

Conjuncts-as-complements: A lexical approach to SGF coordination in German

Berthold Crismann 

Université Paris Cité, Laboratoire de linguistique formelle, CNRS

Proceedings of the 29th International Conference on
Head-Driven Phrase Structure Grammar

Online (Nagoya/Tokyo)


Stefan Müller, Elodie Winckel (Editors)

2022

Frankfurt/Main: University Library

pages 48–64

Keywords: SGF coordination, ATB condition, missing subject, type raising, lexical rule, weak UDC

Crismann, Berthold. 2022. Conjuncts-as-complements: A lexical approach to SGF coordination in German. In Stefan Müller & Elodie Winckel (eds.), *Proceedings of the 29th International Conference on Head-Driven Phrase Structure Grammar; Online (Nagoya/Tokyo)*, 48–64. Frankfurt/Main: University Library. DOI: 10.21248/hpsg.2022.3. 

Abstract

In this paper¹, I shall discuss a peculiar coordination construction in German, where the shared subject of the two conjuncts is not found peripheral, but is contained within the first conjunct. Following Höhle (1983, 2019a), this construction is called “Subject Gaps in Finite/Fronted” clauses (SGF).

I shall discuss previous accounts, both symmetric coordination approaches (Frank, 2002; Kathol, 1999), as well as asymmetric adjunction approaches (Büring & Hartmann, 1998). The analysis I shall propose will treat the construction as coordination semantically, yet assume a head complement structure that combines the licensing first conjunct with an incomplete (=slashed) coordinate structure complement. I shall show how this addresses the ATB condition, permits straightforward licensing of the subject gap, and provides better control over the second conjunct, thereby improving over the adjunct analysis.

1 SGF coordination: The challenge

In this paper, I shall discuss a particular coordinate construction in German called *Subject Gaps in Finite/Fronted clauses*, more commonly known as SGF-coordination.

- (1) [In den Wald ging *der Jäger*] und [fing einen Hasen].
into the woods went the hunter and caught a rabbit
‘Into the woods went the hunter and caught a rabbit.’ (Wunderlich, 1988, 289)
- (2) [In Italien schätzt *man* Rotwein] und [haßt die Franzosen].
in Italy appreciates one red wine and hates the French.
‘In Italy, one appreciates red wine and hates the French.’ (Büring & Hartmann, 1998, 173)

In a nutshell, SGF-coordination can be characterised as an asymmetric clause-level coordination, where the verb-initial second conjunct is missing a subject and the overt subject is contained (medially) within the first conjunct. Importantly, the missing subject of the second conjunct is interpreted coreferent with the subject of the first.

¹This paper has been presented at the HPSG conference in summer 2022, as well as the seminar of the Laboratoire de linguistique formelle in October of the same year. I would like to thank the respective audiences for their comments and discussion, in particular Felix Bildhauer, Jakob Maché, Caterina Donati, Lisa Brunetti and Adam Przepiorkowski. A great many thanks also go to Stefan Müller for extensive comments on a pre-final draft. The research reported here has benefited from a public grant overseen by the French National Research Agency (ANR) as part of the program “Investissements d’Avenir” (reference: ANR-10-LABX-0083). It contributes to the IdEx Université Paris Cité – ANR-18-IDEX-0001.

1.1 Structural properties

In terms of phrase structure, the construction displays some quite specific properties: while the second conjunct is invariably a verb-initial clause, the first conjunct can be of any possible clause type.

As witnessed already in (1–2), the first conjunct may be a V2 structure, featuring a non-subject filler in the *Vorfeld*, but it may equally well be a V1 structure, as shown by the yes/no question of example (1) given in (3).

- (3) [Ging *der Jäger* in den Wald] und [fing einen Hasen]?
went the hunter into the woods and caught a rabbit
'Did the hunter go into the woods and catch a rabbit?'

Furthermore, similarly asymmetric coordinations can be found with complementiser-introduced verb last clauses, as illustrated by example (4), due to Wunderlich (1988):

- (4) [Wenn *Du* in ein Kaufhaus gehst] und [hast kein Geld], kannst Du
if you in a store go and have no money can you
Dir nichts kaufen.
yourself nothing buy
'If you go to a store and have no money, you cannot buy yourself anything.'
(Frank, 2002, 176)

Although the second conjunct in (4) misses both a subject and a complementiser, the structure cannot be treated in terms of peripheral sharing, since reconstruction of complementiser and subject with the verb-initial second conjunct yields an ungrammatical string, cf. (5):

- (5) * ... wenn Du hast kein Geld
if you have no money

1.2 Restriction to subjects

The construction is also special in that the missing grammatical function in the second conjunct can only be the subject, as illustrated by the ungrammaticality of object sharing in (6).

- (6) * Gestern kaufte Hans *den Wagen_i* und meldete sein Sohn *e_i* an
Yesterday bought Hans the car_{*i*} and registered his son *e_i*
'Yesterday Hans bought the car and his son registered (it)'
(Frank, 2002, 180)

The restriction to subject function contrasts quite sharply with ATB extraction, where every grammatical function can be factored out, as shown in (7).

- (7) Rotwein [liebt der Franzose] und [trinkt der Italiener].
 red wine loves the French and drinks the Italian
 ‘Red wine, the French love and the Italians drink.’ (Frank, 2002, 189)

Despite their conjunct-internal surface realisation, the shared subject in SGF coordinations takes wide scope over coordination, a point highlighted by Büring & Hartmann (1998).

- (8) [Daher kaufen die wenigsten Leute ein Auto] und [fahren mit dem Bus].
 therefore buys almost no one a car and take the bus
 ‘Therefore, almost no one buys a car and takes the bus.’ (Frank, 2002, 181)

1.3 Asymmetric *Vorfeld*

As it turns out, SGF coordination constitutes quite an unusual coordinate structure: while peripheral material does not get shared across conjuncts, non-peripheral subjects do get shared, with wide scope interpretation. Furthermore, if the initial conjunct is a verb second clause, the *Vorfeld*-constituent may be an exclusive argument of the first conjunct, as witnessed with e.g. the directional PP in (1). By contrast, even if the filler bears an argument structure relation with the first conjunct only, it may nevertheless serve to signal sentence mood for the entire coordinate structure, as suggested by (9).

- (9) [Wohin ging *der Jäger*] und [fing einen Hasen].
 whither went the hunter and caught a rabbit
 ‘Where did the hunter go to and catch a rabbit.’

Thus, we are confronted with the analytical paradox that the first conjuncts *Vorfeld*-constituent may determine properties of the entire coordination, while the *Vorfeld* constituent itself must be assumed to be asymmetrically extracted from the first conjunct only.

2 Some previous approaches

The analytical paradox presented by German SGF coordination lies with the fact that the asymmetric extraction from the first conjunct suggests high coordination of what would be called a CP in mainstream generative grammar, yet such a high coordination would make subject sharing and the associated wide scope difficult to capture.

2.1 Asymmetric projection of GDF (Frank, 2002)

Frank (2002) proposes an LFG analysis which is indeed symmetric at the level of constituent structure, assuming coordination of two CPs, where the specifier of the second CP is an empty NP (or DP). Since both conjuncts are assumed to be full

CPs, extractions apply within each conjunct, avoiding any violation of the Coordinate Structure Constraint. Projection of f -structure, however, is asymmetric, where grammaticalised discourse functions (TOPIC, FOCUS, SUBJ) of the coordinate structure are projected from the first conjunct only, as given by the annotated c -structure rule in (10).

$$(10) \quad \begin{array}{ccc} \text{CP} \rightarrow \text{CP} & & \text{Conj CP} \\ \downarrow \in \uparrow & & \uparrow = \downarrow \quad \downarrow \in \uparrow \\ ((\downarrow \text{GDF}) = (\uparrow \text{GDF})) & & \end{array}$$

The interesting case here is GDF being SUBJ: by way of the annotation in (10), the first conjuncts SUBJ will be the SUBJ value of the f -structure containing the set of coordinated f -structures. According to standard LFG assumptions (Dalrymple, 2001), this property is then distributed of all set members, accounting for the identity of subjects across the two conjuncts. Frank (2002) further argues that the resulting f -structure is identical, in all relevant aspects, to the one obtained for ATB extraction of subjects, such that the same wide scope readings can be derived in semantics. The LFG assumption regarding the availability of grammatical functions beyond the point where they get saturated/instantiated provides crucial for her analysis, making it possible to reconcile subject sharing with CP coordination. Frank (2002) further shows that sharing of variables is sufficient to account for the wide scope effect observed by Buring & Hartmann (1998).

One drawback of the analysis is that it crucially builds on LFG-specific assumptions regarding the representation of grammatical function, which are not shared by frameworks such as HPSG or CG that build on valence cancellation. The closest we can get is using semantics: while subcategorisation information is filled in LFG, yet cancelled in HPSG, we still built up semantics in tandem with phrase structure. Consequently, in order to account for sharing of the subject's individual variable, an HPSG analysis will operate at the syntax-semantics interface.

2.2 HPSG analyses

Within HPSG, the only published account of SGF-construction is the linearisation-based analysis proposed by Kathol (1995, 2000) for German, as well as a similar analysis for English by Kathol & Levine (1992).

The fundamental idea behind Kathol's approach is that SGF-coordination constitutes a mere word order variation of a *Vorfeld*-subject. Drawing on the distinction made in linearisation-based approaches between tecto-grammar and pheno-grammar, Kathol suggests that SGF-coordination can be understood as VP coordination, essentially factoring out the shared subject, which will be peripheral to both conjuncts at the tecto-grammatical level. The surface patterns are derived by exceptionally linearising the subject into the *Mittelfeld* of the first conjunct only. While the basic idea has some initial plausibility, Kathol needs to invoke a special condition for subjects in order to work around the problem that the first conjunct's subject does not seamlessly linearise with the domain list of the second conjunct.

Frank (2002) argues rather convincingly that this condition lacks any independent motivation.

In an unpublished presentation (Crysmann, 2006), I reported on the implementation of SGF coordination in a DELPH-IN grammar of German (Müller & Kasper, 2000; Crysmann, 2003, 2007). I suggested to build on the UDC analysis of topic-drop already present in the grammar (Müller, 2004) and proposed an asymmetric, construction-specific coordination schema that combines a slashed verb-first clause on the right with a fully saturated clause on the left. While it captures the empirical facts, this analysis is rather ad hoc, using construction-specific features to ensure the sharing of indices. Furthermore, it postulates coordinate structures that are in blatant violation of the Coordinate Structure Constraint (Ross, 1967).

3 Analysis

3.1 The second conjunct

In previous work (Crysmann, 2006), I have suggested that the subject-less verb-initial structure of the second conjunct shares some similarity with topic-drop, an independently attested construction of German where a discourse-salient *Vorfeld*-constituent can be dropped (cf. also Wilder 1996). I.e., topic-drop represents a non-interrogative V1 clause with an empty *Vorfeld* and a missing subject or object, or even a missing modifier.

(11) (ich) bin schon da!
I am already there
'I'm here already!'

(12) (das) kenn ich schon.
that know I already
'I know it already.'

While there is certainly some similarity between the two constructions, it should be kept in mind that topic-drop is both more general and more specific than the verb-initial second conjunct in SGF coordinations: while topic-drop does not observe any restriction regarding grammatical function, SGF-coordination restricts licensing to subjects. Conversely, as pointed out by Jacob Maché (p.c.), SGF-coordination works with indefinite pronominals such as *man* 'one', cf. example (2), whereas topic-drop supposedly does not.

To make sense of this partial overlap, I shall tentatively assume that the two constructions differ in their licensing mechanisms: topic-drop, as a root phenomenon, is a discourse phenomenon, which should account for the definiteness restriction. SGF licensing, while possibly drawing on similar syntactic representations, is not restricted to root contexts, as witnessed e.g. by (4), and licensing is syntactic.

3.2 The first conjunct

The particularly challenging nature of SGF coordination is mainly due to the fact that the licensing overt subject is not peripheral, but rather contained within the first conjunct. A priori, this state of affairs conflicts with wide-spread notions of the locality of subcategorisation, as made in HPSG and shared with other frameworks, such as GB or the Minimalism.

Subjects, however, have received a somewhat exceptional status with HPSG's theory of locality: in Minimal Recursion Semantics (=MRS Copestake et al., 2001), an *XARG* feature serves to expose, for purposes of composition, the index of the external argument, alongside *INDEX* and *LTOP*. Sag (2012) argues for a *sign*-valued (=synsem-valued) feature exposing the entire syntacto-semantic properties of a realised subject (*EXT-ARG*), in order to account for copy-raising in English.

For German, Kathol (2003) suggested percolation of *ARG-ST* to access subject properties in partial VP fronting. More recently, Machicao y Priemer & Müller (2021) crucially rely on a Sag-style syntacto-semantic *EXT-ARG* feature within German NP syntax. For SGF coordination, it appears to be sufficient, though, to expose the semantic index of the licensing subject.

3.3 CP vs. C' coordination

The analysis of the second conjunct as a verb-initial finite clause with a subject in *SLASH* still leaves open two possible analyses in terms of the constituents being coordinated: a CP analysis, where the constituents being combined are ultimately completely saturated finite verbal phrases (=empty valence lists and empty *SLASH*), or a C' analysis where the second constituent is a saturated finite verbal phrase with a non-empty *SLASH*.

An analysis of the second conjunct as a verb first clause with the subject in *SLASH* should be compatible with either C' or CP: if it is C', the second conjunct is a finite clause with a slashed subject, but without a *Vorfeld*. If it is CP, we will have an empty *Vorfeld*, which can either be derived by means of an empty filler, or else by a unary rule that saturates the slashed subject.

While a CP analysis will not have a problem with the ATB condition, with the filler being contained within each conjunct, it raises issues about licensing of the empty subject: first, how to ensure that the filler be indeed empty? Once *SLASH* has been saturated, properties of the filler are not visible anymore from outside the CP. Since we cannot detect the presence or the properties of the filler, we cannot capture the fact that the filler must correspond to the subject of the second conjunct. Furthermore, it remains unclear how to project e.g. sentence mood asymmetrically from the left conjunct.

If, however, we assume a coordination of two C' constituents, we will not fare much better, however, for different reasons: while we should have direct access to the properties in the second conjunct's *SLASH*, making it easy to capture that it is indeed the subject and that it is locally missing, we will inevitably incur an ATB

violation, since the second conjunct's SLASH is by necessity distinct from that of the first, as is most clear when dealing with yes/no questions as in (3) or complementiser-introduced verb-last clauses, as in (4).

3.4 Towards an analysis

Having seen the kind of problems SGF coordination proposes for a symmetric coordination analysis, regardless of whether we assume the coordination to combine two CPs or two C' constituents, I shall now pursue an alternative approach.

There is no reason to doubt that the SGF construction has just ordinary coordination semantics. Although most of our examples used the conjunction *und* 'and', we can equally well use disjunctive *oder* 'or', as in (13) or the exclusively disjunctive *entweder ... oder* 'either ... or' in (14), which do not seem to be amenable to an analysis in terms of comitatives as *und* 'and' would be.

- (13) [Wenn Du in ein Kaufhaus gehst] oder [bestellst im Internet], solltest
if you in a store go or order in.the internet should
Du besser Geld auf dem Konto haben.
you better money on the account have
'Whether you go to a department store or order on the internet, you'd better
have some money in your account.'
- (14) Entweder ist der Jäger wieder im Wald oder hat gestern schon
either is the hunter again in.the woods or has yesterday already
genug Hasen geschossen.
enough rabbits shot
'Either the hunter is in the woods again, or has shot enough rabbits yesterday.'

The syntax of the SGF construction, by contrast, does not look like coordination: the licensing conditions favour an analysis where the second conjunct must be slashed, but nothing similar appears to hold for the first conjunct. Not only are the two conjuncts disparate, but the difference in SLASH specifications inevitable leads to ATB violations. Furthermore, sharing of arguments in coordinate structure typically involves arguments which are structurally or linearly peripheral. In the SGF construction, however, the shared argument is medial, and peripheral material is not shared. Finally, the first conjunct appears to function as the syntactic head, determining, *inter alia* sentence mood.

A possible alternative has been proposed by Buring & Hartmann (1998). Semantically, they treat the second conjunct as an open proposition which is syntactically attached as an adjunct. While such an analysis could in part be motivated by the functional similarity of conjunctive *und* with comitatives, it remains unclear what kind of motivation can be given for disjunctive coordinations, as in (13) and (14) above. Furthermore, recursive SGF coordination, which I shall address in Section 3.7 would make for highly unusual adjuncts. The most serious criticism, how-

ever, has been raised by Frank (2002): if the second conjunct is treated as an adjunct, there is no way to ensure it cannot be extracted. Fronting of the second conjunct in an SGF-construction, however, is illicit.

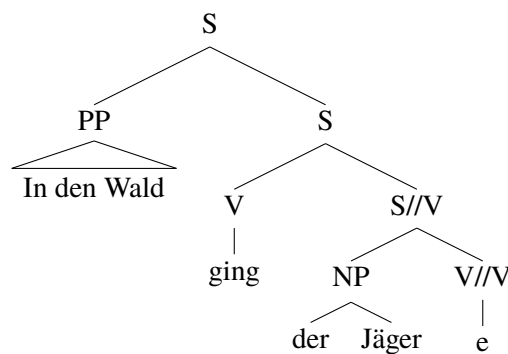
While I concur with the general idea that the first conjunct functions as a head, we do seem to need better control over the realisation of the second conjunct. I shall therefore propose a head-complement analysis where the second conjunct is “type-raised” to become a complement of the first conjunct’s initial verb/complementiser. This analysis shall neatly account for the observation that the first conjunct behaves like a syntactic head and that the initial verb or complementiser assumes a pivotal role in licensing the construction. Finally, complement status shall permit much more fine-grained control over the second conjunct than what seems possible under an adjunct analysis.

3.5 V1/V2 in German

In the analysis I am going to propose, the initial verb or complementiser of the first conjunct plays a central role. Therefore, before we enter into the formal account of the SGF construction, I shall briefly outline the basic treatment of verb second in German.

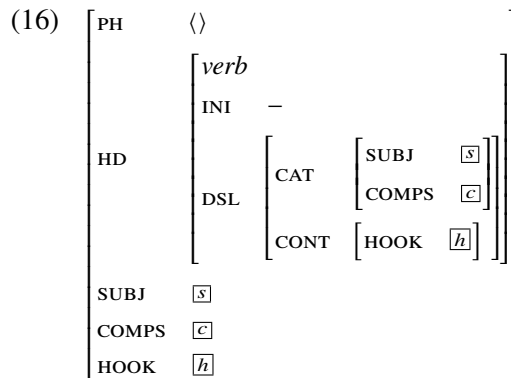
German is an SOV language with a verb-second/verb-first effect. Most treatments within HPSG follow previous works in Transformational Grammar (Thiersch, 1978) and assume simulated head movement (Kiss & Wesche, 1991; Müller & Kasper, 2000; Müller, 2005).²

(15)



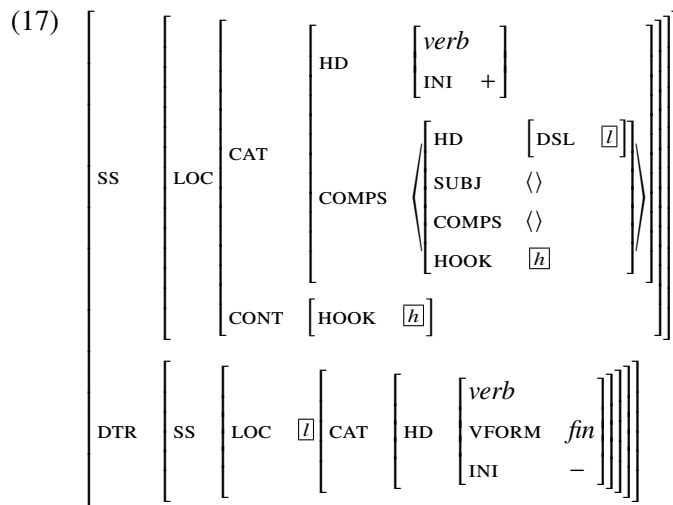
Technically, this is achieved by postulating a verb trace in the right sentence bracket that acts as the head of the verb-final *Mittelfeld*. This trace has a special head-feature DSL or // that crucially percolates valence information and features relevant for semantic composition, i.e. hook features in MRS. A sample lexical entry for the trace is given in (16).

²An alternative analysis using flat structures has been proposed by Uszkoreit (1987). See also Reape (1990, 1994) and Kathol (1995, 2000) for linearisation-based accounts. See Müller (2020) for detailed discussion of approaches to verb second in German.



As the verb trace combines with complements and modifiers, properties of these dependents are recorded on the head: e.g. if a complement combines with the verb trace, its *SYNSEM* is unified with an element on the trace's *COMPS*. But as valence lists are shared under *DSL*, information about the complements will be percolated along the head projection path. Thus, whenever the actual initial verb combines with the projection of the verb trace, it will be able to see what arguments are present and match it against its lexical valence requirements.

The initial verb in the left sentence bracket needs to combine with a saturated constituent projected from its own trace. Typically this is achieved by means of a lexical rule like the one given in (17).



Essentially, this rule takes as its daughter a lexical finite head-final verb and projects from it a head-initial verb that selects a single complement, namely the saturated projection of its trace. Crucially, the lexical verb's valence information (*SUBJ*, *COMPS*) is structure-shared with the valence information in the *DSL* feature of its sole complement. This ensures that any arguments realised in the *Mittelfeld* will actually have to unify with the valence requirements of the initial lexical verb.

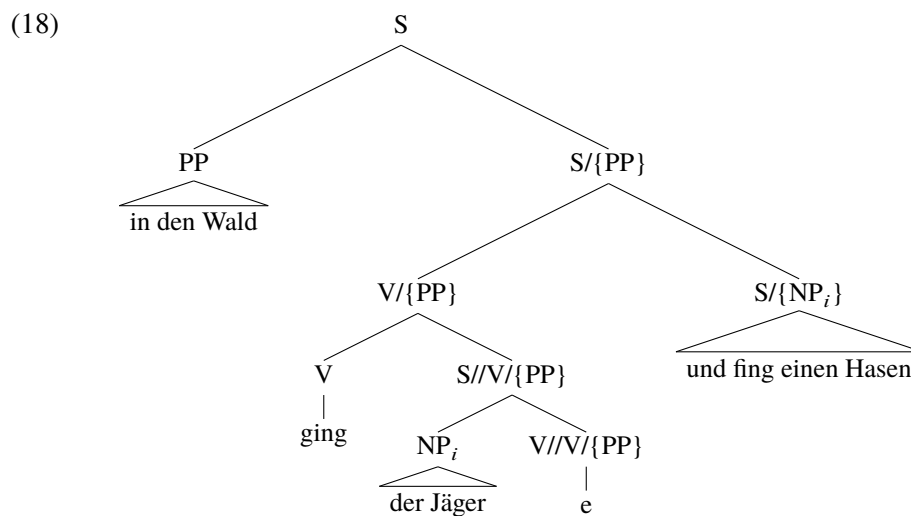
For the purposes of our proposal, it is important to point out that the standard analysis of verb fronting has an initial verb that selected for the entire remainder of

the clause as a single argument. This is highly similar to complementisers, such as *wenn*, which also take a single clausal argument.

3.6 SGF coordination as complementation

Having all the necessary ingredients in place, we can now turn to the formal analysis of SGF coordination.

I shall propose to analyse the conjuncts in the SGF constructions as syntactic co-complements. Semantically, however, the construction will be treated as ordinary coordination, embedding the semantic contribution of the two conjuncts under the conjunction provided by the second conjunct.



As we have seen in the previous section, simulated head movement likens the representation of initial verbs in German to that of complementisers, cf. Höhle (2019b), both taking a single complement that corresponds to the remainder of the clause.

Conjunct-to-complement “type-raising” will be effected by the lexical rule given in (19): this rule takes an initial verb or complementiser and expands its singleton COMPS list with a second complement corresponding to the second conjunct.

This second complement is constrained to be verb-initial and to have a nominative NP in its SLASH value, which is bound by the head of the construction ($ss|_{NL}[T-B]|_{SL}$). The index of this NP is further constrained to be shared with the XARG of both complements, thereby establishing coreference of subjects in both conjunct clauses. Furthermore, this second complement is semantically constrained to have a coordination relation as its highest predication.

Syntactically, the augmented verb or complementiser will combine with its original complement, followed by the conjunct. Since both conjuncts are now dependents of the initial verb, crucial properties of the entire construction will be projected from that verb, including the head value. Furthermore, since the initial verb lexically binds the SLASH value of the second conjunct, amalgamation will only

Under the conjunct-as-complement approach proposed here, it is in fact only the first conjunct that really receives special treatment. The internal structure of the second conjunct, by contrast, is no different from any other second conjunct. The head of the first conjunct selects for an incomplete coordinate structure that consists of the second conjunct only, and contributes its own VP//{V} complement to function semantically as the first conjunct.

In order to generalise the approach from binary coordinations to n -ary coordinations, all it takes is to ensure that the representation of a recursive coordination lacking the first conjunct is the same as the representation of the second conjunct in the binary case we have considered so far. Thus, conjuncts $2..n$ will be considered an ordinary (recursive) coordination of slashed verb-initial clauses, observing the ATB condition. However, the missing first conjunct will be provided by the lexical rule.

The following discussion will be led against the backdrop of the treatment of coordinate structures in the LinGO Grammar Matrix (Bender et al., 2010), which supports a typologically wide range of coordination strategies, including monosyndetic coordination, as typical in German, as well as asyndetic, polysyndetic, and omnisyndetic strategies. Furthermore, the coordination rule types provided by the Matrix already provide semantic composition using Minimal Recursion Semantics (Copestake et al., 2005).

The Grammar Matrix recognises different rule types for the basic and the recursive step in monosyndetic coordination. The basic rule type combines a right daughter semantically headed by coordinating relations with the left conjunct and semantically embeds the content of that conjunct under the coordination relation. The recursive rule type takes as its right daughter a coordinate structure and adds its left daughter as an additional conjunct. type combines The crucial difference between these two rule types is that the recursive type also provides an implicit coordination relation as constructional content, whereas the basic coordination rule type relies on the right hand daughter to provide that relation.

Furthermore, the Matrix coordination rule types employ a Boolean feature `COORD` that serves to register whether a coordinate structure is still incomplete, as e.g., the combination of conjunction with the right conjunct (`COORD +`), or complete (`COORD -`). The latter specification is the same as found with non-coordinate structures.

Given that the crucial difference between basic and recursive rule types lies with the constructional introduction of an implicit coordination relation, all it takes is to remove the constructional content from the binary recursive coordination rule itself and ship it out to a unary rule instead. Once we do this, we can use the same binary rule for both the basic step and the recursive step. Thus, instead of using different coordination rules, we shall use a single such rule, cf. (21), plus a unary rule that addresses the introduction of the implicit coordination for the recursive step, cf. (22).

$$(21) \left[\begin{array}{l} \text{SS} \left[\begin{array}{l} \text{LOC} \left[\begin{array}{l} \text{COORD} - \\ \text{CAT} [c] \\ \text{CONT} [\text{HOOK} [l]] \end{array} \right] \\ \text{NLOC} [n] \end{array} \right] \\ \text{DTRS} \left\langle \begin{array}{l} \text{SS} \left[\begin{array}{l} \text{LOC} \left[\begin{array}{l} \text{COORD} - \\ \text{CAT} [c] \\ \text{CONT} [\text{HOOK|LTOP} [l]] \end{array} \right] \\ \text{NLOC} [n] \end{array} \right] \\ \text{SS} \left[\begin{array}{l} \text{C-CONT} \left[\text{RELS} \left([\text{L-HNDL} [l]] \right) \right] \\ \text{LOC} \left[\begin{array}{l} \text{COORD} + \\ \text{CAT} [c] \\ \text{CONT} [\text{HOOK} [h]] \end{array} \right] \\ \text{NLOC} [n] \end{array} \right] \end{array} \right\rangle \end{array} \right]$$

$$(22) \left[\begin{array}{l} \text{C-CONT} \left[\text{RELS} \left\langle \begin{array}{l} \text{PRED} \textit{implicit-coord} \\ \text{R-HNDL} [r] \end{array} \right\rangle \right] \\ \text{SS} \left[\begin{array}{l} \text{LOC} \left[\begin{array}{l} \text{COORD} + \\ \text{CAT} [c] \end{array} \right] \\ \text{NLOC} [n] \end{array} \right] \\ \text{DTRS} \left\langle \begin{array}{l} \text{SS} \left[\begin{array}{l} \text{LOC} \left[\begin{array}{l} \text{COORD} - \\ \text{CAT} [c] \\ \text{CONT} [\text{HOOK} [\text{LTOP} [r]]] \end{array} \right] \\ \text{NLOC} [n] \end{array} \right] \end{array} \right\rangle \end{array} \right]$$

The unary rule in (22), which introduces the implicit coordination relation, takes a complete coordinate structure as its daughter and semantically embeds it under the R-HNDL argument of the *implicit-coord-rel*. The resulting phrase now is an incomplete coordinate structure, still lacking the left conjunct. This intermediate status is registered by means of the COORD + specification, akin to the specification introduced by lexical coordinating conjunctions found in the basic step of monosyndetic coordination. Consequently, the general binary coordination rule takes as its right hand daughter such an intermediate coordinate structure and combines it with a left conjunct to yield a complete coordinate phrase.

4 Conclusion

I have argued that SGF-coordination in German is characterised by rather unusual syntax, where shared material is contained within the first conjunct, yet peripheral material is not shared.

The present conjunct-as-complement approach, which is implemented by means of a lexical rule, combines a syntactic head-complement structure with coordination semantics. Under this perspective, the first conjunct enjoys the status of syntactic head, accounting for the fact that sentence-initial fillers eschew the ATB condition.

Moreover, the asymmetric approach advocated here straightforwardly captures the fact that the first conjunct alone determines sentence mood.

The second conjunct is analysed as a verb-first structure with a non-empty SLASH representing the missing subject and the missing *Vorfeld*, similar, but not identical to topic-drop. This SLASH value is bound by the initial verb of the first conjunct, which functions as the head of the entire construction. Identity of subjects is imposed using the index-valued MRS hook feature `XARG`.

The analysis suggested here is similar in spirit to the adjunct analysis by Buring & Hartmann (1998)., Complement status, however, provides better control for obligatory in situ realisation, scales up to recursive coordination, and preserves a standard coordination analysis in semantics.

References

- Bender, Emily M., Scott Drellishak, Antske Fokkens, Michael Wayne Goodman, Daniel P. Mills, Laurie Poulson & Safiyah Saleem. 2010. Grammar prototyping and testing with the LinGO Grammar Matrix customization system. In *Proceedings of the ACL 2010 system demonstrations*, 1–6. Uppsala, Sweden: Association for Computational Linguistics. <http://www.aclweb.org/anthology/P10-4001>.
- Buring, Daniel & Katharina Hartmann. 1998. Asymmetrische Koordinationen. *Linguistische Berichte* 174. 172–201.
- Copestake, Ann, Dan Flickinger, Carl Pollard & Ivan Sag. 2005. Minimal recursion semantics: an introduction. *Research on Language and Computation* 3(4). 281–332.
- Copestake, Ann, Alex Lascarides & Dan Flickinger. 2001. An algebra for semantic construction in constraint-based grammars. In *Proceedings of the 39th Annual Meeting of the Association for Computational Linguistics, Toulouse, France, .*
- Crysmann, Berthold. 2003. On the efficient implementation of German verb placement in HPSG. In *Proceedings of Recent Advances in Natural Language Processing (RANLP 2003)*, 112–116. Borovets, Bulgaria.
- Crysmann, Berthold. 2006. GG — an efficient and reversible HPSG for German. Invited talk at the Workshop on large-scale grammar development and grammar engineering, CRI, University of Haifa, June, Haifa.
- Crysmann, Berthold. 2007. Local ambiguity packing and discontinuity in German. In T. Baldwin, M. Dras, J. Hockenmaier, T. H. King & G. van Noord (eds.), *Proceedings of the ACL 2007 workshop on Deep Linguistic Processing*, 144–151. Prague, Czech Republic: Association for Computational Linguistics.
- Dalrymple, Mary. 2001. *Lexical functional grammar*. San Diego: Academic Press.

- Frank, Anette. 2002. A (discourse) functional analysis of asymmetric coordination. In Miriam Butt & Tracy Holloway King (eds.), *Proceedings of the LFG 2002 conference*, 174–196. Athens: CSLI Online Publications.
- Höhle, Tilman. 1983. Subjektflücken in Koordinationen. Ms., University of Cologne.
- Höhle, Tilman N. 2019a. Subjektflücken in Koordinationen. In Müller et al. (2019) 193–218. doi:10.5281/zenodo.2588353. First circulated in 1983.
- Höhle, Tilman N. 2019b. Vorangestellte Verben und Komplementierer sind eine natürliche Klasse. In Müller et al. (2019) 417–433. doi:10.5281/zenodo.2588383.
- Kathol, Andreas. 1995. *Linearization-based German syntax*: Ohio State University dissertation.
- Kathol, Andreas. 1999. Linearization versus phrase structure in German coordinate constructions. *Cognitive Linguistics* 10. 303–342.
- Kathol, Andreas. 2000. *Linear syntax*. Oxford: Oxford University Press.
- Kathol, Andreas. 2003. Subjects in fronted German VPs and the problem of case and agreement: Shared argument structures for discontinuous predicates. In Jongbok Kim & Stephen Wechsler (eds.), *On-line proceedings of the 9th International Conference on Head-Driven Phrase Structure Grammar (HPSG 2002)*, 91–108. Stanford: CSLI Publications. <http://cslipublications.stanford.edu/HPSG/3/>.
- Kathol, Andreas & Robert D. Levine. 1992. Inversion as a linearization effect. In Amy Schafer (ed.), *Proceedings of the north east linguistic society 23*, 207–221. Department of Linguistics, University of Massachusetts: GLSA.
- Kiss, Tibor & Birgit Wesche. 1991. Verb order and head movement. In Otthein Herzog & Claus-Rolf Rollinger (eds.), *Text understanding in lilog* (Lecture Notes in Artificial Intelligence 546), 216–240. Berlin: Springer-Verlag.
- Müller, Stefan. 2004. Elliptical constructions, multiple frontings, and surface-based syntax. In Gerhard Jäger, Paola Monachesi, Gerald Penn & Shuly Wintner (eds.), *Proceedings of Formal Grammar 2004, Nancy*, 91–109. Stanford: CSLI Proceedings Online. <http://cslipublications.stanford.edu/FG/2004/>.
- Müller, Stefan. 2005. Zur Analyse der deutschen Satzstruktur. *Linguistische Berichte* 201. 3–39.
- Müller, Stefan. 2020. *Grammatical theory* (Textbooks in Language Sciences 1). Berlin: Language Science Press. doi:10.5281/zenodo.3992307.

- Müller, Stefan & Walter Kasper. 2000. HPSG analysis of German. In Wolfgang Wahlster (ed.), *Verbmobil: Foundations of speech-to-speech translation*, 238–253. Berlin: Springer.
- Müller, Stefan, Marga Reis & Frank Richter (eds.). 2019. *Beiträge zur deutschen Grammatik: Gesammelte Schriften von Tilman N. Höhle* (Classics in Linguistics 5). Berlin: Language Science Press 2nd edn. doi:10.5281/zenodo.2588383.
- Machicao y Priemer, Antonio & Stefan Müller. 2021. NPs in German: Locality, theta roles, possessives, and genitive arguments. *Glossa: a journal of general linguistics* 6(1). doi:10.5334/gjgl.1128.
- Reape, Mike. 1990. A theory of word order and discontinuous constituency in west continental germanic. In Elisabeth Engdahl & Mike Reape (eds.), *Parametric variation in germanic and romance: Preliminary investigations* (DYANA Deliverable R1.1.A), 25–39. University of Edinburgh: Center for Cognitive Science and Department of Artificial Intelligence. ESPRIT Basic Research Action 3175.
- Reape, Mike. 1994. Domain union and word order variation in German. In John Nerbonne, Klaus Netter & Carl J. Pollard (eds.), *German in Head-Driven Phrase Structure Grammar* (CSLI Lecture Notes 46), 151–197. Stanford University: CSLI Publications.
- Ross, John R. 1967. *Constraints on variables in syntax*: MIT dissertation.
- Sag, Ivan A. 2012. Sign-based construction grammar: An informal synopsis. In Hans Boas & Ivan A. Sag (eds.), *Sign-based construction grammar*, 69–202. Stanford, CA: CSLI Publications.
- Thiersch, Craig. 1978. *Topics in German syntax*: MIT dissertation.
- Uszkoreit, Hans. 1987. *Word order and constituent structure in german*. Stanford: CSLI Publications.
- Wilder, Chris. 1996. V2-effekte: Wortstellungen und ellipsen. In Ewald Lang & Gisela Zifonun (eds.), *Deutsch — typologisch*, 142–180. Berlin, New York: de Gruyter.
- Wunderlich, Dieter. 1988. Some problems of coordination in German. In Uwe Reyle & Christian Rohrer (eds.), *Natural language processing and linguistic theories*, Dordrecht: Reidel.