

# Word order in the German middle field – scrambling

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This chapter provides an overview of the major empirical and theoretical aspects of word order variation in the German middle field, viz., scrambling. After introducing the German clause structure and providing basic properties of scrambling, this chapter discusses whether scrambling should be analyzed as involving base-generation or movement and, should movement indeed be involved, which movement type it instantiates. It will be argued that while many of the arguments for movement are eventually inconclusive, certain locality restrictions on scrambling and evidence for intermediate representations with floating quantifiers provide some evidence for a movement approach after all. Concerning the movement type, I will illustrate, based on its categorial restrictions and its binding/reconstruction profile, that scrambling patterns neither with A- nor A'-movement but rather instantiates a pattern of a third type and thus can significantly contribute to our understanding of movement type typology. In the last section, further important aspects are addressed, including questions regarding the base order of double object verbs, possible triggers for scrambling and implications for clause structure. It will become clear that despite 40 years of intense research, scrambling still presents many empirical challenges and given its puzzling set of properties cannot easily be accommodated within Generative Grammar.

## 1 Introduction: German clause structure and scrambling

The topic of this paper is the word order in a particular part of the German clause, namely in the so-called *middle-field*. Like other Germanic languages except English, German is a verb second (V2) language with the finite verb in main clauses appearing after the first phrasal constituent. Non-finite verbs occur at the end of the clause, after the arguments and any adjuncts (unless there is extraposition, see below):<sup>1</sup>

- (1) Gestern hat der Peter der Maria den Hans vorgestellt.  
yesterday has the.NOM Peter the.DAT Mary the.ACC John introduced  
'Yesterday, Peter introduced John to Mary.'

Subordinate clauses are introduced by complementizers (or relative-/wh-phrases), while the finite verb, together with non-finite verbs, occurs clause-finally:

- (2) dass gestern der Peter der Maria den Hans vorgestellt hat  
that yesterday the.NOM Peter the.DAT Mary the.ACC John introduced has  
'that yesterday Peter introduced John to Mary'

It is by now standard to assume that V2-clauses are derived from verb-final clauses by movement of the finite verb to the left, the landing site often being identified with C, the position occupied by complementizers in subordinate clauses. This implies that the portion of the clause between C and the clause-final verbs is shared by main and subordinate clauses. In more traditional/descriptive approaches, this portion of the clause is referred to as the *middle field*. It can contain arguments, adjuncts and (secondary) predicates and constituents of various categories (AP, PP, CP, and DP), see Haider (2017: 5f.). While filled in most cases, it can, in principle, remain empty (e.g., in impersonal constructions or in sentences consisting of a subject and an intransitive verb, see Haider 2017: 31–33). The middle field is enclosed by what is called the *sentence brackets*. The left bracket

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<sup>1</sup>All examples will be from Standard German. To the best of my knowledge, there is no dialectal variation w.r.t. the scrambling properties discussed in this chapter. Data without explicit reference have been constructed by the author. The glosses follow the Leipzig Glossing rules.

is the position of the complementizer/the position of the finite verb in main clauses, the right bracket is the position of the verbal elements in clause-final position (which also includes verbal particles). The sentence brackets separate the middle field from (i) the *prefield*, the phrasal position before the left bracket that can be occupied by almost any XP in main clauses and relative and *wh*-phrases in subordinate clauses (and remains empty in subordinate clauses introduced by complementizers), and the *post-field*, the position after the right sentence bracket which usually need not be occupied, although clausal constituents preferably occur there. In syntactic theory, the pre-field is usually identified with Spec,CP, while the postfield corresponds to an extraposition area, usually modeled as right-adjunction to VP/vP/TP. The organization of the clause into fields has no theoretical status in modern syntactic theory but provides useful terminology to refer to different parts of the clause without having to commit to specific theoretical assumptions.

The focus of this chapter is word order in the middle field, which thus roughly corresponds to the part of the clause between C and V. What has intrigued linguists about the middle field is its flexible word order. A sentence like (2) with 4 constituents in the middle field can in principle occur in 24 different versions, viz., any ordering between the arguments and the adjunct is possible. One of these versions is provided in (3):

- (3) dass den Hans der Maria der Peter gestern vorgestellt hat  
 that the.ACC John the.DAT Mary the.NOM Peter yesterday introduced has  
 ‘that yesterday Peter introduced John to Mary’

The word order in this part of the clause is therefore considered ‘free’ (which is not to mean that all orders are equally unmarked, a topic we return to in section 5.2). In modern syntactic theory, the word order variation in the middle-field (but also beyond) has been linked to a reordering operation called *scrambling*. For simplicity’s sake, I will often speak of scrambling or reordering and indicate the hypothesized base positions by means of traces; however, this should not imply that the word order freedom necessarily comes about via movement as this is not a generally accepted position (though certainly the majority view).

This chapter provides an overview of what I take to be the major empirical and theoretical issues surrounding the syntax of word order in the middle field. For reasons of space, this chapter will focus on narrow-syntactic aspects of scrambling, addressing aspects where scrambling interfaces with information structure and prosody only inasmuch as it informs the syntactic analysis. I will try to present the discussion from a neutral perspective rather than advocating a particular approach to scrambling. An important task in this paper will consist in separating the uncontroversial empirical facts from the controversial ones. As we will see, many of the crucial empirical facts are either disputed or too subtle to evaluate without careful experimental verification. Another focus will be the critical evaluation of the diagnostics used in the theoretical discussion and the conclusions drawn from them, which can often be shown to be flawed. As a consequence, despite almost 40 years of research on the topic many central empirical and theoretical questions remain unresolved. To a large extent, then, the chapter can be read as a to-do list for future research. This overview draws heavily on other overview papers including Abels (2015), Frey (2015), Haider (2017). While there will inevitably be a certain overlap, I will focus on issues that received less attention in those works, while being rather brief concerning topics that are discussed there in detail. For works providing an overview of the discussion during the Government-and-Binding era, see Grewendorf & Sternefeld (1990), Corver & Riemsdijk (1994), Müller (1995: 91–181). Given space constraints, I will frequently refer the reader to these sources for further data and discussion.

This chapter is organized as follows: In section two, I will discuss the basic properties of word order variation in the middle field. In section three, I will address the question of whether scrambling involves movement or base-generation. In section four, I discuss the nature of the movement type involved in scrambling. In section five, I will discuss further issues that have played an important role in research on scrambling (establishing the base order, possible triggers, landing sites),

and section six concludes.

## 2 Basic properties of word order freedom in the middle field

In this section, I will provide a list of basic descriptive properties of scrambling.

The first two properties were already illustrated in the example in (3): First, scrambling can lead to reordering of arguments. Second, it can be iterated (in that both objects have been reordered w.r.t. the subject and the direct object has been scrambled across the indirect one). The first property is important because it sets German scrambling apart from object shift in North Germanic and, to a large extent, scrambling in Dutch (for residual cases of argument-reordering in Dutch, see, e.g., Haider 2017: 37-39). The second property distinguishes scrambling from *wh*-movement or prefield-fronting (traditionally called topicalization) in German, which can affect only one constituent per clause. Third, scrambling can affect constituents of various categories, viz., DP, PP and CP. DP-scrambling is illustrated in (3); PP- and CP-scrambling (which includes finite and non-restructuring non-finite clauses) are illustrated in (4) (from Haider 2010: 147; for pronouns, see section 5.3 below. Pseudo-incorporated NPs and PPs do not scramble according to Frey 2015: 538–542 and cannot even be stranded under VP-topicalization; scrambling of in-situ *wh*-phrases and *wh*-indefinites is very restricted, see Fanselow 2012: 277):

- (4) a. dass dort jetzt [auf Peter]<sub>1</sub> jemand \_\_\_<sub>1</sub> wartet  
 that there now for Peter someone.NOM waits  
 ‘that someone is waiting for Peter there now’  
 b. ?weil ja heutzutage [dass die Erde rund ist]<sub>1</sub> niemand ernstlich \_\_\_<sub>1</sub> bezweifelt  
 since PRT today [that the earth round is] nobody.NOM seriously doubts  
 ‘That nowadays nobody seriously doubts that the earth is round’  
 c. dass doch [diese Tür aufzubrechen]<sub>1</sub> keiner je \_\_\_<sub>1</sub> versucht hat  
 that PRT [this door to.break.open] nobody.NOM ever tried has  
 ‘that nobody ever tried to break open this door’

There are two empirical aspects here that are controversial. First, it is frequently claimed that scrambling is confined to arguments (see, e.g., Haider 2017). This seems to be supported by the fact that predicates, including (primary and secondary) AP-predicates and (bare infinitival/participial) VPs do not seem to scramble, see, e.g., Müller (1995: 154–155):

- (5) ??daß [<sub>AP</sub> krank]<sub>1</sub> der Hans am Montag \_\_\_<sub>1</sub> nicht gewesen ist  
 that ill the.NOM Hans on Monday not been is  
 ‘that John was not ill on Monday’

However, predicate scrambling is generally deemed relatively acceptable once a rise-fall contour is involved, see Grewendorf & Sternefeld (1990: 13), Müller (1995: 307, fn. 39). It is not a priori clear what this implies. As will be discussed towards the end of this section, perhaps the rise-fall contour is indicative of a different type of scrambling, viz., A'-scrambling, in which case the generalization for – regular – scrambling could be upheld (like *wh*-indefinites, predicates can be left in the middle field under VP-topicalization, which causes complications for the theory of remnant movement, see Fanselow 2002, Fanselow 2012: 288–292, Müller 2014: 99–113).

The second issue concerns the scrambling of adverbials. It is clear that adverbials can occur in different positions of the middle-field. For instance, in ex. (3), the temporal adverbial can occur not only directly before the verb but either before all arguments as in (2) or in between any of the arguments. This is, however, not enough to show that it actually undergoes scrambling since it is conceivable that certain adverbials can be merged in different positions of the middle field (as long as they are semantically compatible with the constituent they attach to). Evidence from Frey & Pittner (1998), Frey (2015: 532–538) that adverbials actually pass the same reordering diagnostics

as arguments (viz., scope reconstruction) will be discussed in section 4.1 below.

Fourth, scrambling in German is possible within head-final phrases, viz., VPs and APs, but not within NPs and PPs, see Müller (1995: 112-118), Haider (2017: 6). This can be shown by means of VP- and AP-topicalization (presupposing that the fronted constituents are indeed not larger than vP/aP). The following examples provide illustrations of this ((6-a) is adapted from Haider 2017: 6):

- (6) a. [AP [DP dem Briefträger]<sub>1</sub> in vielen Merkmalen \_\_\_<sub>1</sub> ähnlich]<sub>2</sub> war der Hund \_\_\_<sub>2</sub>.  
           the postman.DAT in many features resembling was the dog.NOM  
           ‘The dog was resembling the postman in many features.’  
   b. [VP [DP den Hans]<sub>1</sub> der Maria gestern \_\_\_<sub>1</sub> vorgestellt]<sub>2</sub> hat der Peter \_\_\_<sub>2</sub>.  
           the.ACC Hans the.DAT Mary yesterday introduced has the.NOM Peter  
           ‘Peter introduced John to Mary yesterday.’

Haider (2017) takes OV order to be a pre-condition for scrambling on a cross-linguistic scale. This is a controversial position, though, and a lot hinges on the analysis of languages like Yiddish or Slavic languages, which clearly display word order variability/scrambling below the left periphery but are VO. See Pregla (2024) for evidence against a causal link between scrambling and OV.

Fifth, scrambling affects constituents of VP, AP, DP and PP. In the case of the last two, given that they are not scrambling domains, this implies that the constituents must leave the projection of their predicate and surface within VP, while in the case of the first two, scrambled constituents can either remain within the domain of the predicate as in (6) or can target the next higher VP (in the case of VP-constituents, this means that they can surface in the VP projected by a governing restructuring verb/auxiliary). The following two examples illustrate scrambling from DP and PP, see Müller (1995: 91–92):

- (7) a. daß Ellen [PP über Gisbert]<sub>1</sub> mal wieder [DP ein Gerücht \_\_\_<sub>1</sub>] gehört hat  
           that Ellen about Gisbert PRT again a rumour heard has  
           ‘that Ellen again heard a rumor about Gisbert’  
   b. daß da<sub>1</sub> wieder der Fritz [PP \_\_\_<sub>1</sub> für] zahlen musste  
           that it again the.NOM Fritz for pay.INF had.to  
           ‘that again Fritz had to pay for it’

Sixth, scrambling is optional (see Haider 2017: 9-11). ‘Optional’ means that there are no cases where reordering would be necessary to obtain a grammatical result (e.g., unlike with fronting of a *wh*- or relative pronoun; see Abels 2015: 1402 for discussion of the notion of ‘free’). This property is related to the discussion about interpretive effects of scrambling and possible triggers, a topic we return to in section 5.2 below (for obligatory scrambling of situ *wh*-phrases and *wh*-indefinites in certain configurations, see Heck & Müller 2000: sections 2.1-2.4).

Seventh, scrambling is clause-bound, viz., cannot cross a finite clause-boundary (Haider 2017: 7):

- (8) \*dass [die Lösung]<sub>1</sub> niemand geglaubt hat, [dass er \_\_\_<sub>1</sub> gefunden hätte]  
           that the solution no.one.NOM believed has that he found had  
           ‘that no one believed that he had found the solution’

With respect to non-finite clauses, it is uncontroversial that scrambling is possible from the complement of restructuring verbs as in (9), which are usually taken to involve less structure than a CP (e.g., VP, vP or TP; for a recent overview of verb clusters and restructuring, see Wurmbrand 2017):

- (9) weil [das Buch]<sub>1</sub> keiner [\_\_\_<sub>1</sub> zu lesen] versuchte  
           because the book no.one.NOM to read.INF tried  
           ‘because no one tried to read the book’

The status of scrambling from the complement of non-restructuring verbs is contested, however. Traditionally, it is regarded as impossible, which is in line with the assumption that they are CPs and thus of the same size as finite clauses. But according to Wurmbrand (2001: 269f.), scrambling is possible from non-restructuring verbs with irrealis complements if the scrambled DP is focused.

However, this may indicate that a different type of scrambling, viz., A'-scrambling, is involved (further issues arise w.r.t. the nature of scrambling from the so-called 3rd construction, see Salzmann 2019: 100–105 for recent discussion).

I will conclude this chapter with a few remarks on A'-scrambling. The construction was brought into the discussion in Neeleman (1994: 395–400) on the basis of Dutch data. He observed that it differs from regular scrambling in that it can cross clause-boundaries and apply to categories that normally don't scramble, viz., manner adverbials, predicative adjectives and VPs. The construction seems confined to spoken registers and necessarily involves a rise-fall contour, indicated by / \ (in the literature on German, one can also find the term *I-topicalization*). While sometimes referred to as focus-fronting, the fronted constituent arguably rather receives a contrastive topic interpretation. (10) illustrates local A'-scrambling of a predicative adjective (from Müller 1995: 157), (11) illustrates long-distance scrambling (from Haider 2010: 144):

- (10) daß [so RIchtig/ krank]<sub>1</sub> der Hans am Montag natürlich nicht \ \_\_\_<sub>1</sub> gewesen ist  
 that thus really ill the.NOM Hans on Monday of.course not been is  
 'that, of course, John wasn't really ill on Monday'
- (11) a. dass [/so eine Lösung]<sub>1</sub> nie \ mand geglaubt hat, [dass einer \_\_\_<sub>1</sub> finden  
 that such a solution no.one.NOM believed has [that someone.NOM find.INF  
 würde]  
 would]  
 'that no one believed that anyone had found such a solution'
- b. dass ja [/so frugal]<sub>1</sub> kei \ ner von uns glaubte, dass man \_\_\_<sub>1</sub> leben könnte  
 that PRT [so frugal] nobody.NOM of us thought that one live.INF could  
 'that none of us thought that one could live so frugally'

Most examples of A'-scrambling in the literature are characterized by a high landing site, viz., usually the position immediately following the complementizer, and thus possibly a position in the left periphery (which would entail that the German left periphery must be more complex than just consisting of TP and CP). However, one also finds examples where A'-scrambling targets a lower position after the subject in both local and long-distance versions. This is illustrated in (12) (from Haider 2017: 7 and Müller 1995: 408).

- (12) a. dass sie ja [/SO viel]<sub>1</sub> nicht \ geglaubt hat [dass man dafür \_\_\_<sub>1</sub> bezahlen müsse]  
 that she PRT so much not believed has [that one for.that pay.INF must]  
 'that she didn't believe that one would have to pay so much for that'
- b. obwohl er verlieren /<sub>1</sub> nur sehr schwer \ \_\_\_<sub>1</sub> kann  
 although he lose.INF only very hardly can  
 'although he is hardly able to lose'

There are two further properties of A'-scrambling that are sometimes thought to set it apart from regular scrambling, viz., systematic reconstruction for binding (Neeleman 1994: 399–400) and the presence of freezing effects (Frey 2015: 547). I will address these topics in sections 3.1.1 and 4.2.

While I will have nothing more to say about long-distance scrambling, the possibility of local A'-scrambling is a potential confound when analyzing local scrambling, especially when the displacement of NPs or PPs is involved: On the surface, one cannot easily tell in that case which type of scrambling one is dealing with, unless there is explicit information about prosody/intonation. As far as I can tell, much previous work is somewhat unsystematic in that prosody/intonation is not discussed explicitly. Often, there is reference to a certain intonation that makes certain examples more acceptable, but whether this implies that a different type of scrambling is involved often remains unclear. In some approaches, e.g., Müller (1995), it is in fact assumed that there is just one type of scrambling, but that a rise-fall contour makes scrambling in certain configurations acceptable. Thus, some of the limitations listed above (e.g., no fronting of predicates) are eventually not considered properties of clause-bound scrambling.

### 3 Movement or base-generation?

Consider the following minimal pair where the direct object either precedes or follows the subject:

- (13) a. dass keiner das Buch gelesen hat b. dass das Buch keiner gelesen hat  
 that no.one.NOM the book read has that the book no.one.NOM read has  
 ‘that no one read the book’

There are two logical possibilities to analyze the word order flexibility: Either the arguments can be merged in flexible order, viz., the two orders can be base-generated, or, one is derived from the other via movement. Both possibilities have been advocated in the literature, with base-generation representing the less prominent position (see, e.g., Bayer & Kornfilt 1994, Fanselow 2001, 2003a) and work in non-derivational/declarative frameworks, see Abels 2015: 1424–1432 for references).

I will in what follows discuss two types of evidence in favor of movement. The first one is based on the interaction of scrambling with locality constraints, the second type of evidence is based on diagnostics suggesting that a given constituent must have occupied a lower position at some point of the derivation.

#### 3.1 Scrambling and locality constraints

If scrambling involves movement, we expect it to interact with locality constraints. If instead it involves base-generation, such interaction is not necessarily expected. There are two ways in which scrambling has been argued to interact with locality constraints:

##### 3.1.1 Consequences of scrambling: freezing effects

The first argument from locality concerns the consequences of scrambling. If scrambling is movement, we expect it to cause freezing effects, like other movement operations, viz., obey the Condition on Extraction Domains (CED, see Huang 1982) and prohibit subextraction. In Müller (1998: 143–146), it is argued that this prediction is borne out: PP-extraction from DP or extraction of an R-pronoun from PP is possible if the DP/PP is in-situ but not once it has undergone scrambling:

- (14) a. Wo<sub>1</sub> meinst du [<sub>CP</sub> \_\_\_<sub>1</sub> dass keiner [<sub>PP</sub> \_\_\_<sub>1</sub> mit] gerechnet hat]?  
 what think you that no.one.NOM with counted has?  
 b. \*Wo<sub>2</sub> meinst du [<sub>CP</sub> \_\_\_<sub>2</sub> dass [<sub>PP</sub> \_\_\_<sub>2</sub> mit]<sub>1</sub> keiner \_\_\_<sub>1</sub> gerechnet hat]?  
 what think you that with no.one.NOM counted has  
 ‘What do you think no one counted on?’

However, the freezing argument is contested. It is related to a more general dispute concerning the status of the CED in German. The intransparency of (DP and sentential) subjects has been questioned for a long time, see, e.g., De Kuthy & Meurers (2001: 148), Fanselow (2003b: 21), and Haider (2017: 25) for examples and references. The same goes for freezing effects. See, e.g., De Kuthy & Meurers (2001: 151), Fanselow (2003b: 22), Haider (2010: 155–157), and Haider (2017: 51–53) for examples suggesting that scrambled phrases can be transparent. (15) is from Fanselow (2003b: 22):

- (15) [<sub>PP</sub> Über welches Thema]<sub>2</sub> würde [<sub>DP</sub> solch einen Artikel \_\_\_<sub>2</sub>]<sub>1</sub> selbst der Hubert  
 about which topic would such an article even the.NOM Hubert  
 nicht \_\_\_<sub>1</sub> in die Zeitung setzen?  
 not in the newspaper put.INF  
 ‘Which topic would not even Hubert put an article about in the newspaper?’

It remains to be explained why some of the examples, e.g., like (14-b) clearly seem unacceptable and others do not. Meinunger (2000: 212–216) and Fanselow (2003b: 21–22), citing previous literature, suggest that this is related to information structure in that subextraction is usually restricted to focused phrases. Given that subjects and scrambled objects are often topical, the fact that they

frequently disallow subextraction would follow (although the scrambled object in (15) does not seem to be focal; see also Meinunger 2000: 187, fn. 5, 192-194 for discussion of these data and the claim that topic islands are weak). Since the variable acceptability of extraction from scrambled XPs is orthogonal to the questions pursued here, we will not dwell on this.

While scrambling does not necessarily entail freezing effects, it is not clear what this implies for the movement vs. base-generation debate. Under a conservative approach to the CED, any XP that is a non-complement should be opaque for extraction. Crucially, this holds irrespective of whether that XP is moved to that position or is externally merged/base-generated there. Thus, the facts above eventually are more a puzzle for theories of the CED rather than useful diagnostics for the movement vs. base-generation debate. The same conclusion obtains given more refined approaches to the CED like Müller (2010) where only the last merged specifiers of a phrase constitute opaque domains; again, how those specifiers are created is immaterial for the opacity. In conclusion, then, freezing effects are not obviously informative w.r.t. the movement vs. base-generation debate (for arguments that the CED should distinguish between extraction from externally merged and internally merged specifiers, with extraction being more restricted in the latter, see Fanselow 2002: 107ff. based on extraction from DOs of SU>DO>PP verbs).

### 3.1.2 Locality constraints on scrambling

The second argument from locality, however, does provide relevant information for our discussion: It has been argued that scrambling itself is subject to well-established locality constraints, see Müller (1995: 122–124). He argues that scrambling from DP is subject to the same constraints as *wh*-movement: It cannot extract PPs from subjects and indirect objects. Furthermore, when applying to constituents of direct objects, scrambling is blocked from specific/definite NPs and is subject to the familiar lexical restrictions, viz., is only possible if verb and DP form what is considered a natural predicate. Finally, if the direct object contains a prenominal genitive/possessor, scrambling of either the possessor or another constituent of that DP is not possible. The following pair illustrates (failed) scrambling from indirect objects and failed scrambling of possessors (for evidence that not all cases of PP-extraction can be reanalyzed as extraction of VP-modifiers, as proposed in De Kuthy & Meurers 2001, see Müller 1998: 11–13)

- (16) a. \*daß man [<sub>PP</sub> über die Liebe]<sub>1</sub> neulich [<sub>DP</sub> einem Film \_\_\_<sub>1</sub>] einen Preis verliehen hat  
 that one about the love lately a.DAT movie a.ACC prize awarded has  
 ‘that one lately awarded a prize to a movie about love’
- b. \*daß ich Antjes<sub>1</sub> gestern [<sub>DP</sub> \_\_\_<sub>1</sub> Papiere über Benjamin] gelesen habe  
 that I Antje.GEN yesterday papers about Benjamin read have  
 ‘that yesterday I read Antje’s papers about Benjamin’

However, De Kuthy & Meurers (2001: 147-151) provide empirical arguments against most of Müller’s generalizations (although in the case of extraction from subjects, it is not always clear whether they really are external arguments). Thus, the argument from locality constraints seems significantly weakened. Still, while factors such as definiteness/specificity and the presence of a possessor may not block extraction from DP entirely, it is completely accidental under a base-generation approach that the very same factors that make *wh*-movement or prefield-fronting from DP more difficult also affect DPs from which no extraction has taken place (because the subconstituents are base-generated outside of DP, see below). Even more importantly, there remain restrictions that only a movement approach seems to be able to explain. First, the facts with indirect objects as in (16-a) strike me as robust (but see Meinunger 2000: 190–191 for a different judgment). Second, prenominal possessors/genitives as in (16-b) and postnominal genitives/possessors as in (17) are as immobile as in *wh*-movement/pre-field fronting (see Müller 1995: 46 for examples showing that DP-internal genitives cannot be extracted from DP in German):

- (17) \*dass ich [DP des Professors]<sub>1</sub> gestern [DP geheime Berichte \_\_\_<sub>1</sub>] gelesen habe  
 that I.NOM the.GEN professor.GEN yesterday secret reports read have  
 ‘that I read secret reports by the professor’

At least w.r.t. the examples in (16) and (17), there seems to be no doubt that they are ungrammatical. This strongly suggests that scrambling is subject to the same constraints w.r.t. extraction from DP as other movement operations. Under a base-generation approach, this parallel behavior is a priori unexpected.

The force of this argument for movement depends on how such phenomena could be treated under a base-generation account. Within Chomskyan syntax, the most recent and explicit account is Fanselow (2001, 2003a,b). An assumption underlying all versions is that the checking of the selectional requirements of predicates and theta-role assignment can be delayed. In Fanselow (2001), V and v incorporate into T at LF. The checking is then initiated by the parts of the complex head in T (V, v or T), from where they c-command all arguments (which are in vP). Since by assumption checking is relativized to specific case values (accusative, dative, nominative), there are no intervention effects. Consequently, the arguments can be freely merged/generated within vP. For scrambling from coherent infinitives and scrambling from DPs and PPs into (a superordinate) VP, Fanselow (2001: 417–422) proposes that V, P, N form an (abstract) complex predicate with the governing verb via LF-incorporation (implemented by means of feature movement at LF). An argument of P, N or a lower V can then be merged within the higher vP because it will be c-commanded by its predicate that forms part of the complex head in matrix T.

Given that the CED only allows (LF-)incorporation of V/N/P into V for heads of complements, it seems to correctly predict that the head (V/N/P) of a non-complement cannot incorporate into V, thereby making scrambling from non-complements in principle impossible. However, since the arguments of V can be merged in any order in Fanselow (2001), whichever argument is the complement of V, potentially including external arguments or indirect objects, should allow for its head to incorporate into V. This wrongly predicts them to be transparent for scrambling. Thus, the restriction on scrambling from indirect objects actually does not follow in the theory developed in Fanselow (2001) but would require additional assumptions.

Things are different in the slightly revised versions of the base-generation approach in Fanselow (2003a: 207–209, ex. 27), Fanselow (2003b: 16–18): It is proposed that an argument has to c-command the (possibly complex) predicate to receive a theta-role (thereby ruling out that an argument is base-generated too low, e.g., the argument of a matrix verb inside its complement VP, a possibility not ruled out in Fanselow 2001). Thus, arguments have to be merged within the projection of their predicate or within the projection of a head into which their predicate has incorporated. This implies that the subject cannot be merged as a complement of V given that it is an argument of v. If we assume that each argument is introduced by a separate head (e.g., the DO by V and the IO by a functional head like Appl), then reordering will only be possible if an argument is merged in a projection dominating the projection of their predicate. Thus, if the DO precedes the IO, it is merged in Spec,ApplP, if it precedes the subject, it is merged in Spec,vP (or TP). The VP then remains without an argument at every point of the derivation. This entails that only the direct object/unaccusative subject/theme argument can ever be a complement. Consequently, scrambling from non-complements (and thus incorporation of N, P, V from non-complements) is excluded after all under this version of base-generation and thus accounts for failed scrambling from indirect objects as in (16-a). As for exceptions to the CED, viz., scrambling from subjects and scrambled objects as in (15), basically the same option as for a movement approach obtains: Once one dispenses with the CED, incorporation from non-complements will be possible as well, thereby ruling in scrambling from non-complements. A different solution will then have to be found for indirect objects on both movement and non-movement accounts as those really seem to be impermeable.

However, failed scrambling of possessors and DP-internal genitives as in (16-b) and (17) re-



mains a serious problem under both versions of base-generation (viz., Fanselow 2001 and Fanselow 2003a,b). Assuming that they are arguments of an N in direct object position, incorporation of N into V should always make it possible for them to be merged within VP, contrary to fact. There seems to be no straightforward way to allow scrambling of PP-complements of nouns and disallow scrambling of DP-internal genitives at the same time in this type of approach. Admittedly, the ban on extracting genitives is also difficult to account for under a movement approach, given that genitives can be extracted in other languages. Müller (1995: 49–50) proposes that the ban on scrambling genitives is not movement-related but follows from the fact that after incorporation of N into V, DP-internal genitives can no longer receive case. In Fanselow’s base-generation approach, however, case-checking at LF by the various segments of the complex head in T, crucially including P, is taken to be possible and thus should extend to checking of genitive through the incorporated N. In other words, while many arguments from locality constraints on scrambling are eventually inconclusive for the movement/base-generation debate, the fact that DP-internal genitives cannot scramble, just like they cannot undergo *wh*-movement/prefield-fronting, shows that the base-generation account fails to capture a generalization. This consequently represents an argument for scrambling as movement after all.

Another potential argument for a movement approach to scrambling comes from the so-called Müller-Takano generalization. According to this generalization, remnant movement must not involve the same movement type as was involved in the remnant-creating movement step. Thus, scrambling a VP from which (DP)-scrambling has taken place is ungrammatical, see Müller (2015: 65):

- (18) \*dass [\_\_ zu lesen] [das Buch] keiner versucht hat  
 that to read.inf the book no.one.NOM tried has  
 ‘that no one tried to read the book’

There are good accounts of this effect under derivational approaches (based on the A-over-A principle, see Müller 1998). According to Fanselow (2002: 117–118), the base-generation account can account for the generalization as well: Given that the fronted VP is scrambled, it will be base-generated in the projection of the matrix V/auxiliary. Since it has not moved, it cannot reconstruct. Because of this, the head of the fronted VP, which is a non-complement, cannot incorporate into the matrix V/auxiliary and as a consequence, arguments of the fronted VP cannot be merged in the projection of the governing restructuring verb/auxiliary. Thus, at least the case in (18) can be subsumed under the CED. However, given that incorporation from non-complements may be necessary in cases where scrambling does not obey the CED (as in, e.g., ex. (15)), a coherent account of those and (18) may not be feasible under the base-generation approach.

## 3.2 Evidence for a lower position

We will discuss four types of evidence suggesting that the scrambled constituent has occupied a lower position at previous stages of the derivation, viz., that there is evidence for a lower copy/trace (I will use the terms interchangeably). First, parasitic gap-licensing; second, reconstruction effects; third, the interaction between word order and focus projection; fourth, intervention effects with floating quantifiers.

### 3.2.1 Parasitic Gap-licensing

The first argument for a movement account comes from parasitic gap-licensing as in examples like (19), from Fanselow (2001: 411):

- (19) dass er Maria<sub>1</sub> [<sub>CP</sub> ohne \_\_ anzuschauen] \_\_<sub>1</sub> geküsst hat  
 that he.NOM Maria without to.look.at.INF kissed has  
 ‘that he kissed Maria without looking at her’

It seems that the direct object is scrambled across the adjunct containing the parasitic gap (assuming the adjunct is adjoined above VP). Crucially, the example is ungrammatical if the direct object follows the adjunct. Given that parasitic gaps are only licensed by movement dependencies (Culicover & Postal 2001), this would seem to be a strong argument for a movement dependency being involved in scrambling. Unfortunately, the analysis of the phenomenon in (19) is very contested, and there is no consensus on whether it actually contains a proper parasitic gap. For instance, Fanselow (2001: 411–413), Kathol (2001) and Haider (2017: 57–60) argue it should be analyzed as a different phenomenon since its properties differ significantly from those of canonical parasitic gaps (as in English). Fanselow proposes instead that the phenomenon should receive an analysis in terms of coordination with forward deletion. Under such an analysis, the phenomenon is irrelevant for the movement debate. While the issue is far from settled and several of the putatively exceptional properties of German scrambling are actually attested in English as well (e.g., non-referential/non-DP-antecedents, multiple gaps), I consider the argument too problematic given the controversy and therefore set it aside. We will briefly come back to parasitic gap-licensing when we discuss the movement type underlying scrambling in section 4 below.

### 3.2.2 Reconstruction effects

The reconstruction properties of scrambling are somewhat puzzling and rather complex. Scrambling does not reconstruct for binding when objects are reordered with respect to each other, viz., such scrambled XPs are interpreted in their surface position. This would be compatible with both a base-generation approach or a movement approach where movement does not reconstruct (for binding). There are complications, though, with binding in *dat*>*acc* orders and in that (certain) XPs scrambled across the subject *can* reconstruct. Given these complexities, reconstruction for binding cannot straightforwardly be used as an argument in this debate. I will return to reconstruction for binding in section 4.2 below.

I will instead focus on scope reconstruction in this subsection, which has received most attention in this debate and which in prominent parts of the literature, see Frey (2015), Haider (2017), is considered a solid argument in favor of movement. In the following pair, while the example displaying the postulated *dat*>*acc* base order only allows surface scope, the one with *acc*>*dat* order allows both surface and inverse scope (from Frey 1993, as cited in Frey 2015: 528):

- (20) Peter thinks that
- a. man mindestens einem Experten fast jedes Bild zeigte.  
 one at.least one expert.DAT nearly every picture showed  
 ‘they showed at least one expert nearly every picture.’ only  $\exists > \forall$
- b. man [mindestens ein Bild]<sub>1</sub> fast jedem Experten <sub>1</sub> zeigte.  
 one at.least one picture nearly every expert.DAT showed  
 ‘they showed nearly every expert at least one picture.’  $\exists > \forall$ ;  $\forall > \exists$

Under the assumption that a scrambled phrase can be interpreted both in its base position and in its landing site w.r.t. scope, a movement account provides a straightforward account of the asymmetry in (20).

However, the argument based on scope is problematic for empirical reasons, which, in my view, eventually renders it inconclusive. The first issue comes from the following observation in Fanselow (2001: 415–416): If both objects scramble across the subject but retain their unmarked order, only surface scope between the objects is possible:

- (21) dass [fast jedem Kind]<sub>2</sub> [mindestens ein Buch]<sub>1</sub> nur Hans <sub>2</sub> <sub>1</sub> vorlas  
 that nearly each.DAT child at.least one book only Hans read.to  
 ‘that only Hans read at least one book to nearly every child’ only  $\forall > \exists$

This is unexpected under a movement account given that the two (putatively) moved objects

should be able to be interpreted in their base-position. If only one of them is (and nothing would seem to rule this out), we expect scope ambiguity, contrary to fact. Fanselow proposes that the correct generalization is that inverse scope is only possible if two XPs do not occur in their unmarked order; he further argues that such data favor the base-generation account as long as there is a way of referring to the unmarked order, a topic we return to presently (for more discussion and an explanation in derivational terms, see Fanselow 2012: 280–285). Unfortunately, the scope data, including those in (21), are contested, see Abels (2015: 1406, 1432–1434) for references. An even bigger problem is that it is far from clear that inverse scope is unavailable in the non-scrambled order. According to Wurmbrand (2008: 90), it is available once the rise and fall contour is applied. Wurmbrand interprets inverse scope under the rise-fall contour as indicating QR and develops a system of scope interpretation that allows QR in languages like German in very specific circumstances (Haider 2017: 68, fn. 21, on the other hand, claims that the rise-fall intonation only has an effect on structures with movement in that it favors scope-reconstruction but cannot lead to inverted scope in non-scrambled structures). In addition, there is both recent corpus (Webelhuth 2022: 341–361) and experimental evidence (Fanselow et al. 2022) showing that inverse scope is to some extent available in the unmarked/non-scrambled order even without the rise-fall contour. Whatever the mechanism that is responsible for that (e.g., Quantifier Raising), it clearly opens up the possibility that the reconstructed/non-surface scope reading in (20-b) is not the result of reconstruction but of whatever allows the lower of two XPs to take scope over the higher one. Consequently, reference to a lower position may no longer be necessary to account for scope ambiguity. Therefore, the scope argument is inconclusive.

A more robust argument for movement comes from the scrambling of idiom chunks, which is shown to be possible in Fanselow (2012: 272–277) and Wierzba et al. (2023), see, e.g., *Vielleicht hat er die Flinte zu früh ins Korn geworfen*, lit., perhaps has he the gun too early into.the grain thrown = ‘Perhaps he gave up too early’. Under base-generation it not clear how the idiomatic meaning can obtain given that the parts of the idiom are not contiguous at any point of the derivation.

### 3.2.3 Focus projection

Another prominent diagnostic for movement in this debate is the interaction of word order and focus projection, going back to work by Lenerz (1977) and Höhle (1982), also discussed in detail in Frey (2015: 526–528) and Haider (2017: 16–18). The (somewhat simplified) generalization is that in an out-of-the-blue context, a sentence can only have wide focus if the nuclear accent falls onto the structurally lowest XP, viz., the sister constituent of the lexical verb, as illustrated in (22) (cf. also Cinque 1993; see Kratzer & Selkirk 2007 for a more recent treatment that arrives at a slightly different generalization):

- (22) What happened?
- a. Gerade hat Maria dem Milliardär das BILD gezeigt.  
just.now has Maria the billionaire.DAT the painting.ACC shown  
‘Just now Maria has shown the billionaire the painting.’
  - b. #Gerade hat Maria dem MilliarDÄR das Bild gezeigt.
  - c. #Gerade hat Maria das Bild dem MilliarDÄR gezeigt.
  - d. #Gerade hat Maria das BILD dem Milliardär gezeigt.

The crucial example is thus (22-c) where the nuclear accent falls onto a verb-adjacent constituent, but focus projection is nevertheless not possible. This suggests that, given that the unmarked order with this verb is *dat>acc*, focus projection is only possible if the nuclear accent is on the lowest argument *in its base-position*. This thus furnishes an argument for movement. In (22-c), the DO has scrambled across the IO, leaving a trace/copy, which cannot be stressed.

Under the base-generation account in Fanselow (2001) where the arguments can be projected

in any order and the indirect object in (22-c) would thus be the complement, it is a priori not clear how to capture the generalization about focus projection. One would have to find a different way to refer to unmarked order. In the revised version in Fanselow (2003a: 206–209), the difference between marked and unmarked orders can be captured configurationally: As already mentioned above, the generalization is that an argument can only be merged within the projection of its predicate or another predicate into which its predicate has incorporated. Under the assumption that direct objects, indirect objects and subjects are all introduced by designated heads (V, Appl, v), a marked order will be visible in that one of the heads will not have a complement/specifier (e.g., if the DO is merged in Spec,ApplP). Thus, under this base-generation account, the absence of structure is an indication of marked word order and the principles of focus projection introduced above can be applied to such structures: If the DO is not projected within VP (but within ApplP or vP), there will be no sister constituent of V and focus projection is no longer possible. The precise formulation of the focus projection rule will be important here. Referring simply to the structurally lowest/most deeply embedded XP/constituent will not do here. Rather, reference to material within VP seems crucial. Thus, contrary to many claims in the literature, the argument from focus projection is not decisive for the movement vs. base-generation debate.

### 3.2.4 Intervention effects with floating quantifiers

While the previous arguments for a possible lower trace ended up being inconclusive, there is one argument involving a lower trace that I believe does help distinguish between movement and base-generation accounts. It is based on the paradigm in (23) and (24) from Heck & Himmelreich (2017) (they provide a parallel argument from parasitic-gap licensing that I will not discuss; one should mention that not all speakers agree on these judgments; the index ‘i’ indicates association between wh-phrase and quantifier):

- (23) a. \*Wer<sub>2/i</sub> hat \_\_<sub>2</sub> [einen Professor]<sub>1</sub> alles<sub>i</sub> \_\_<sub>1</sub> vergöttert?  
 who.NOM has a professor.ACC all idolized  
 intended: ‘Who all idolized a professor?’  
 b. \*Wem<sub>2/i</sub> hat sie \_\_<sub>2</sub> [einen Professor]<sub>1</sub> alles<sub>i</sub> \_\_<sub>2</sub> \_\_<sub>1</sub> vorgestellt?  
 who.DAT has she a professor.ACC all introduced  
 intended: ‘Who all did she introduce a professor to?’
- (24) a. Wen<sub>1/i</sub> hat [ein Professor] \_\_<sub>1</sub> alles<sub>i</sub> \_\_<sub>1</sub> beleidigt?  
 who.ACC has a professor.NOM all insulted  
 ‘Who all did a professor insult?’  
 b. Wen<sub>1/i</sub> hat sie [einem Professor]<sub>2</sub> \_\_<sub>1</sub> alles<sub>i</sub> \_\_<sub>2</sub> \_\_<sub>1</sub> vorgestellt?  
 who.ACC has she a professor.DAT all introduced  
 ‘Who all did she introduce to a professor?’

The first triple suggests that an indefinite cannot occur between a wh-phrase and a floating quantifier (FQ) that is associated with it, pointing towards some sort of intervention effect (note that no problems obtain if a definite DP occurs in this position). The pair in (24), however, shows that this cannot be a constraint applying to the surface order. Heck & Himmelreich (2017) argue that this paradigm provides evidence for intermediate representations and, crucially, for scrambling involving movement. On their account, the generalization covering the data in (23) and (24) is as follows (where the antecedent is the *wh*-phrase and the associate the floating quantifier):

- (25) *Generalized intervention asymmetry*  
 An antecedent  $\alpha$  can establish a relation with an associate  $\beta$  in the presence of a co-argument  $\gamma$  that precedes  $\beta$ , if and only if  $\gamma$  is higher on the hierarchy nom>dat>acc than  $\alpha$ .

They provide the following derivational account of the facts above: The floating quantifier is merged

as the innermost specifier of vP. In the ungrammatical cases in (23), the FQ is merged first, then, in (23-a), the direct object, and in (23-b), both objects, are scrambled across it. After scrambling, the indefinite DO, which is closest to the FQ, agrees with it, which affects the features of the FQ in such a way that subsequent Agree between the subject-/indirect object-wh phrase and the FQ fails and the derivation crashes. In the grammatical cases in (24), however, the wh-phrase can scramble across the FQ before the indefinite is merged/scrambled to Spec,vP. It thus can associate with the FQ. Subsequent wh-movement across the indefinite will not affect this. There are two important assumptions for the analysis to work: First, when *v* has an edge feature and both objects undergo scrambling, they have to move in order preserving fashion. As a consequence, the DO will invariably be merged in a lower specifier than the IO and will thus be closer to the FQ than the IO. Second, the subject is always merged after scrambling of the objects. Thus, it will always occupy a higher specifier than the objects, which will thus be invariably closer to the FQ (thus, unlike in more standard accounts, EF-driven movement targets inner and not outer specifiers). With these assumptions in place, the paradigm above can be derived.

The question is now how a base-generation account deals with these data. As Heck & Himmelreich (2017) argue, it is probably impossible to capture the paradigm above once arguments can be merged in flexible order. The grammatical cases in (24) are unproblematic since the wh-phrase can be merged below the indefinite so that it can be associated with the FQ. However, it seems impossible to rule out the ungrammatical cases in (23): If the subject can be merged below the direct/indirect object or the indirect object below the direct object, then there will be a stage where the wh-phrase is closer to the FQ than the indefinite and, consequently, association should be possible, contrary to fact. As far as I can tell, this issue holds for both Fanselow (2001), where the arguments of a predicate can be merged in any order (and thus subjects and indirect objects could be merged as complements), and Fanselow (2003a), where ‘scrambled’ constituents are base-generated in the projection of a higher head. In both approaches, the argument merged first can be higher on the argument hierarchy than the argument merged next; but once this is possible, the generalization in (25) can no longer be captured. Thus, it seems, to derive the paradigm above, it is crucial that arguments are introduced in a fixed order. As a consequence, orders that deviate from the fixed order must arise via movement. Taken together, the paradigm above thus represents an interesting and (and abstracting away from possible empirical issues and the technical complexities) convincing argument in favor of a movement approach to scrambling.

## 4 Movement type

Although much of the discussion w.r.t. the movement-base generation debate was shown to be inconclusive, some facts do favor a movement-based approach after all. Once a movement approach is adopted, the next obvious question is which movement type scrambling belongs to. In the 80ies and early 90ies there was a prominent controversy about whether scrambling instantiates A- or A'-movement. It seems clear nowadays that scrambling doesn't fit into either category. I will not attempt to resolve the issue, not the least since this does not seem straightforwardly possible. Rather, the reason for devoting space to this topic is related to recent attempts to derive the cluster of properties that characterizes A and A'-movement, respectively, from independent facts/principles, see, Urk (2015), Safir (2019). Since scrambling has a different cluster of properties, it can inform and will need to be taken into account by any attempt to provide a deeper understanding of why movement types differ from each other in the way they do. As far as I can tell, every version of generative grammar is confronted with this challenge, whether movement is feature driven as in mainstream versions of Minimalist syntax or untriggered as in the Government and Binding era and more recent labeling-based accounts within Minimalism (e.g., Chomsky et al. 2019). To contribute to this debate, this section will critically evaluate some of the argumentation in the literature and refine

the empirical picture, especially in the domain of binding/reconstruction effects (the early generative literature treated scrambling as a stylistic operation, arguably corresponding to PF-movement in modern terms. This option can be set aside given that scrambling is subject to the same constraints as narrow-syntactic movement and can have an effect on interpretation w.r.t. scope or binding).

When comparing canonical cases of A- vs. A'-movement like English raising vs. wh-movement, the dichotomy is relatively straightforward (see Urk 2015: chapter 2, Safir 2019: 287–287 for more properties): First, the former is clause-bound, while the latter is not. Second, the former is restricted to (usually nominal) arguments and displaces them to positions where case can be assigned, while the latter is not restricted to a particular category and targets a non-case-position. Third, only A'-movement can skip subject positions. Fourth, only A'-movement can license parasitic gaps. Fifth, the former leads to new binding possibilities, while the latter does not (in fact, leads to crossover violations).

When looking at the properties of German scrambling, a mixed picture arises. The clause-boundedness seems more in line with A-movement, but at the same time, wh-movement is clause-bound for many speakers of German as well, rendering this diagnostic somewhat moot. On the other hand, as pointed out in Abels (2015: 1416), the fact that scrambling can extract constituents of DP, PP and AP militates against a treatment in terms of A-movement – at the very least, there are no other clear cases of A-movement that would target constituents in such domains. W.r.t. the possibility to skip the subject position, scrambling patterns with A'-movement as well. The parasitic gap argument is, unfortunately, of limited help only given the dispute over the nature of parasitic gaps in German (recall section 3.2.1). In addition, there has been intensive discussion about the interaction of parasitic gap-licensing and binding, including the famous paradox by Webelhuth. Since the discussion has eventually lead to an inconclusive result and is adequately summarized in Abels (2015: 1418-1421), I will not discuss it any further here.

In what follows, we will instead look at two other types of diagnostics in more detail, viz., categorial restrictions and the binding/reconstruction profile.

## 4.1 Categorical restrictions

As mentioned at the beginning, scrambling is often claimed to be restricted to arguments of the categories DP, PP and CP. The fact that PPs can scramble is often taken to imply that it cannot be A-movement (see, e.g., Abels 2015: 1415-1416). However, at least on some accounts, movement to the subject position in English can also involve PPs (and even APs and VPs), namely in locative and predicate inversion, see (26) for an example of the former:

(26) *Down the hill rolled the baby carriage.*

Thus, the relevance of PP-scrambling for this debate is possibly overstated in my view.

More important is the issue of adjunct scrambling. As mentioned above it is still prominently claimed that scrambling is restricted to arguments (e.g., Haider 2017). Indeed, at least certain adverbials, especially predicative and manner adverbials, do not seem to scramble. But this does not hold for all adverbials. Fanselow (2003a: 213-214) discusses scrambling from coherent constructions and observes that while scrambling of adjuncts is more restricted than scrambling of arguments, once the examples are properly constructed, some cases of adjunct-scrambling from coherent constructions turn out to be quite well-formed after all, e.g. (27):

(27) *dass man [in diesem Hotel]<sub>1</sub> niemandem [<sub>1</sub> zu essen] empfehlen kann*  
 that one in this hotel no.one.DAT to eat.INF recommend.INF can  
 'that one cannot recommend to anyone to eat in this hotel'

Examples of this type are important because they cannot just be handled by assuming that adverbs can be adjoined to different projections as long as they can semantically compose with their sister.

Given that the adverbial in (27) clearly modifies the lower VP, scrambling is inevitable (no matter how it is implemented).

A similar point is made by examples in Frey & Pittner (1998) and Frey (2015: 532-538), who argue that reordering of adverbials can lead to scope ambiguities:

- (28) a. Er HAT mindestens eine Kollegin auf fast jede Art und Weise umworben.  
 he has at.least one colleague.F in nearly every way and manner courted  
 ‘He has courted at least one colleague in nearly every way.’ only  $\exists > \forall$
- b. Er HAT auf mindestens eine Art und Weise fast jede Kollegin umworben.  
 he has in at.least one way and manner nearly every colleague.F courted  
 ‘He has courted nearly every colleague in at least one way.’  $\exists > \forall$ ;  $\forall > \exists$

While the logic of the argument is clear, it seems fair to say that there is no consensus on the facts here, which is little surprising given our discussion on scope reconstruction above. More specifically, Fanselow (2003a: 215-217) discusses data with adverbials which, according to his judgment, are ambiguous without scrambling. Thus, the force of the scope argument remains weak, but there seems to be at least some residual evidence that adverbials can scramble. If this can be substantiated, the categorial restrictions are clearly unlike those characteristic of A-movement. However, it should be pointed out that scrambling is more restricted than bona fide cases of A'-movement in German such as prefield-fronting, which unlike scrambling can apply to adverbials of all kinds, including predicative adjectives and manner adverbials:

- (29) [Krank]<sub>1</sub> ist der Hans am Montag nicht \_\_\_<sub>1</sub> gewesen.  
 sick is the.NOM John on Monday not been  
 ‘John was not ill on Monday.’

Thus, w.r.t. categorial restrictions, German scrambling neither patterns like bona fide A-movement constructions like English raising nor like other A'-movement constructions in German.

## 4.2 Binding/reconstruction profile

Turning to the binding/reconstruction profile of scrambling, one needs to distinguish between scrambling across objects and scrambling across the subject.

Starting with scrambling across objects, it is frequently claimed, e.g., Haider (2017), that scrambled XPs are only interpreted in their surface position, which entails that scrambling can create new binding relations and destroy existing ones, viz., does not reconstruct for binding. The following data illustrate this on the basis of Principle C and variable binding (from Haider 2010: 148f., see Frey 2015: 530, ex. 25a for a different judgment concerning Condition C reconstruction):

- (30) a. \*dass man [den Peter<sub>i</sub>]<sub>1</sub> [Peters<sub>i</sub> Vater] \_\_\_<sub>1</sub> nicht übergeben hat  
 that one the.ACC Peter.ACC Peter's father.DAT NEG surrendered has  
 ‘that one has not handed over Peter<sub>i</sub> to Peter<sub>i</sub>'s father’
- b. dass man [den Hut des Polizisten<sub>i</sub>]<sub>1</sub> [dem Polizisten]<sub>i</sub>/ihm<sub>i</sub> \_\_\_<sub>1</sub> nicht  
 that one the.ACC hat the.GEN policeman the.DAT policeman/he.DAT NEG  
 übergeben hat  
 handed.over has  
 ‘that one didn't hand over the policeman<sub>i</sub>'s hat to the policeman<sub>i</sub>.’
- (31) a. dass man [fast jeden<sub>i</sub>]<sub>1</sub> [seinem<sub>i</sub> Vorgesetzten] \_\_\_<sub>1</sub> ankündigte  
 that one almost everyone.ACC his.DAT boss.DAT announced  
 ‘that one announced almost everyone<sub>i</sub> to his<sub>i</sub> boss’
- b. \*dass man [seinen<sub>i</sub> Vorgesetzten]<sub>1</sub> jedem<sub>i</sub> \_\_\_<sub>1</sub> ankündigte  
 that one his.ACC boss.ACC everyone.DAT announced  
 ‘that one announced everyone<sub>i</sub> his<sub>i</sub> boss’

In the literature, the absence of reconstruction effects is often considered an argument for A-movement (cf. Haider 2017), but that is a misconception because both A- and A'-movement can, in principle, reconstruct for binding and scope, cf., e.g., English raising. The two movement types are often argued to differ w.r.t. Condition C reconstruction in that only A'-movement does so, but the results in Salzmann et al. (2023) suggest that this is not the case, viz., that A'-movement doesn't robustly reconstruct for Condition C either. Consequently, reconstruction effects are ill-suited to disentangle the two movement types quite generally. Rather, the crucial diagnostic is whether a moved XP can create new binding relations in its landing site (note that scope is uninformative in this respect because A'-movement can be scope extending as well). The data in (30-a) and (31-a) thus represent an A-movement property.

Unfortunately, data based on double object constructions are somewhat inconclusive because the neat picture painted above becomes more puzzling once anaphors are taken into account. The major problem is that an accusative anaphor cannot be bound by a dative object, neither in the putatively unmarked dat>acc order, nor in the acc>dat order, a fact that holds for both reciprocals and reflexives (although the facts are subtle and contested, see Abels 2015); binding is only possible if the anaphor is dative and is bound by a preceding accusative object, see Müller (1995: 159f.):

- (32) a. \*dass ich {[den Gästen]<sub>i</sub> einander<sub>i</sub> | einander<sub>i</sub> [den Gästen]<sub>i</sub>}  
 that I the.DAT.PL guest.PL.DAT each.other each.other the.DAT.PL guest.DAT.PL  
 vorgestellt habe  
 introduced have  
 intended: 'that I introduced the guests<sub>i</sub> to each other<sub>i</sub>'  
 b. dass ich [die Gäste]<sub>i</sub> einander<sub>i</sub> vorgestellt habe  
 that I the.ACC.PL guest.ACC.PL each.other introduced have  
 'that I introduced the guests<sub>i</sub> to each other<sub>i</sub>'

As discussed in Abels (2015), there are several proposals to account for this pattern: Under the dat>acc base order, one will have to assume that datives for some reason cannot bind accusative anaphors. An alternative perspective arises if the base order is taken to be acc>dat (Müller 1995, 1999). This accounts for (32-b). Furthermore, once scrambling is taken to be A'-movement, the ungrammaticality of (32-a) also follows (since it cannot create new binding relations). While an acc>dat base order together with A'-scrambling accounts for the pattern with anaphors in (32), problems arise with bound variables and Condition C, since there are dat>acc orders where the dative object needs to be interpreted in its surface position as it establishes a binding relationship there, which in turn argues against A'-movement (see Müller 1995: chapter 4 for an attempt to reconcile the conflicting properties):

- (33) a. dass man jedem<sub>i</sub> [seinen<sub>i</sub> Vorgesetzten] ankündigte  
 that one everyone.DAT his.ACC boss.ACC announced  
 b. \*dass man [dem Polizisten]<sub>i</sub> [den Hut des Polizisten]<sub>i</sub> nicht  
 that one the.DAT policeman.DAT the.ACC hat the.GEN policeman.GEN NEG  
 übergeben hat  
 handed.over has  
 'that one didn't hand over the policeman<sub>i</sub>'s hat to the policeman<sub>i</sub>/him<sub>i</sub>.'

Thus, the pattern is somewhat equivocal. Another possibility to account for the divergence between anaphor binding and Condition C/variable binding is to assume that anaphor binding operates in terms of a case hierarchy (and, possibly, precedence) rather than just c-command. Some support for this comes from (i) the observation that the binding facts are the same with verbs that arguably have a different base order, viz., acc>dat, see section 5.1 below, and (ii) the fact (cited in Müller 1995: 160) that dative objects can bind reflexives inside PPs (which would be lower on the hierarchy):



- (34) dass Maria<sub>i</sub> ihr<sub>j</sub> die Augen [PP über sich<sub>i/j</sub>] öffnete  
 that Maria her.DAT the eyes.ACC about self opened  
 ‘that Mary gave her a reality check’

Another complication is that the discussion about the base order with dat>acc verbs has focused on bare anaphors in DO-position. Once they are embedded within a DP, binding by a dative seems possible (note that German is thought not to allow logophoric binding into picture NPs, rendering such examples relevant; see Bayer et al. 2001: 484f. for a similar example with a reciprocal):

- (35) Ich habe Peter<sub>i</sub> das Spiegelbild von sich<sub>i</sub> an der Wand gezeigt.  
 I have Peter the mirror.image of self on the wall shown  
 ‘I showed Peter<sub>i</sub> the mirror image of himself<sub>i</sub> on the wall.’

The acceptability of such examples heavily depends on the nature of the noun. With event nouns (e.g., *??Ich habe Peter<sub>i</sub> die Untersuchung gegen sich<sub>i</sub> angekündigt* ‘I announced to Peter<sub>i</sub> the investigation of himself<sub>i</sub>’), binding seems much less acceptable. At any rate, more empirical work will be necessary to substantiate these facts.

Possible confounds with unclear base orders can be avoided if nom>acc>PP verbs are used, whose base order is not contested. The pattern with these verbs strikes me as quite clear. In the acc>PP order, the acc can bind an anaphor/variable within the PP. If a PP containing these elements is scrambled across the DO, ungrammaticality results:

- (36) a. dass ich [die Kandidaten]<sub>i</sub> nebeneinander<sub>i</sub> setzte  
 that I the candidates next.to.each.other put  
 ‘that I put the candidates<sub>i</sub> next to each other<sub>i</sub>’  
 b. \*dass ich [nebeneinander<sub>i</sub>]<sub>1</sub> [die Kandidaten]<sub>i</sub> \_\_ setzte  
 that I next.to.each.other the candidates put
- (37) a. dass ich Peter<sub>i</sub> nicht [von sich<sub>i</sub>] überzeugen konnte.  
 that I Peter not of self convince.INF could  
 ‘that I couldn’t convince Peter of himself’  
 b. \*dass ich [von sich<sub>i</sub>]<sub>1</sub> Peter<sub>i</sub> nicht \_\_<sub>1</sub> überzeugen konnte  
 that I of self Peter not convince.INF could
- (38) a. dass ich [jeden Studenten]<sub>i</sub> [von seinem<sub>i</sub> Betreuer] überzeugen konnte  
 that I every.ACC student.ACC of his advisor convince.INF could  
 ‘that I could convince every student<sub>i</sub> of his<sub>i</sub> advisor’  
 b. \*dass ich [von seinem<sub>i</sub> Betreuer]<sub>1</sub> [jeden Studenten]<sub>i</sub> \_\_<sub>1</sub> überzeugen konnte  
 that I of his advisor every.ACC student.ACC convince.INF could

So far, this shows that the scrambled PP is interpreted in its surface position (it does not reconstruct) w.r.t. binding. Note that if the scrambled constituent were moved to the prefield instead, binding (and thus reconstruction) would be possible. Scrambling the PP can also lead to new binding relationships. This is difficult if not impossible to illustrate with Condition A, arguably because of lack of c-command out of the PP and perhaps because of the case hierarchy. Hence, the following example is ungrammatical (cf. also the discussion in Müller 1995: 161-162):

- (39) dass Maria<sub>j</sub>/man<sub>j</sub> [von Peter<sub>i</sub>/von den Künstlern<sub>i</sub>] sich<sub>\*i/j</sub>/einander<sub>\*i/j</sub> \_\_ überzeugen  
 that Mary/one of Peter/of the artists self/each.other convince.INF  
 konnte  
 could  
 ‘that Mary<sub>j</sub>/one<sub>j</sub> could convince self<sub>\*i/j</sub>/each other<sub>\*i/j</sub> of Peter<sub>i</sub>/the artists<sub>i</sub>’

But the following triple involving variable binding illustrates the effect clearly:

- (40) a. weil ich [jeden Studenten]<sub>i</sub> [neben seinen<sub>i</sub> Professor] setzte  
 because I every.ACC student.ACC next.to his professor put

- ‘because I put every student<sub>i</sub> next to his<sub>i</sub> professor’
- b. \*weil ich [seinen<sub>i</sub> Professor] [neben jeden Studenten]<sub>i</sub> setzte  
because I his.ACC professor next.to every student put
- c. weil ich [neben jeden Studenten]<sub>i</sub> [seinen<sub>i</sub> Professor] \_\_\_<sub>1</sub> setzte  
because I next.to every student his.ACC professor put

(40-a) shows that a quantified DO can bind a variable in the PP, while the reverse is not possible, see (40-b). (40-c) crucially shows that scrambling the PP with the quantifier across the bound variable leads to a well-formed result. A similar paradigm can be constructed based on Condition C:

- (41) a. \*dass ich Peter<sub>i</sub>/ihn<sub>i</sub> auf Peters<sub>i</sub> Fähigkeiten aufmerksam machte  
that I Peter/him.ACC on Peter’s talents alert made  
‘that I alerted Peter<sub>i</sub>/ihm<sub>i</sub> to Peter<sub>i</sub>’s talents’
- b. dass ich Peters<sub>i</sub> Mutter auf Peter<sub>i</sub>/ihn<sub>i</sub> aufmerksam machte  
that I Peter’s mother on Peter/him.ACC alert made  
‘that I alerted Peter<sub>i</sub>’s mother to Peter<sub>i</sub>/him<sub>i</sub>’
- c. \*dass ich [auf Peter<sub>i</sub>/ihn<sub>i</sub>]<sub>1</sub> Peters<sub>i</sub> Mutter \_\_\_<sub>1</sub> aufmerksam machte  
that I on Peter/him.ACC Peter’s mother alert made  
‘that I alerted Peter<sub>i</sub>’s mother to Peter<sub>i</sub>/him<sub>i</sub>’

(41-a) shows that the DO c-commands the R-expression within the PP, thus leading to a Condition C violation. (41-b) shows that in the absence of c-command, an R-expression (or a pronoun) within the PP is fine. Once we scramble that PP across the DO, an ungrammatical result obtains, (41-c), suggesting that the scrambled PP is interpreted in its surface position.

Thus, the pattern with nom>acc>PP-verbs is quite clear: scrambling the PP across the DO can create new binding relationships and destroy existing ones; it is thus interpreted in its surface position and does not reconstruct w.r.t. binding. This is an A'-movement pattern, but a caveat is in order w.r.t. the WCO/variable binding data. The literature on scrambling usually presupposes that A'-movement uniformly leads to robust WCO violations and thus takes the grammaticality of examples like (40-c) to show that A'-movement is ruled out. However, it has been known since at least Lasnik & Stowell (1991) that this in fact depends on the construction type, with some A'-constructions causing much weaker or perhaps no WCO effects at all. Thus, the force of examples like (40-c) may be somewhat limited in that they could also be compatible with an A'-movement operation that happens not to trigger (noticeable) WCO effects.

Turning now to the binding/reconstruction profile of scrambling across the subject, one can observe a somewhat different pattern. At least with anaphors, it is undisputed that this cannot lead to new binding options, neither with reflexives nor reciprocals, see Müller (1995: 161) and Abels (2015: 1417):

- (42) \*dass {[den Fisch und den Frosch]<sub>i</sub> einander<sub>i</sub> | einander<sub>i</sub> den [Fisch und  
that the.ACC fish and the.ACC frog each.other each.other the.ACC fish and  
den Frosch]} angeguckt haben  
the.ACC frog at.looked have  
intended: ‘that the fish and the frog looked at each other’

Given that the base order is undisputed with such nom>acc verbs, it is clear that the acc>nom version of (42) involves a derived order. One could conclude from this that scrambling across the subject is A'-movement. But this will not be sufficient because scrambling a quantified phrase across a bound pronoun contained in a subject *is* possible, see (43) from Abels (2015: 1407):

- (43) a. \*weil seine<sub>i</sub> Mutter jedem Kind<sub>i</sub> hilft  
because his.NOM mother every.DAT child helps  
‘because his<sub>i</sub> mother helps every child<sub>i</sub>’

- b. weil [jedem Kind<sub>i</sub>]<sub>1</sub> seine<sub>i</sub> Mutter \_\_\_<sub>1</sub> hilft  
 because every.DAT child his.NOM mother helps  
 'because every child<sub>i</sub> is helped by his<sub>i</sub> mother'

Thus, variable binding and anaphor binding diverge here. Recall from (33-a) that they also diverge w.r.t. double objects, where a dative quantifier can easily bind a pronoun contained in the DO, while the same is not possible with anaphors contained in the DO. There are two ways of reconciling this divergence. First, at least w.r.t. the data in (42), one could argue that anaphors in subject position are ruled out for independent reasons, viz., the anaphor agreement effect. Note that anaphors can never be subjects in German, not even with unaccusative dat/acc>nom verbs. Second, the data in (42) also follow under a case-hierarchy approach to binding given that the nominative would be higher on the hierarchy than the accusative. Examples with anaphors *within* subject DPs bound by objects scrambled across them are the obvious alternative test case; there are no relevant examples in the literature to my knowledge; the judgment of examples like (44) is difficult (crucially, the subjects are external arguments) :

- (44) dass dem Peter<sub>i</sub>/[Peter und Maria]<sub>i</sub> ein Freund von sich<sub>i</sub>/Freunde von einander<sub>i</sub> \_\_\_<sub>1</sub>  
 that the.DAT Peter/Peter and Mary a friend of self/friends of each.other  
 geholfen hat/haben  
 helped has/have  
 'that a friend of himself<sub>i</sub>/friends of each other<sub>i</sub> helped Peter<sub>i</sub>/[Peter and Mary]<sub>i</sub>'

The situation seems similarly unclear with respect to Condition C. Again, there do not seem to be examples in the literature; the following pair illustrates the relevant configuration, but the judgment is again rather difficult, and I will leave this open here.

- (45) a. dass [den Peter<sub>i</sub>]<sub>1</sub> gestern Peters<sub>i</sub> neuer Student \_\_\_<sub>1</sub> angeschrien hat  
 that the.ACC Peter yesterday Peter's new student.NOM yelled.at has  
 'that Peter<sub>i</sub>'s new student yelled at Peter<sub>i</sub>'  
 b. dass [Peters<sub>i</sub> neuen Studenten]<sub>1</sub> gestern der Peter<sub>i</sub> \_\_\_<sub>1</sub> angeschrien hat  
 that Peter.GEN new student.ACC yesterday the.NOM Peter yelled.at has  
 'that Peter<sub>i</sub> yelled at Peter<sub>i</sub>'s new student'

Thus, concerning new binding possibilities, the pattern with scrambling across subjects is thus not fully clear at this point. Whether it actually deviates from scrambling across objects can only be determined after more careful empirical investigation of the anaphor and Condition C data.

The full reconstruction profile of scrambling is also puzzling. As shown above, scrambling across objects does not seem to reconstruct, see ex. (31-b), (38-b) for variable binding (but see Wurmbrand 2008: 104 for the claim that reconstruction in such cases *is* possible if the rise-fall intonation is involved/the scrambled object is a topic), ex. (30-b), (41-c) for Condition C, ex. (36-b) for reciprocals (but see Abels 2015 for an example with a different judgment), and ex. (37-b) as well as (46) from Müller (1995: 177) for reflexive binding:

- (46) daß der Arzt<sub>i</sub> [sich<sub>i/\*j</sub>]<sub>1</sub> den Patienten<sub>j</sub> \_\_\_<sub>1</sub> im Spiegel gezeigt hat  
 that the doctor.NOM self.DAT the patient in.the mirror shown has  
 'that the doctor<sub>i</sub> showed the patient<sub>j</sub> to himself<sub>i/\*j</sub> in the mirror'

Based on such data (and those in section 3.2.2 above), a rather unusual pattern obtains: Scrambling (to a position below the subject) does not reconstruct for binding, only for scope. This motivated the proposal in Lechner (1998) that scrambling cannot undergo syntactic reconstruction but only semantic reconstruction. While descriptively adequate, it is by no means obvious why things should be like this.

The situation is even more complicated in that scrambling across the subject does reconstruct for variable, reflexive, and (pace Corver & Riemsdijk 1994: 7) reciprocal binding, see Müller (1995: 178):

- (47) a. daß [seine<sub>i</sub> Schwester]<sub>1</sub> jeder<sub>i</sub> \_\_\_<sub>1</sub> mag  
 that his sister everyone.NOM likes  
 'that everyone<sub>i</sub> likes his<sub>i</sub> sister'
- b. daß [sich<sub>i</sub>]<sub>1</sub> der Fritz<sub>i</sub> \_\_\_<sub>1</sub> schlaue vorkommt  
 that self the.NOM Fritz intelligent appears  
 'that Fritz<sub>i</sub> appears to himself<sub>i</sub> to be smart'
- c. ... weil einander<sub>1</sub> beide Seiten \_\_\_<sub>1</sub> Verstöße gegen diese Abmachung  
 because each.other both parties violations against this agreement  
 vorwarfen  
 accused.of  
 'because both parties<sub>i</sub> accused each other<sub>i</sub> of violations of this agreement'  
<https://www.sueddeutsche.de/muenchen/wolfratshausen/wolfratshausen-harte-nuss-1.1710212>,  
 found on June 12, 2023

To account for the deviating reconstruction behavior of scrambling across the subject, two types of proposals have been made. On the one hand, it has been proposed that there is covert movement of the subject across the scrambled constituents to Spec,TP, which presupposes that the subjects in (47) occupy the low subject position, viz., Spec,vP. However, there is robust evidence against covert (EPP-driven) movement of the subject, see Wurmbrand (2006: 182-200, esp., ex. 10c, 14), Haider (2017: 21, ex. 31), thus ruling out this option. Alternatively, it has been stipulated that somehow, binding is established via the T-head, which can be assumed to be in a spec-head relationship with the fronted constituents (see, e.g., Frey 1993, Haider 2017). While the workings of this proposal are rather unclear, reconstruction of reflexives indeed seems to be restricted to those bound by the subject, see, e.g., Fanselow (2001) (see also the claim in Müller (1995: 178) that a version of (48-b) with prefield-fronting of the reflexive is equally degraded, suggesting that something else may be going on):

- (48) a. dass ich [den Hans]<sub>i</sub> sich<sub>i</sub> im Spiegel zeigte  
 that I the.ACC Hans self in.the mirror showed  
 'that I showed Hans<sub>i</sub> himself<sub>i</sub> in the mirror'
- b. \*dass ich sich<sub>i</sub>/sich<sub>i</sub> ich [den Hans]<sub>i</sub> im Spiegel zeigte

The facts are clear with reflexives as in (48); whether bound variables can reconstruct and be bound by a non-subject has not received much discussion; the following example strikes me as degraded:

- (49) ??dass [seinen<sub>i</sub> neuen Studenten]<sub>1</sub> die Uni [jedem<sub>i</sub> Professor] \_\_\_<sub>1</sub> vorgestellt hat  
 that his.ACC new student the university every.DAT professor introduced.to has  
 'that the university introduced his<sub>i</sub> new student to every professor<sub>i</sub>'

Additionally, reconstruction of a scrambled XP from a position above an ECM-subject also seems to be impossible, see Fanselow (2003b: 27), Haider (2017: 13), suggesting that reconstruction for binding is indeed only possible if the binder is nominative.

Another complication in this debate is that it is not always made explicit whether scrambling across the subject involves a marked prosody/intonation. If it does, contrastive topic scrambling may be involved instead, which is argued to reconstruct systematically for binding, recall from section 2. However, since there are clear cases where no rise-fall intonation is involved, e.g., in the examples in (47), a reduction of scrambling across the subject to a different movement type (which may then account for the different reconstruction behavior) does not seem warranted.

Thus, the general binding/reconstruction pattern of German scrambling is rather puzzling. Low scrambling is much less likely to reconstruct for binding than scrambling across the subject. Since both A- and A'-movement can reconstruct for binding, this asymmetry does not translate into different movement types but rather seems to present a pattern sui generis. Note that Wurmbrand (2008: 105) argues that what is relevant to account for the reconstruction pattern is not the

movement type but information structure: reconstruction is possible if the moved constituent is marked/interpreted as a topic.

To conclude this section, scrambling displays a pattern w.r.t. categorial restrictions and binding/reconstruction that differs from both A- and A'-movement. We will briefly come back to movement type-related questions in section 5.3, which deals with possible landing sites for scrambling.

## 5 Further issues

### 5.1 A note on establishing the base order

In early work on scrambling, a prominent assumption was that the basic order corresponds to the unmarked order, see Lenerz (1977) and Höhle (1982). Apart from possible empirical challenges to determine markedness, the following arguments call the basic assumption into question, see Müller (1999: 784f.): First, the assumption does not follow from anything. Second, markedness is highly affected by the semantic properties of the arguments (definiteness, animacy). With sufficient manipulation, different orders of the same verb may be unmarked. This would entail that the same verb can have different base orders, probably an undesirable state of affairs. Or, if one adheres to just one base order, that the unmarked order involves scrambling after all (see also Fanselow 2003a: 201). Because of these shortcomings, approaches that solely determine the base order by means of markedness have largely been abandoned. Another possible strategy is to probe the base order of verbs by using DP-types that do not scramble (easily) like, e.g., *wh*-indefinites, see Frey (2015: 523–525). But even there, animacy can be a confounding factor (a fact that also holds for the data discussed by Frey). For instance, with a verb like *zeigen* ‘show’, only *dat>acc* seems to be possible if the DO is inanimate. But once both objects are animate, this clear preference disappears (at least for me, (50-b)):

- (50) a. *dass sie wem was/\*was wem gezeigt hat*  
 that she someone.DAT something.ACC/something.ACC someone.DAT shown has  
 ‘that she showed something to someone’
- b. *dass sie wem wen/?wen wem gezeigt hat*  
 that she someone.DAT someone.ACC/someone.ACC someone.DAT shown has  
 ‘that she showed someone to someone’

Instead, it strikes me as more promising to determine the base order on the basis of grammatical diagnostics like reconstruction effects and focus projection.

As discussed in section 4.2, Müller (1999: 780–782) argues in favor of a uniform *acc>dat* base order for double object verbs based on the pattern in anaphor binding, where, for all verbs, the DO can bind an IO-anaphor, while the reverse is not possible. A second argument is argued to come from the order of weak pronouns, where the unmarked order in the standard language is *acc>dat*, again for all double object verbs. While I consider the first argument valid in principle, the second strikes me as weak given that in many languages weak pronominal elements (cf. clitics in many languages) are subject to ordering principles that are different from those that govern DPs.

A different position is advocated in Frey (2015: 526–532, 545–546) and Haider (2017: 15–20), who argue that there are two classes of ditransitives (and also several classes of intransitives), viz., one with a *dat>acc* base order (e.g., verbs like ‘give’, ‘introduce to’, ‘entrust to’) and one with an *acc>dat* base order (e.g., verbs like ‘expose to’, ‘devote to’, ‘take away from’). W.r.t. the *acc>dat* verbs, it has been objected that they often happen to involve an animate DO and an inanimate IO, suggesting that the preference may thus be more a reflex of the influence of animacy (see, e.g., Müller 1999: 786); indeed, most of the examples in Frey (2015) and Haider (2017) involve the animacy confound, the only exceptions being the *dat>acc* verb with two animate arguments in Frey (2015: 531, ex. 29), viz., ‘introduce’, and an *acc>dat* verb in Haider (2017: 18, ex. 25c/d), viz.,

‘devote’, where the DO is inanimate and the IO animate. The later case would suggest that the different base orders have nothing to do with animacy after all but rather are based on different argument structures (with the dative in *dat>acc* verbs corresponding to a recipient and the dative in *acc>dat* verbs corresponding to a goal, cf. also Meinunger 2000: chapter 2, who treats datives in *acc>dat* orders as hidden locational PPs). Frey (2015) and Haider (2017) in fact reach their conclusion by applying the focus projection and scope reconstruction diagnostics. Thus, according to them, with an *acc>dat* verb, focus projection is only possible if the accent falls on the IO in an *acc>dat* order, and only *acc>dat* (but not *dat>acc*) orders are scopally unambiguous. Still, to really resolve this issue careful experimental work seems to be required that applies the diagnostics to proper minimal pairs and takes the animacy/definiteness confound into account.

Another possible diagnostic for base positions is discussed in Frey (2015: 529), viz., Condition C reconstruction of topicalized XPs. However, there are at least two problems with this diagnostic: First, the robustness of Condition C reconstruction has recently been called into question, see Salzmann et al. (2023). Second, one could imagine that prefield-fronting is preceded by an instance of (A-)scrambling across an object. Reconstruction of the *A'*-step then would only target the higher A-position, not necessarily the lower one.

## 5.2 Ordering principles and triggers for scrambling

Given that the arguments of a verb often do not occur in their base order, one can then ask what causes these deviations. To a certain extent, reordering takes place to satisfy linearization constraints referring to semantic or information structural properties that generally hold for languages with free word order, e.g., definite > indefinite, animate > inanimate, scope bearer > scope taker, topic > non-topic, given > new etc., see Frey (2015: 522) for a list of possible constraints. In addition, prosodic factors may favor scrambled orders, which in turn has information-structural consequences (see, e.g., Krifka 1998, Struckmeier 2017). While it seems largely undisputed that scrambling can be motivated by these factors, it is much less clear what this implies for the syntactic implementation of scrambling, viz., whether there is a causal relationship between a certain property of an XP/a sentence and the movement operation. This issue is particularly pressing in the Minimalist Program, where movement is subject to last resort and thus can only take place if it results in feature checking (Chomsky 1995). As a consequence, a significant amount of work has attempted to characterize scrambling in terms of (semantic and information-structural) triggers. Possible triggers that have been proposed include specificity, givenness, topicality (cf., e.g., Meinunger 2000), referentiality, and scope (earlier work also proposed a purely formal trigger, viz., case, but that can be set aside quickly given that non-DPs scramble as well).

It seems fair to conclude that all attempts at finding a coherent trigger for scrambling and thereby establishing a direct link between syntax and semantics/information structure have failed. Since this is adequately discussed elsewhere (see, e.g., Abels 2015: 1422–1423, Frey 2015: 548–556), I will be brief. Scope fails because non-scopal elements (like proper names) can scramble; it is also implausible given the possibility of scope reconstruction. More semantic and information-structural features fail because scrambling can target quantifiers (see the examples with scope reconstruction above), *wh*-indefinites (Heck & Müller 2000, Fanselow 2012: 277–279), and even idiom chunks (see Fanselow 2012: 272–277, Wierzba et al. 2023). Also, while it is frequently claimed that focused phrases cannot scramble, Fanselow (2012: 270–271) and Struckmeier (2017: 21) show that this is not generally correct. Next to problems with identifying a coherent trigger, reordering is often not obligatory to achieve the postulated semantic/information-structural effect. Thus, as shown in Frey (2015: 551–552) and Haider (2017: 10f.) w.r.t. the interpretation of indefinites, scrambling can surely have semantic consequences in that scrambled indefinites are normally only interpreted as specific. But this cannot serve as the trigger given that the specific interpre-

tation is also available in-situ. Rather, scrambling often reduces interpretive options (scrambled indefinites usually can no longer receive a non-specific interpretation). Similarly, as shown in Frey (2015: 549-551), while given objects often scramble, they can also remain within VP. As a consequence, there are usually several possible serializations in specific discourse contexts. Perhaps the strongest argument against a direct link between syntax and information structure comes from instances of altruistic scrambling, see Fanselow (2003a: 210-211), Fanselow (2003b: 11-12): scrambling often takes place so a different constituent, e.g., the verb or the subject, can be in focus/receives the nuclear accent, but this does not imply that the scrambled XP necessarily receives a special information-structural property. Such interactions cannot be expressed in a system based on attracting features; Optimality-theoretic approaches seem at an advantage here (see, e.g., Müller 1999). So in other words, the factors/linearization preferences are soft constraints (of different strength). When they are violated, some degree of markedness obtains, but not ungrammaticality. There are two possible reactions to this state of affairs. Either scrambling is treated as a non-uniform phenomenon with different reorderings corresponding to different movement types/being triggered by different features (cf. also Struckmeier 2017). Or it is assumed that there is a generic trigger for scrambling, a scrambling feature in the earlier literature (e.g., Müller 1998) or, more recently, an EPP- or edge feature (e.g., Heck & Himmelreich 2017). While the use of generic features is often criticized as providing little insight, it should be pointed out that the same may be required for other well-established movement operations. For instance, Fanselow & Lenerová (2011) show convincingly that movement to the German prefield cannot generally be characterized in terms of information structure. Rather, they propose that an unspecified edge-feature is responsible. Fanselow (2012) shows that some of the issues that arise with prefield-fronting also arise with scrambling. Thus, the issue with movement triggers may be more general (and, upon closer inspection, will arise in other languages/constructions as well). One issue with using generic movement triggers for scrambling is that, as discussed in Heck & Himmelreich (2017), attraction cannot be subject to Minimality/the Minimal Link Condition because scrambling can target several phrases, which, however, need not preserve their order upon movement (e.g., if both objects are scrambled across the subject, they can appear in acc>dat or dat>acc order). This implies that either of two objects can be targeted by a scrambling probe on, say, *v*. Thus, eventually, integrating scrambling into Minimalist syntax remains a challenge. Haider & Rosengren (2003) and Struckmeier (2017) therefore take a very different approach and treat scrambling as a free non-triggerred operation of syntax that is essentially only constrained by interface requirements (semantics, information structure, prosody). This is not too different from approaches adopting a generic trigger, but it remains to be seen whether triggerless approaches can be sufficiently constrained to provide an adequate description of the many finegrained properties of (German) scrambling. One final challenge needs to be mentioned. Haider (2017: 56f.) correctly points out that many accounts have little to say about the fact that scrambling in German can only take place within head-final phrases. Once movement-triggering features are postulated, one wonders why they can be on a head in VP/AP but not in DP/PP.

### 5.3 Possible landing sites

In the section on movement types, we saw that scrambling can both target a position below the subject and a position above the subject. In the earlier literature, this was often correlated with a different landing site and different movement types: Movement below the subject would be A-movement to Spec,vP/adjunction to vP, movement above the subject would be A'-movement to Spec,TP/adjunction to TP. There are several difficulties with this bipartition.

First, it presupposes certain properties of the clausal spine in German. In some of the literature, the (non-)existence of the TP is under debate. For instance, Haider (2017: 20-26, 41-44) argues against the existence of Spec,TP on several grounds. First, there is no strong evidence for verb

movement to T in German. Second, the subject can remain vP-internally, and when it does, there is strong evidence against covert movement. Third, extraction from subjects is possible. Fourth, there are no expletive subjects in the middle field (in the presence of low DP-subjects). All arguments strike me as inconclusive. The absence of evidence for movement to T does not preclude the possibility that there can be a TP. Movement of lexical verbs in English also does not go up to T, yet there is sufficient independent evidence for a functional projection above vP (e.g., through different positions the subject can occupy). As long as the EPP-feature on T is optional, no problems arise with low subjects, and we don't expect expletives in that case. The CED argument is largely orthogonal to the vP/TP distinction given that the external argument occupies a specifier position in any case. Wurmbrand (2006: 185–200, 210–216) also argues against covert movement of the subject to Spec,TP (on the basis of scope freezing effects and the possibility of subjects in fronted VPs) but nevertheless argues in favor of the existence of a TP in German (on the basis of the long-distance passive that requires externalization of the subject for case reasons). One also finds the reverse position, viz., that the structure of the middle field is in fact more fine-grained, containing in addition to TP a designated position for aboutness topics, see Frey (2004), Frey (2015: 550) and Fanselow (2003a: 217–223) for discussion. As far as I can tell, the existence of a high subject position (Spec,TP) is nowadays largely accepted, while no consensus has been reached concerning a possibly cartographic structure of the middle-field. Still, this means that a distinction between high and low scrambling in configurational terms can, in principle, be made.

Second, quite apart from the fact that, as shown above, it is empirically unwarranted to treat scrambling above and below the subject as wholly different kinds, it is far from clear that different landing sites are actually involved: Under the – widespread – assumption that subjects in German can either move to Spec,TP or remain in their base-position in Spec,vP (Müller 1999), scrambling above the subject can be structurally ambiguous. Thus, for the two types of scrambling to be correlated with different landing sites, the subjects would always have to occupy Spec,TP in the relevant examples with high scrambling. This is, however, not controlled for in the examples in the literature (e.g., by using diagnostics like modal particles that delimit certain parts of the structure). Thus, we cannot be sure which positions the subject, and, consequently, the scrambled object, actually occupy.

Third and more generally, any attempt to relate the (potentially) different properties of the two types of scrambling to configurational differences is called into question by the observation that cross-linguistically, there is no such correlation. For instance, A-scrambling in Japanese can very well target Spec,TP (see, e.g., Miyagawa 2010). Conversely, one can imagine there being instances of A'-movement that target lower positions like Spec,vP, e.g., movement to low focus or topic positions. Differences between the two scrambling types could then instead be related to the nature of the attracting feature, see, e.g., Urk (2015).

Fourth, it is not really clear whether scrambling can actually target a high position in those configurations where there is some certainty that the subject is in Spec,TP. According to Müller (1999), the diagnostic for whether subjects occupy Spec,TP is whether they precede weak pronouns, which are assumed to occupy specifiers of a designated functional head between T and vP. It is claimed that this sets subjects apart from objects, which are claimed not to be able to precede weak pronouns. Scrambling across the subject is then predicted to be impossible if the subject precedes a weak pronoun. Without a rise-fall contour, this prediction seems to be borne out. In the presence of a rise-fall contour, however, at least scrambling to a position before the subject seems marginally possible (see also Haider 2017: 30, ex. 49 for data where a scrambled object precedes a weak reflexive pronoun):

- (51) weil     ??{diesen Roman} Peter ??/\*{diesen Roman} ihr     {diesen Roman} gestern  
       because this.ACC novel   Peter this.ACC novel   her.DAT this.ACC novel   yesterday



nicht geben wollte  
 not give.INF wanted  
 'because Peter didn't want to give this novel to her yesterday'

Should such examples eventually turn out to be ungrammatical, then there cannot be any scrambling to Spec,TP and thus, a different configurational asymmetry would have to be found for high/low scrambling. This will be impossible if the only possible landing site is Spec,vP. Now, there can be reordering between the objects below the subject, also when the subject can be shown to occupy a vP-internal position, e.g., by using a wh-indefinite (which cannot precede weak pronouns), or by having the subject follow a modal particle, which, according to Diesing (1992), marks the vP-boundary, see Fanselow (2001: 408) for examples. Heck & Himmelreich (2017) propose that in such cases, scrambling of an object can target an inner specifier of vP. But once that option is chosen, scrambling below and above the subject can no longer be distinguished configurationally. An obvious alternative is to assume that scrambling among objects involves movement to Spec,ApplP, in which case the two types of scrambling could be captured configurationally after all, viz., via movement to SpecApplP and SpecvP, respectively).

## 6 Conclusion

Despite roughly 40 years of intense research, scrambling still represents a challenge, both empirically and theoretically. While the field has accumulated a wealth of data and arguments for certain theoretical positions, it seems fair to say many crucial aspects still remain controversial/unresolved. This surely concerns the base-generation vs. movement debate, where many of the arguments for movement can be shown to be inconclusive. The theoretical interpretation is often hampered by unclear empirical facts, especially with respect to binding and scope reconstruction. It seems that further progress in this domain will only be possible on the basis of careful empirical/experimental work. The aspect with the possibly widest implications is arguably the movement type underlying scrambling, which can be shown to be neither A- nor A'-movement. Scrambling instantiates a movement type of its own, which thus has the potential to contribute to our understanding why different movement types differ from each other in the way they do. At any rate, German scrambling remains an excitingly complex phenomenon that will continue to present challenges for syntactic theory.

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