

Parameterized [E]llipsis: An Argument from German Determiner Sharing

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1. Introduction

In gapping sentences, some determiners or quantifiers can be omitted¹ from the non-initial conjunct(s), see (1). McCawley (1993) has termed these structures *determiner sharing* (DS) constructions.

- (1) a. Too many German shepherds are named Fritz, ~~too many~~ Irish setters ~~are named~~ Kelly, and ~~too many~~ Huskies ~~are named~~ Nanook. McCawley (1993)
b. Jede Gräfin mag Lavendel und jede Königin mag Flieder.
every countess likes lavender and every queen likes lilac
'Every countess likes lavender and every queen likes lilac.'

As first observed by McCawley (1993), this ellipsis has some interesting restrictions: it is parasitic on gapping, and it is only possible if the determiner is the first element in the second conjunct.

Most previous analyses of DS explain these restrictions by postulating small, *vP*-sized conjuncts and situating the determiner outside of the coordination, such that ellipsis in the second conjuncts is only illusory (e.g. Johnson 2000; Lin 2002; Arregi & Centeno 2005, *vs.* Ackema & Szendrői 2002).

In German, however, where gapping arguably involves much larger conjuncts (see e.g. Hartmann 2000; Repp 2009), this explanation is not available. This paper proposes a new analysis of DS in German. The general idea is this: DS is [E]-feature deletion which has to be licensed by gapping via Agree.

To that end, this paper is structured as follows: Section 2 describes the empirical properties of DS and gapping in German. The analysis is then outlined in Section 3. Section 4 discusses possible extensions of the proposed [E]-deletion analysis. Section 5 concludes.

2. Properties of DS and gapping

2.1. Determiner sharing

Ellipsis of a determiner in gapping contexts shows some interesting restrictions. First, DS is parasitic on Gapping. If the finite verb in the second (and following) conjunct(s) is realized overtly, an interpretation of a shared quantifier is not available. In sentences like (2), the only possible interpretation is one of a bare plural.

- (2) Alle Mädchen spielen Klavier und ___ Jungen spielen Geige.
all girls play piano and boys play violin
✓'All the girls play the piano and boys in general play the violin.'
✗'All the girls play the piano and all the boys play the violin.'

Secondly, the elided quantifier must be initial in its conjunct. Any material overtly intervening between the coordinator and the quantifier makes DS impossible. This is illustrated with a topicalized object DP in (3). In both conjuncts, the object is fronted and blocks sharing of the quantifier *viele* in the subject DP.

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¹ The non-pronounced elements are marked with strike-through throughout.

- (3) *[Ein Teleskop] haben viele Kollegen Petra geschenkt, und [einen a.ACC telescope.ACC have many.NOM colleagues.NOM Petra.DAT given and a.ACC Römertopf] haben viele Freunde Petra geschenkt.
 clay.pot.ACC have many.NOM friends.NOM Petra.DAT given
 intended: ‘Many colleagues have given Petra a telescope, and many friends have given her a clay pot.’

Thirdly, DS can never skip elements. A prenominal modifier can only be deleted a) if it is the first one or b) if its left/higher neighbor has been deleted (4).

- (4) Jeder zweite Schüler leidet unter Stress und jeder zweite Lehrer leidet unter Lärm.
 every second student suffers under stress and every second teacher suffers under noise
 ✓‘Every other student suffers from stress and every teacher suffers from noise.’
 ✗‘Every other student suffers from stress and every other teacher suffers from noise.’

Lastly, not all D-elements may be shared. There is a lot of cross- and intra-linguistic variation. The only cross-linguistically somewhat robust generalization seems to be that (bare) cardinal numbers and the indefinite article may never be shared.² (5) offers non-exhaustive lists of elements that can and cannot be part of DS-ellipsis in German.

- (5) a. possible in German DS: *alle* ‘all’, *einige* ‘some’, *wenige* ‘few’, *viele* ‘many’, *kein* ‘no’, definite article, ordinal numbers, ...
 b. impossible in German DS: indefinite article, cardinal numbers, possessive pronouns, demonstratives, ...

2.2. Gapping in German

In this section, I will briefly argue that conjuncts in German gapping sentences are clause-sized. Most analyses of DS are designed for English (e.g. Johnson 2000; Lin 2002; Ackema & Szendrői 2002). German differs from English in the size of conjuncts involved in gapping. In English, it can be argued that conjuncts in gapping are quite small (*v*Ps, e.g. Chao 1988; Johnson 2009; Coppock 2001; López & Winkler 2003; Toosarvandani 2013, but see also Frazier 2015; Potter et al. 2017 for a different point of view). German seems to involve bigger, clause-sized conjuncts. German gapping (and consequently DS) therefore cannot be analyzed with non-ellipsis approaches like across-the-board movement (Johnson 2000; Lin 2002; Arregi & Centeno 2005) or Multidominance (Citko 2006; Kasai 2007).

Evidence for the large size of German gapping conjuncts comes from the lack of wide scope, the lack of cross-conjunct binding, and the possibility to topicalize objects. First, Repp (2009) showed that negation cannot take wide scope in German (6).

- (6) ?*Max hat den Kuchenteller nicht abgewaschen und Paul die Salatschüssel.
 Max has the cake.plate not washed and Paul the salad.bowl

This suggests that the first conjunct is large enough that negation is merged inside of it, as opposed to in a higher part of the structure that c-commands both conjuncts. Secondly, German does not allow cross-conjunct binding. In English gapping sentences, the subject of the first conjunct can bind the subject of a non-initial conjunct (7a)(see e.g. McCawley 1993; Kennedy 2001; Johnson 1996/2004).

- (7) a. Not every girl₁ ate a green banana and her₁ mother ate a ripe one. (Johnson 1996/2004:26)
 b. #Not every girl₁ ate a green banana and her₁ mother ate a ripe one.

² Based on a small sample of five languages: German, English (Johnson 2000, Lin 2002), Spanish (Arregi and Centeno 2005), Korean (Kim 2011, Citko 2006, Hyunjung Lee, p.c.), and Dutch dialects (Ackema and Szendrői 2002).

- (11) [_{CP} Kein Mädchen sollte Klavier spielen,] findet SIE, und [_{CP} *(kein) Junge sollte Geige
no girl should piano play thinks she and no boy should violin
spielen], findet ER.
play thinks he
intended: 'She thinks no girl should play the piano and he thinks no boy should play the violin.'

In (11), an embedded clause has been fronted in both conjuncts. The verb in the matrix clause has been gapped in the second conjunct. This gapping cannot license sharing of *kein* "no" in the embedded clause because of the intervening phase boundary. Note that (11) is acceptable if the quantifier surfaces overtly.

Turning to the Minimality condition, an intervening DP can block DS in a lower DP, (12). The indirect object that c-commands the direct object intervenes in the relation between the gapping-triggering Foc^0 and the DS-exhibiting DO.

- (12) *Ich habe meiner Mutter jede Blume gezeigt und [meinem Vater jede Krähe].
I have my.DAT mother every flower shown and my.DAT father every crow
intended: 'I have shown my mother every flower and my father every crow.'

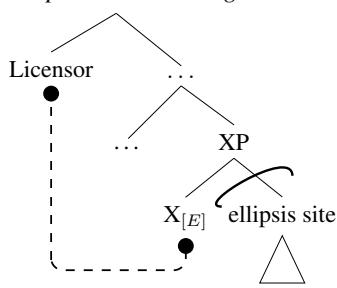
Lastly, the c-command condition is difficult to test. The relevant test case would involve a higher domain in which an element exhibits DS, and a lower domain where there is gapping, such that the DS-DP c-commands the gapping-head. Gapping in the embedded environment should be too low to license DS higher up. (13) exhibits such a case, but there is a confounding factor: a phase boundary. It's not clear whether the phase boundary or the lack of c-command lead to ungrammaticality.

- (13) * [_{CP} Jede Professorin glaubt dass die Regierung die Wirtschaft beeinflusst] und
every professor believes that the government.NOM the economy.ACC influences and
[_{CP} jede Studentin denkt (*dass) der Markt die Regierung beeinflusst]
every student thinks that the market.NOM the government.ACC influences
intended: 'Every professor believes that the government influences the economy and every student believes that the market influences the government.'

Still, I take the parallelism between the restrictions of Agree and the relation between DS and gapping to indicate that there exists an Agree relation between the DS-exhibiting DP and the gapping triggering head Foc^0 . I propose that DS is a type of [E]-deletion (Merchant 2001, 2004) and gapping licenses DS via Agree as in Aelbrecht (2010).

3.2. [E]-feature ellipsis

Before we turn to the derivation, let me outline the mechanics of [E]-feature deletion and define the [E]-feature involved in DS. Merchant (2001, 2004) proposed an analysis for clausal ellipsis like sluicing and fragment answers which employs the so called [E](llipsis) feature. This feature can optionally occur on a syntactic head. Its function is to instruct the post-syntax to leave the head's complement to be unpronounced, i.e. no vocabulary items will be inserted in the complement of the [E]-carrying head. Each elliptical construction has a distinct [E]-feature with its own selectional, phonological, and semantic properties. Aelbrecht (2010) showed that the application of the [E]-feature is restricted by Agree: it has to be licensed by a c-commanding head (14).

(14) *Ellipsis and licensing*

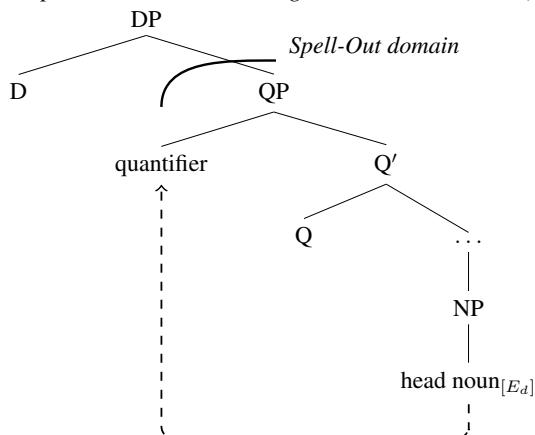
I adopt all of these standard notions and propose the following extensions: a) I assume that an [E]-feature-carrying head *agrees* with the element the [E]-feature deletes, and b) I introduce a new type of [E]-feature: $[E_d]$. $[E_d]$ differs from sluicing-[E] in systematic ways along two dimensions: *locality* and *direction* of Agree. Sluicing-[E] triggers non-pronunciation of its complement, i.e., it agrees *downward* with the element that is *closest* in its c-command domain. In contrast, DS-[E] agrees *upward* with the element that is *furthest away* from it (inside the same DP-phase), e.g. material in QP below D. $[E_d]$ is formally defined in (15) in a notation that combines Merchant's and Aelbrecht's. It is hosted on N^0 , has to be licensed by agreeing with gapping-Foc⁰, agrees upward, and instructs PF to leave a [-local] element unpronounced. Gapping in German is also analyzed as [E]-deletion: gapping is deletion of FinP (the complement of Foc⁰), licensed by agreeing with the coordinator &, (16).

- (15) $[E_d]$
 a. CAT: [E]
 b. INF: [u Foc $_{[E]}$]
 c. SEL: [u N*]
 d. PHON: $\varphi X_{[-c-com,-loc]} \rightarrow \emptyset/E$

- (16) $[E_{gap}]$
 a. CAT: [E]
 b. INF: [u &]
 c. SEL: [u Foc*]
 d. PHON: $\varphi X_{[+c-com,+loc]} \rightarrow \emptyset/E$

3.3. *Derivation*

Determiner sharing is derived as follows:³ inside DP, a noun carrying $[E_d]$ is merged. $[E_d]$ marks the most anti-local c-commanding element for non-pronunciation. I assume that quantifiers are hosted in functional projections between N and D (see e.g. Löbel 1990). D^0 , as the phase head, cannot be targeted by $[E_d]$. This accounts for the impossibility of personal pronouns to be shared in German (18).

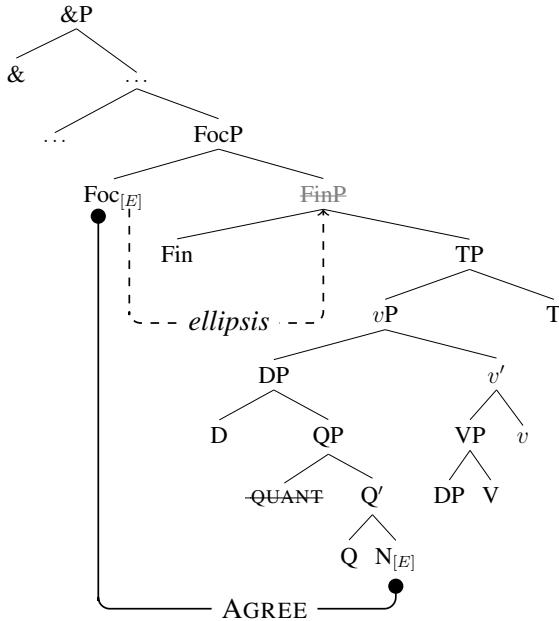
(17) *Step 1: Determiner sharing*

- (18) *Meine Tochter ist 21 und
 my daughter is 21 and
 meine Frau ist 35.
 my wife is 35

³ For reasons of space, I only show the derivation of DS in subject position. Object- and embedded DS are also attested, but show different properties than subject-DS.

The DP is merged into the verbal projection as the subject. The structure is built up until $\text{Foc}_{[E]}$ is merged. The gapping $[E]$ on Foc^0 does two things: (i) it triggers ellipsis of its complement, FinP ; (ii) it agrees with $[E_d]$ and thereby licenses the deletion in DP after-the-fact⁴. DS is only licit if it is licensed by agreeing with $[E_{gap}]$. Without this agreement, the derivation would crash because of an unlicensed $[E_d]$.

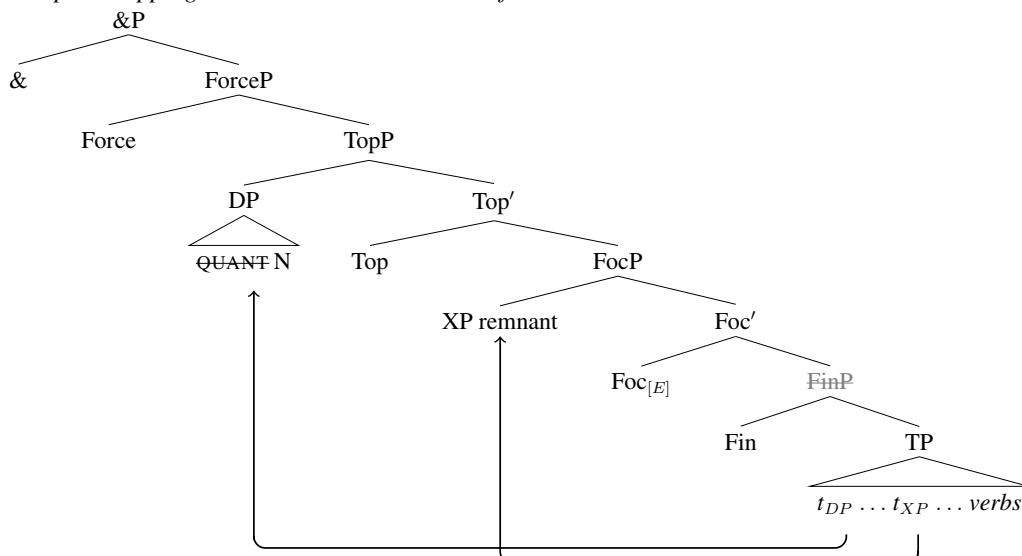
(19) *Step 2: Licensing of DS by gapping-[E]*



In a final step, the remnants have to escape the ellipsis site by evacuation movement to topic and focus positions (for different implementations of this exceptional movement see e.g. Temmerman 2013; Boone 2014; Weir 2014; Ortega-Santos et al. 2014).

⁴ Note that $\text{Foc}_{[E]}$ cannot agree with $N_{[E]}$ directly, since the DP instantiates a phase barrier. However, there needs to be an independent mechanism that makes features of the noun accessible to the verbal domain, e.g. for purposes of subject-verb-agreement. I assume that whatever that mechanism is (feature percolation, feature sharing, etc.), it also makes $[E_d]$ accessible for agreement with heads in the verbal functional projection.

(20) *Step 3: Gapping and evacuation movement of the remnants*



3.4. Deriving the properties

(21) repeats the generalizations about determiner sharing ellipsis that have been discussed above.

(21) *Properties of DS*

- a. DS is parasitic on gapping.
- b. The shared element must be initial in its conjunct.
- c. Deletion can never skip an element.
- d. Not all Ds/Qs can be shared. The indefinite article and numerals seem to resist sharing.

Let us see how the present analysis can account for these observations. The parasitism of DS on gapping is captured straightforwardly: there is an Agree relation between Foc^0 and N^0/D^0 which licenses DS only when gapping also occurs. By assumption, the lack of this agreement leads to ungrammaticality. The requirement of the shared determiner/quantifier to be in conjunct-initial position can be reduced to relativized Minimality: Other phrases can be defective interveners in the Agree relation between Foc^0 and N^0/D^0 . The no-skipping constraint can also be conceived of as a Minimality effect: $[\text{E}_d]$ on N^0 looks for the most anti-local element in its phase. The most anti-local terminal node is considered the primary, most eligible, in a sense “closest”, target. If the type of upward Agree that we assume for $[\text{E}_d]$ is subject to relativized Minimality, ignoring that target and moving on to another one can be considered a violation of Minimality. As for the observation in (21d), regarding the unclear empirical picture, not much more than tentative suggestions can be made. It seems to be the case that (bare cardinal) numerals and the indefinite article cannot be shared in the languages that have been investigated. A common property of these elements is that they occupy low positions in the nominal projection (e.g. Julien 2002). They might be so low that they are not anti-local enough in the sense of $[\text{E}_d]$ and thus can never be targeted.

4. Implications and extensions

If this analysis is on the right track, $[\text{E}]$ could be more flexible than previously thought. It could be parameterized along the lines of (22).

(22) *Generalized $[\text{E}]$ -ellipsis*

Within phase ϕ , $[\text{E}]$ on head H marks an element ϵ in ϕ , $\epsilon \in [\alpha\text{c-command}, \alpha\text{local}]$, for non-pronunciation.

Thus, some ellipses target [+/-] elements (sluicing, gapping), others [-/-] elements (DS). An obvious question that arises is: are the other patterns [α c-command, $-\alpha$ local] also possible?

The sentences in (23) seem to present such a pattern. As mentioned above, cardinal numbers cannot be shared in DS on their own, (23a). However, as part of a complex of modifiers, they can be, (23b).

- (23) a. *Zwölf Mädchen machen Tee und zwölf Jungen ~~machen~~ Kaffee.
 twelve girls make tea and twelve boys make coffee
 b. Alle zwölf Mädchen machen Tee und alle zwölf Jungen ~~machen~~ Kaffee.
 all twelve girls make tea and all twelve boys make coffee

This is reminiscent of the Principle of Minimal Compliance (Richards 1998; Preminger 2019) (24).

- (24) *Principle of Minimal Compliance* (Preminger 2019 version)
 Once a probe P has successfully targeted a goal G, any other goal G' that meets the same featural search criterion, and is dominated or c-commanded by G (= dominated by the mother of G), is accessible to subsequent probing by P irrespective of locality conditions.

For DS that means that low, local elements can only be elided *after* deletion of higher, non-local elements. Thus, in (23), [E_d] can target *zwölf* in a second round of application, even though that element is usually too low.

The other possible pattern is that in a second round of application, [E_d] checks only DPs with the feature [+c-com, -loc], i.e. it agrees *downward* with anti-local phrases. PPs may be such elements as their phase barrier classifies them as anti-local. Observe the contrast in (25). In (25a), no deletion of a determiner occurred and the reading "movies about linguists" is not available, thus it cannot be present in the structure. (25b) involves DS and makes the reading available.

- (25) a. [DP Viele Bücher [PP über Linguisten]] hab ich gelesen und [DP viele Filme] gesehen.
 many books about linguists have I read and many movies watched
 b. [DP Viele Bücher [PP über Linguisten]] hab ich gelesen und [DP viele Filme über
 many books about linguists have I read and many movies about
 Linguisten] gesehen.
 linguists watched

5. Conclusion

Determiner sharing is a niche phenomenon but can potentially give us insights into the core properties of ellipses. It shows how two distinct ellipsis processes interact through syntactic licensing, and a potential instantiation of Minimal Compliance in ellipsis. If Agree can apply downward and upward (as argued for by Himmelreich 2017, a.o.), then this parameterization of [E] is entirely expected.

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