal and existential quantification. Sections 3.7 and 3.8 introduce quantifiers of multiple arguments, and an NPI licensed by semantically decreasing DPs, respectively. Sections 3.9, 3.10, and 3.11 discuss the semantic import of multiple quantificational DPs as arguments to a single predicate. Finally, section 3.12 deals with German translations of only.

3.1 Distributive Numerals and Binominal Each

As mentioned in §2.2.1, German has another nominal strategy of expressing universal quantification, namely by means of the distance distributive quantifier *je(weils)* in 190, which is comparable to English binominal *each* [Safir and Stowell, 1988, Zimmermann, 2002b,a].

(190) *Die Jungen haben je(weils) drei Würstchen gekauft.*
    the boys   have   each   three sausages   bought

    "The boys bought three sausages each."

(191) *Die Jungen haben drei Würstchen gekauft.*
    the boys   have   three sausages   bought

    "The boys bought three sausages."

(192) *Die   Jungen   haben   insgesamt   drei   Würstchen   gekauft.*
the   boys   have   in total   three   sausages   bought

"The boys bought three sausages in total."

The full form *jeweils* is morphologically complex, and consists of the quantifying expression *je* and the form *weil-s* (time – see footnote 10). Unlike the adnominal universal quantifiers in 2.2.1, *jeweils* does not form a constituent with the plural expression denoting its semantic restriction, but rather with the indefinite (numeral) expression to its right. (See Zimmermann [2002b,a] for extensive discussion of the distribution and syntactic constituency of distance-distributive elements, as well as for a compositional semantics for such elements.) Semantically, the presence of *jeweils* disambiguates in favor of distributivity the interpretation of sentences which otherwise would be ambiguous between a distributive interpretation and a collective one (see 191 and 192). It does so by distributing the denotation of the indefinite (numeral) expression, the distributive share, over the denotation of the plural expression, the distributive key. Conversely, the collective, or rather cumulative, interpretation can also be expressed overtly by means of the expression *insgesamt* (in total).

A major difference between German *jeweils* and English binominal each consists in the fact that the *je(weils)*-constituent need not be c-commanded by the DistKey plural expression.

(193) *Je(weils)   zwei   Offiziere   begleiten   die   Ballerinas.*
each   two   officers   accompany   the   ballerinas

"The ballerinas are being accompanied by two officers each."
"Each time, two officers accompany the group of ballerinas."

A second major difference concerns the fact that *jeweils* does not require a plural clausemate expression at all. In such cases, it distributes over a (frequently implicit) plurality of events, as shown in 194. Distribution over events, or situations, also accounts for cases in which there is only a singular expression, as in 195.

(194) *Je(weils)   drei   Ballerinas   wurden   begleitet.*
each   three   ballerinas   became   accompanied

"Three ballerinas were accompanied each time."

(195) *Je(weils)   zwei   Bauern   füttern   einen   Esel.*
each   two   farmers   feed   a   donkey

"The donkeys are being fed by two farmers each."

Distribution over events is mandatory for adverbial instances of *jeweils*, in which case the short form *je* is illicit.

(196) *Die   Jungen   haben   je*(weils)   gewonnen.*
the   boys   have   each   won

"The boys won each time."
(not: "Each boy won.")

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Related to *jeweils* is the adjective *jeweilig* (respective).

(197) *Die Männer haben mit ihren jeweiligen Frauen getanzt.*
     the   men   have   with their   respective wives   danced

    "The men danced with their respective wives."

3.2 Floating Quantifiers

The quantifiers *alle*, *jede(r/s)* and *beide* can be associated with definite count DPs (not mass DPs (198)) elsewhere in the clause. The associated DP must be either a c-commanding subject, direct, or indirect object (no objects of prepositions, possessors, etc). The floated quantifier bears the same case as its associated DP – in (201) the floated quantifier *allen* is in the dative case, as is its associate *den Mädchen* – unless the associate DP is the controller of the clause in which the floated quantifier is located (eg. (202) adapted from Giusti [1991], where *den Dienern* is dative, but the floated quantifier is non-dative).

(198)   1. *Gestern   wurde   aller Zucker   gegessen.*
           yesterday became all   sugar   eaten

      2. **Der Zucker wurde   gestern   aller gegessen.*
           the   sugar   became yesterday all   eaten

(199) *Die Mädchen haben mir alle ein Buch gegeben.*
    the   girls   have   me all a   book given

    "The girls all gave me a book."

(200) *Die Bücher habe ich alle den Mädchen gegeben.*
    the   books   have I   all   the   girls   given

    "I gave the girls all of the books."

(201) *Den Mädchen habe ich alle*(n) ein Buch gegeben.*
    the   girls   have I   all   a   book given

    "I gave all the girls a book."

(202) *Der König befahl den Dienern alle Flöte zu spielen.*
    the   king   ordered the   servants all   flute   to   play

    "The king ordered his servants to all play the flute."

As noted by Büring [1994], floated quantifiers cannot follow indefinite arguments (203,205), but can definite ones (204, 206).

(203) *Die Geschenke hat der Lehrer (alle) einem Clown (*alle)*
    the   presents   has the teacher (all)   a   clown (all)
    gegeben.
    given

    "The teacher gave all the presents to a clown."

(204) *Die Geschenke hat der Lehrer (alle) den Kindern (alle)*
    the   presents   has the teacher (all)   the   children (all)
    gegeben.
    given

    "The teacher gave all the presents to the children."

(205) *Die Geschenke hat (alle) ein Lehrer (*alle) gekauft.*
    the   presents   has (all)   a   teacher (all)   bought

    "A teacher bought all the presents."

(206) *Die Geschenke hat (alle) der Lehrer (alle) gekauft.*
    the   presents   has (all)   the teacher (all)   bought

    "The teacher bought all the presents."

3.3 Bare Qs

Bare Quantifiers can productively function as arguments (i.e. N-bar ellipsis is generally possible).

(207) *Kevin hat drei (Rosinen) gefunden.*
    Kevin has three raisins   found

    "Kevin found three raisins."

(208) *Die meisten (Singles) flirten online.*
    the   most   (singles) flirt   online

(209) *Fast jeder (Student) außer höchstens drei kam.*
    almost every student   except highest   three came

    They cannot, in general, function as predicates. A possible exception is *alle* (all), which in predicative position means empty or used up.

(210) *Die Milch ist alle.*
    the milk   is   all

    "The milk (container) is empty."

In certain contexts, however, a larger variety of quantifiers may appear alone post-copula.

(211) *Das sind zwei.*
    that are   two

    "That's two."

(212) *Die Spartaner waren viele.*
    the spartans   were   many

(213) *Die Leute hier sind alle (die ich bekommen konnte).*
    the people here are   all   (the I   get   could)

    "The people here are all I could get."

It is not clear whether these cases should be treated as bare quantifiers being used predicatively, or as identity statements involving bare quantifiers as arguments. Either way, it seems quite a heterogenous class of quantifiers.

The *wh*-determiner *welche* (which) can be used existentially (see also section 3.6), but only as a bare quantifier in anaphoric contexts. It is in complimentary distribution with bare *ein*, which occurs in singular count environments.

(214) **Q:** *Wo   sind die Schraubenzieher?*
where are   the   screwdrivers

    A: *Im   Schrank   gibt   es welche / einen.*
in the cupboard gives it   which   / one

        "There's some / one in the cupboard."

(215) **Q:** *Gibt   es Zucker?*
gives it sugar

        "Is there any sugar?"

    A: *Im   Schrank   gibt   es welchen.*
in the cupboard gives it   which

        "There's some in the cupboard."

3.4   Mass Quantifiers and Noun Classifiers

German does not have classifiers in general, although it does have ways of imposing units of measurement on mass nouns. This is done by juxtaposing a count noun with the mass term, as per the below.

(216) *ein Kopf Salat*
a   head lettuce

(217) *ein Löffel Brei*
a   spoon porridge

The relation between the two nouns is not one of compounding (as in 219), as both retain a primary stress.

(218) *eine TONne MÜLL*
a   barrel   trash

(219) *eine MÜLLtonne*
a   trash barrel
"a trash can"

However, the count noun 'classifier' doesn't always pluralize. Only grammatically feminine classifiers like *Scheibe* (slice), as in 220, must, whereas non-feminine ones like *Kopf*, *Löffel*, *Meter* (meter) and *Blatt* (leaf), need not. [16]

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[16]This generalization is due to Manfred Krifka. Other pluralizing feminine classifiers are *Tonne* (barrel), *Kanne* (can), *Tasse* (mug), as well as the old measure nouns *Spanne* (span) and *Elle* (yard).

(220) 1. *eine   Scheibe   Brot*
       a   piece   bread

      2. *drei   Scheibe*(n) Brot*
         three   pieces   bread

(221) 1. *ein   Blatt   Papier*
       a   leaf   paper
       "a piece of paper"

      2. *drei   Blatt/Blätter Papier*
        three   leaf/leaves   paper
       "three pieces of paper"

In some cases, there can be a semantic difference between pluralized and non-pluralized forms.

(222) *drei   Stück Wurst*
     three piece sausage
     "three sausages"

(223) *drei   Stücke Wurst*
     three pieces sausage
     "three sausages"
     "three pieces of sausage"

The count noun classifier does inflect for case, when appropriate.

(224) *eines   Glas*(es)*
     of a   glass

(225) *eines   Glas*(es) Wein*
     of a   glass   wine

Furthermore, the mass noun can be modified by adjectives, which inflect for case appropriate to the whole DP, but for gender appropriate to the mass noun. When so modified, the mass noun also shows case inflection (compare (225) and (230)).

(226) *Ein Kopf grüner Salat   liegt da.*
     a   head green   lettuce lies   there

(227) *Einen Kopf grünen Salat   habe ich gegessen.*
     a   head green   lettuce have I   eaten
     "I ate a head of green lettuce."

(228) *Ein Glas teurer   Wein steht   dort.*
     a   glass expensive wine stands there

(229) *Ein Glas teuren Wein habe ich getrunken.*
    a   glass expensive wine have I   drunk

    "I drank a glass of expensive wine."

(230) *Wegen eines Glases teuren Wein*(s) bin ich bis nach*
    because of of a glass expensive wine   am I   until to
    Hamburg gefahren.
    Hamburg driven

    "Because of a glass of expensive wine, I drove up to Hamburg."

3.5 Existential sentences

German has two constructions which have been characterized as existential constructions [Czinglar, 2002]. In the first, the verb is *geben* 'to give', and in the second, *sein* 'to be'.

(231) *Es gibt einen Mann im Garten.*
    it gives a   man in the garden

    "There is a man in the garden."

(232) *Es ist ein Mann im Garten.*
    it is a   man in the garden

    "There is a man in the garden."

Both constructions have a semantically empty *es* 'it' subject, but the nature of this element differs across these constructions. In the *geben* case, the *es* remains overt regardless of whether or not it occupies the prefield, the pivot noun phrase receives the accusative case, and does not agree with the finite verb (which surfaces in the third person singular, appropriate for agreement with *es*).

(233) **Ein / Einen Mann gibt *(es) im Garten.*
    a.NOM / a.ACC man   gives (it)   in the garden

    "There is a man in the garden."

In the *sein* construction on the other hand, the *es* may appear only in the prefield position, and only in main clauses. In addition, the 'pivot' noun phrase receives nominative case, and triggers agreement on the finite verb.

(234) *Im Garten ist (*es) ein / *einen Mann.*
    in the garden is (it)   a.NOM / a.ACC man

    "There is a man in the garden."

The *sein* construction seems to be a species of the broader transitive expletive construction, in which an expletive *es* occupies the prefield of a (prototypically transitive) clause.

(235) *Es   haben   drei   Ratten   die   Katze   gefressen.*
     it   have   three rats   the   cat   eaten

    "Three rats ate the cat."

(236) *Gefressen   haben   (*es)   drei   Ratten   (*es)   die   Katze   (*es).*
     eaten   have   (it)   three rats   (it)   the   cat   (it)

    Both co-intersective and proportional DPs can occur in the pivot position of both types of sentence.

(237) *In   welchem   Land   gibt   es   die   meisten   Politikerinnen?*
     in   which   country gives it   the   most   female politicians

    "Which country has the most female politicians?"

(238) *Es   gibt   alle   Spielgeräte   auf   diesem   Spielplatz.*
     it   gives all   play equipments on   this   playground

    "This playground has all types of play equipment."

(239) *Es   gibt   jedes   Sternzeichen   ungefähr   gleich   oft.*
     it   gives every astrological sign   approximately   equal   often

    "Each astrological sign is approximately equally likely."

(240) *Es   sind   die   meisten   dieser   Sätze   sorgfältig   ausgedacht.*
     it   are   the   most   of these sentences   carefully   thought out

    "Most of these sentences have been carefully thought out."

(241) *Es   sind   alle   Welpen   vergeben.*
     it   are   all   puppies given away

    "All the puppies have been given away."

(242) *Es   ist   jede   Schwangerschaft   anders.*
     it   is   every pregnancy   different

    "Every pregnancy is different."

Despite this apparent unselectivity, there do seem to be restrictions on the nature of the quantifier in the pivot position in such constructions. Among the *geben*-sentences, sentence (238) has only a type reading, and (239) can also be construed in these terms (each type of astrological sign). The *sein*-sentences can be argued not to be true existential sentences, as their predicates are (not *sein* (be) but) *ausgedacht sein* (to have been thought out), *vergeben sein* (to have been given away), and *anders sein* (to be different). Indeed, uncontroversially expletive sentences (i.e. with locative codas) corresponding to (240)–(242) are difficult to obtain. Sentence (237), on the other hand, seems to remain a real counter-example to the proposition that only intersective DPs can appear (without a type reading) in the pivot position of an expletive sentence.

3.6   Relations between lexical universal, existential and interrogative pronouns

The lexical interrogative pronouns (with the possible exception of *warum* (why)) can, when immediately followed by *immer* (always), be used to build free relatives with a universal meaning.

(243) *Mary   küsst   wen   immer   sie   sieht.*
  Mary   kisses   who   always   she   sees

  "Mary kisses whoever she sees."

(244) *Bill   trinkt   was   immer   vor   ihm   steht.*
  Bill   drinks   what   always   before   him   stands

  "Bill drinks anything you put in front of him."

(245) *Bill   befindet   sich   wo   immer   es   was   zu   trinken   gibt.*
  Bill   finds   himself   where   always   it   what   to   drink   gives

  "Bill is there, whereever there is something to drink."

(246) *Bill   trinkt   wann   immer   er   wach   ist.*
  Bill   drinks   when   always   he   awake   is

  "Bill drinks whenever he is awake."

(247) *Wie   immer   du   es   nennen   magst.*
  how   always   you   it   call   like

  "However you would like to call it."

All wh-phrases (not just lexical ones) can be used productively to build universal-like phrases by putting them in the frame:

<div align="center">WH auch immer</div>

In contrast to the free relatives above (without *auch*), these phrases needn't contain a relative clause, and sometimes cannot.

(248) *Mary   küßt   wen   auch   immer   (sie   sieht).*
  Mary   kisses   who   also   always   she   sees

  "Mary kisses just anyone she sees."

(249) *Mary   hilft   welchem   Tier   auch   immer   (*sie   sieht).*
  Mary   helps   which   animal   also   always   she   sees

  "Mary helps just any animal (that she sees)."

If unstressed, the lexical interrogative pronouns *wer* (who), *was* (what), and (to a lesser extent)*wo* (where) can be, and commonly are, used as existentials. All wh-words with the exception of those denoting why (*warum*, *weshalb*) can be prefixed with *irgend* to form an existential. (The genitive form of *irgendwer* (*irgendwessen*) is not in common use.) The resulting phrases can be stressed.

(250) *Bill   hat   (irgend)wen   gesehen.*
     Bill   has   what   seen.

     "Bill saw someone (or other)."

(251) *Die   Kinder   haben   Saft   (irgend)wohin   geschüttet.*
     the   children   have   juice   whither   spilled

     "The Children spilled juice somewhere (or other)."

(252) *Bill   hat   *(irgend)welche   Flaschen   umgekippt.*
     Bill   has   anywhich   bottles   knocked over

     "Bill knocked over some bottles or other."

3.7   (1,1,1) Qs

Comparative quantifiers in German, which take two NP-complements, are a formed on the pattern of the (adjectival) comparative construction. Comparatives in German are introduced with the comparative form of an adjective, and can be followed by a DP introduced by *als* (than). Interrogatives are formed on the basis of the comparative by prefixing the adjective with the wh-phrase *wie viel* (how many/much).

(253) *größer   als   ich*
     bigger   than   I

(254) *zahlreicher   als   die   Sterne*
     more numerous   than   the   stars

(255) *wie   viel   zahlreicher   als   die   Sterne*
     how   much   more numerous   than   the   stars

Equatives use the base form of the adjective, introduced by *so* (so/as), and the standard of comparison is introduced with *wie* (how).

(256) *so   groß   wie   ich*
     as   big   how   I

(257) *so   zahlreich   wie   die   Sterne*
     as   numerous   how   the   stars

In both the comparative and equative constructions, the standard of comparison (introduced by *als* and *wie* respectively) is often postposed.

    To indicate a rate of comparison (exactly as much, twice as much, three times as much, etc), the equative construction is preceded by the rate indicator.

(258) *doppelt   so   groß   wie   ich*
     twice   as   big   how   I

(259) *halb   so   zahlreich   wie   die   Sterne*
     half   as   numerous   how   the   stars

Comparative quantifiers in German are built on this same mold, taking the base item to be *viel* (many), and the comparative to be *mehr* (more).

(260) *Mehr Studenten als Lehrer sind gekommen.*
more students than teachers are come

(261) *Prozentual mehr Studenten als Lehrer haben die*
percentagewise more students than teachers have the
Petition unterschrieben.
petition signed

(262) *Wie viel mehr Studenten als Lehrer sind gekommen?*
how many more students than teachers are come

(263) *Es wurden so viele Polizisten wie Lehrer entlassen.*
it became so many police how teachers fired
"As many policemen as teachers were let go."

(264) *Doppelt so viel Milch wie Bier wird getrunken.*
double so much milk how beer fired
"Twice as much milk was drunk as beer."

As in English [Keenan and Moss, 1985], the first two argument positions of a comparative quantifier can be saturated by adjectives. In sentence 265, the comparative quantifier has combined with the pair of adjectives *rot* and *grün* to form a $(1,1)$ determiner, which combines with *Gummibärchen* to build a generalized quantifier.

(265) *Es sind doppelt so viele rote wie grüne Gummibärchen in*
it are double so many red how green gummi-bears in
der Packung.
the package

That this is perhaps better viewed as a form of N-bar deletion, is suggested by the sentences below, which show that the head noun (*Gummibärchen*) may appear either in the first or in the second argument position of the comparative quantifier. In order to avoid an N-bar deletion analysis, one would need a kind of wrapping operation to get the word order right, assuming that both arguments should be of the same semantic type. Note that, if the *wie*-phrase (or *als*-phrase, where applicable) is postposed, the head noun must appear in the first argument position.

(266) *Es sind doppelt so viele rote Gummibärchen wie grüne in*
it are double so many red gummi-bears how green in
der Packung.
the package

(267) $^{??}$*Es sind doppelt so viele rote Gummibärchen wie grüne*
     it   are   double so   many red   gummi-bears   how   green
     Gummibärchen in der Packung.
     gummi-bears   in   the   package

(268) **Es sind doppelt so viele rote in der Packung wie grüne*
     it   are   double so   many red   in   the   package   how   green
     Gummibärchen.
     gummi-bears

(269) *Es sind doppelt so viele rote Gummibärchen in der Packung*
     it   are   double so   many red   gummi-bears   in   the   package
     wie grüne.
     how   green

(270) $^{??}$*Es sind doppelt so viele rote Gummibärchen in der*
     it   are   double so   many red   gummi-bears   in   the
     Packung wie grüne Gummibärchen.
     package   how   green   gummi-bears

Comparative DPs can have any grammatical function except that of possessor.

(271) **mehr Anwälten als Ärzten Frauen*
     more   lawyers   than doctors wives
     intended: "More lawyers' than doctors' wives"

(272) **die Frauen mehr Anwälten als Ärzten*
     the   wives   more lawyers   than doctors

(273) **die Frauen von mehr Anwälten als von Ärzten*
     the   wives   from more lawyers   than from doctors

(274) *mehr Frauen von Anwälten als von Ärzten*
     more   wives   from lawyers   than from doctors

Other (1,1,1) quantifiers include those built via conjunction.

(275) *Alle Frauen und Kinder sollen das Schiff zuerst verlassen.*
     all   women and children should the ship   first   leave
     "All women and children should leave the ship first."

(276) *Jedes Kleinkind und Mädchen würde sich darüber freuen.*
     every little child and girl   would self about it be happy
     "Every little kid and girl would be happy about it."

(277) **Jede(r/s) Junge und Mädchen würde sich darüber freuen.*
     every   boy   and girl   would self about it be happy

Note that both nominal arguments to the quantifier must share the same gender and number features, on pain of ungrammaticality (277).

3.8 Decreasing DPs

Some examples of decreasing DPs are given here.

(278) *kein   Mädchen*
     no   girl

(279) *nicht   alle   Jungen*
     not   all   boys

(280) *weniger   als   drei   Viertel   der   Frauen*
     fewer   than   three   quarters   of the   women

Decreasing contexts license the NPI *sich um etwas scheren* (to concern oneself with something).

(281) **Manche   scheren   sich   um   mich.*
     some   concern   themselves   around   me

(282) *Manche   scheren   sich   nicht   um   mich.*
     some   concern   themselves   not   around   me

(283) *Kein   Mädchen   schert   sich   um   mich.*
     no   girl   concerns   herself   around   me

(284) *Nicht   alle   Jungen   scheren   sich   um   mich.*
     not   all   boys   concern   themselves   around   me

(285) *Weniger   als   drei   Viertel   der   Frauen   scheren   sich*
     less   than   a   quarter   of the   women   concern   themselves
     um   mich.
     around   me

3.9 Scope ambiguities

Non-surface quantifier scopes in German are not as easy to get as in English. One exception is in DPs contained in DPs (inverse linking constructions) [May and Bale, 2005, Zimmermann, 2003b], where the natural reading is one in which the DP-internal DP outscopes the DP containing it.

(286) *Ein   Apfel   in   jedem   Korb   ist   verrottet.*
     one   apple   in   every   basket   is   rotten

     ($\forall < \exists$)

Another case where a non-surface scope reading is clearly present occurs when a quantified object is in the prefield, and a quantified subject is in the midfield. But when the subject is in the prefield, no ambiguity is detected with normal intonation.

(287) *Mindestens ein   Baby   hat   jeder   Politiker   geküsst.*
      at least   one baby has every politician kissed

"Every politician kissed at least one baby."
($\forall < {}^{\geq}1$, ${}^{\geq}1 < \forall$)

(288) *Mindestens ein   Politiker   hat   jedes   Baby   geküsst.*
      at least   one politician has every baby kissed

"At least one politician kissed every baby."
(${}^{\geq}1 < \forall$)

Furthermore, a direct object in the prefield can scope beneath an indirect object in the midfield, but not vice versa, if normally intoned.

(289) *Mindestens ein   Gemälde   hat   er   fast   jedem   Besucher*
      at least   one painting has he almost every visitor
      gezeigt.
      shown

"He showed almost every visitor at least one painting."
($\forall < {}^{\geq}1$, ${}^{\geq}1 < \forall$)

(290) *Mindestens einem   Besucher   hat   er   fast   jedes   Gemälde*
      at least   one   visitor   has he almost every painting
      gezeigt.
      shown

"He showed at least one visitor almost every painting."
(${}^{\geq}1 < \forall$)

What seems to be relevant for these normally intoned cases is 'deep' grammatical function, not surface grammatical function, as the following sentences show. Sentence 291 demonstrates that indirect objects in the prefield can scope underneath subjects in the midfield. Sentence 292 is the passive form of 290 above. Despite it being of the surface form of 291, it has the scopal properties of 290.

(291) *Mindestens einem   Besucher   hat   fast   jeder   Museumsdirektor*
      at least   one   visitor   has almost every museum director
      sein   Lieblingsgemälde   gezeigt.
      his   favourite painting   shown

"Almost every museum director showed at least one visitor his favourite painting."
($\forall < {}^{\geq}1$, ${}^{\geq}1 < \forall$)

(292) *Mindestens einem   Besucher   wurde   fast   jedes   Gemälde*
      at least   one   visitor   became almost every painting
      gezeigt.
      shown

"Almost every painting was shown to at least one visitor."
(${}^{\geq}1 < \forall$)

Frey [1993] investigates the scopal behaviour of quantifiers in a setting where intonational effects are controlled for. Extending the range of data to include embedded clauses, as well as temporal and locative prepositional phrases, he arrives at the hierarchy of (deep) grammatical functions below, where an item to the right of another in the hierarchy can scope underneath it in a sentence where the item appears prior to that other.

$$\text{TEMP} < \text{SUB} < \text{LOC} < \text{IO} < \text{DO}$$

He also observes that a description of scope-taking possibilities must make reference to more than simply the linear order and grammatical function of scope-taking expressions. The sentences below have the same scope-taking DPs with the same grammatical function in the same order, but only the first is ambiguous. Furthermore, the only reading available for the second sentence does not correspond to the surface order of the scope-taking elements.

(293) *Fast   jedes   Gemälde   hat   er   mindestens   einem   Besucher*
      almost every painting has he at least   one   visitor
      gezeigt.
      shown

   "He showed at least one visitor almost every painting."
   ($^{\geq}1 < \forall$, $\forall < {^{\geq}}1$)

(294) *Fast   jedes   Gemälde   gezeigt   hat   er   mindestens   einem*
      almost every painting shown   has he at least   one
      Besucher.
      visitor

   ($^{\geq}1 < \forall$)

Pafel [1999] suggests that *wh*/quantifier interactions follow similar patterns.

(295) *Wie   viel   Politiker   haben   jedes   Baby   geküsst?*
      how   many politicians have   every baby kissed

   "How many politicians have kissed every baby?"
   not: "For every baby, how many politicians kissed it?"

(296) *Welche   Babys   hat   jeder   Politiker   geküsst?*
      which   babys has every politician kissed

   "Which babies have been kissed by every politician?"
   "For every politician, which babies did he kiss?"

Subjects in German are naturally interpreted as scoping over negation in neutral intonational contexts. However, certain quantifiers are able to scope under negation if appropriate intonational contours obtain (see e.g. Büring [1997], Krifka [1998]). For example, *jeder* can scope underneath *nicht* in 298. However, *die meisten* (most) cannot have its scope inverted even in particular intonational conditions (300).

(297) *Jeder Politiker hat nicht zugehört.*
every policitian has not listened
($\forall < \neg$)

(298) *JEDER Politiker hat NICHT zugehört.*
every politician has not listened
($\neg < \forall$)

(299) *Die meisten Studenten sind nicht durchgefallen.*
the most students are not failed
"Most of the students did not fail."
($\text{MOST} < \neg$)

(300) *Die MEISTen Studenten sind NICHT durchgefallen.*
the most students are not failed
($\text{MOST} < \neg$)

Pafel [2005] is a detailed study of a number of factors influencing scope preferences in German sentences. These include c-command, grammatical function, degree of affectedness, distributivity, relation to discourse, definiteness, focus, and negatability. He shows that a simple additive weighting system on the basis of these features suffices to predict which readings are preferred.

3.10   Type (2) Qs

Given two generalized quantifiers, one designated as a 'subject', and the other as an 'object', we can represent subject-wide and object-wide scope independently of a particular verb, creating as it were a property of transitive verb denotations (binary relations) from the two quantifiers. (For example (and proper choice of generalized quantifiers), this property might hold of a verb see's denotation just in case every boy is related by seeing to some girl.)

Not all properties of binary relations are reducible to properties derived from two generalized quantifiers in the sense above [Keenan, 1992]. Interestingly, natural languages are able to use co-arguments of verbs to denote properties of binary relations that *aren't* reducible to combinations of generalized quantifiers. German is no exception.

(301) *John hat Mary geküsst, aber niemand anderes hat sonst*
John has Mary kissed, but noone else has otherwise
jemanden geküsst.
someone kissed
"John kissed Mary, but noone else kissed anyone else."

(302) *Jeder Student hat eine andere Frage beantwortet.*
every student has an other question answered

(303) *Alle Studenten haben unterschiedliche Fragen beantwortet.*
all students have different questions answered

(304) *Anna schaut sich niemals den gleichen Film mehrmals*
      Anna watches self never the same movie multiple times
      an.

      "Anna never watches the same movie multiple times."

(305) *Verschiedene Leute mögen verschiedene Dinge.*
      different people like different things

(306) *Vom selben Beweis haben verschiedene Juristen*
      from the same evidence have different jurors
      unterschiedlich geschlussfolgert.
      differently concluded

      "Different jurors came to different conclusions based on the same evidence."

For instance, sentence 302 is false in a situation where every student answered one and the same question. Removing *andere* from sentence 302 removes the ability to compare answers across students. Other adjectives with similar effect are *unterschiedlich* (different), *verschieden* (different), *gleich* (same), and *selbe* (same).

3.11 The indexing function of universal quantifiers

The meanings of the sentences below can be given in terms of an index set (of years, and deaths). The sentences assert that there is an injective function from indices to numbers of people buying Audis and groups of five births respectively.

(307) *Jedes Jahr kaufen mehr Leute einen Audi.*
      every year buy more people an Audi

(308) *Auf jeden Sterbefall kommen fünf Geburten.*
      on every death come five births
      "For every death there are five births."

Rate phrases Sentences 309 and 310 instantiate different ways of expressing rates in German. Sentence 310 uses explicit quantification over days, whereas sentence 309 achieves the same effect by combining the adverbial quantifier *dreimal* with the PP *am Tag*.

(309) *John wäscht sich das Gesicht dreimal am Tag.*
      John washes himself the face three times at the day
      "John washes his face three times a day."

(310) *John wäscht sich jeden Tag dreimal das Gesicht.*
      John washes himself every day three times the face

(311) *Ich laufe 20 Kilometer (am Tag/ pro Stunde).*
I   run   20   kilometers (at the day /   per   hour)

"I run 20 km a day/ per hour."

3.12   Only

German differentiates between the English DP-internal and external use of only. Internal to the DP either the adjective *einzig* (single) or the determiner *lauter* (see §2.1.4 and Eckardt [2006]) must be used.

(312) *Ein einziger Mann ist gekommen.*
a   single   man   is   come

"A single man came."

(313) *Der einzige Mann, der kam, ist gestorben.*
the only   man   the came is died

"The only man who came died."

(314) *Die Familie Brandt hat lauter Töchter.*
the family   Brandt has only   daughters

"The Brandts only have daughters, and many of them."

Sentence 314 illustrates that the word *lauter* is not a synonym of the English only, as it contributes as well to the meaning of the sentence that its restrictor argument holds of a sufficient amount of individuals (what counts as 'sufficient' is context-dependent). As *lauter* is a syntactic determiner, a natural treatment takes it to be a counter-example to the principle that natural language determiners denote conservative functions [Barwise and Cooper, 1981]. Eckardt [2006] argues that this is not the correct analysis, and that *lauter* builds instead a semantic predicate with its noun phrase argument, which is interpreted in sentences like 314 as occuring in a (phonologically reduced) relative clause "something which is *lauter Töchter*." Aside from a certain amount of historical plausibility,[17] this analysis gives a natural account of *lauter* when it occurs predicatively.

(315) *Ihr seid lauter Schlingel.*
you are only   scoundrals

External to the DP, the words *nur* (only), *bloß* (mere(ly)), *ausschließlich* (exclusively), and *lediglich* (merely) can be used [König, 1991].

(316) *Nur John ist gekommen.*
only john is   come

"Only John came."

(317) *Nur fünf Studenten sind gekommen.*
only five students   are   come

---

[17]HIstorically, *lauter* was an adjective meaning pure (see Eckardt [2006]).

(318) *John   hat   nur   gesungen.*
     John   has   only   sung

The selectional properties of DP-external particles is contested, with Jacobs [1983] and Büring and Hartmann [2001] arguing that focus particles (such as *nur*) attach exclusively to projections of the verb (see Bayer [1996] and Reis [2005] for arguments to the contrary). One of the main arguments for this position is the fact that the distribution of such particles does not completely match the distribution of DPs. In particular, DPs selected by prepositions resist modification by focus particles.

(319) **Peter   träumt   (nur)   von   (*nur)   seiner   Frau.*
     Peter   dreams   only   from   only   his   wife

     "Peter dreams only of his wife."

That this is not best viewed as an absolute prohibition, but rather as a (strong) tendency, is argued in Bouma et al. [2007], where German is compared in this respect with the (slightly) more liberal Dutch and English.

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