Resumption by Buffers: German Relative Clauses

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Abstract

In a local derivational (phase-based) approach to syntax, instances of resumption in German (long-distance) relativization constructions with an empty operator and a complementizer *wo* ('where') must be analyzed in terms of movement. Against this background, these constructions raise three problems for syntactic analysis: (i) a locality (backtracking) problem ('How can the information that a resumptive pronoun occupies the base position be made accessible on the moved item at later stages of the derivation, where it is required?'); (ii) a problem for movement theory ('How can movement in these resumption constructions circumvent an island?'); and (iii) a last resort problem ('Why does movement in these resumption constructions have to cross an island?). I will propose a specific solution to problem (i) in terms of buffers that temporarily store minimal pieces of syntactic information; this approach will then be shown to automatically cover problems (ii) and (iii) as well.

Keywords: resumption, relativization, phase, locality, island

1 Introduction

Phase-based minimalist syntax is an approach to grammar that is both *derivational* and *local*: Syntactic structures are generated derivationally in a bottom-up manner, by alternating operations like Merge, Move, and Agree; and the accessible window of a derivation is quite small throughout – it is standardly assumed to be confined to the minimal phase (as required under the Phase Impenetrability Condition (PIC); see Chomsky (2001)). As a consequence, all long-distance dependencies must be modelled locally. Thus, unbounded wh-movement is assumed to be composed of a series of smaller movement steps to intermediate phase edges, and similar local analyses postulating a decomposition of seemingly non-local syntactic operations into sequences of smaller steps have been given for other non-local phenomena, like long-distance reflexivization, non-local case assignment, and long-distance agreement (see Alexiadou, Kiss & Müller 2012 for an overview).

Under these assumptions, a dilemma arises with constructions where it seems that information from a syntactic domain A must be used in a syntactic domain B even though it should not be accessible in B – either because A is not present yet (the *look-ahead* problem), or because A is too deeply embedded (perhaps, in fact, entirely gone, as a consequence of cyclic spell-out; this can be viewed as a kind of *backtracking* problem). The two problems for local derivational approaches to syntax are schematically depicted in (1).

(1) a. *Look-Ahead*:
$\underbrace{[_{XP}\ldots[_{X'}\ X\ldots}_{A}\ [_{YP}\ldots[_{Y'}\ Y\ldots\ \underbrace{[_{ZP}\ldots[_{Z'}\ Z\ldots[_{WP}\ldots[_{W'}\ W}_{B}\ldots]]]]]]]]$

b. *Backtracking*:
$\underbrace{[_{XP}\ldots[_{X'}\ X\ldots[_{YP}\ldots[_{Y'}\ Y}_{B}\ \ldots[_{ZP}\ldots[_{Z'}\ Z\ \underbrace{\ldots[_{WP}\ldots[_{W'}\ W}_{A}\ldots]]]]]]]]$

In what follows, I will be concerned with a backtracking problem as it arises in German relativization constructions involving resumption across an island, as in (2).

(2) ein Buch $[_{CP}$ Op_1 $[_{C}$ wo] $[_{TP}$ ich einen Mann getroffen habe $[_{CP}$ der *es*$_1$ gelesen hat]]]
a book where I a man$_{acc}$ met have who it read has

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The task for a phase-based analysis of examples like (2) will be to make information from an earlier, more deeply embedded domain A available in the current domain B in a local approach to syntax. More specifically, there must be an operation that transports the relevant piece of information in a successive-cyclic way across syntactic domains. Following Hornstein (2001, 2009), I assume that the only such operation is *movement* (among other things, this implies that Agree cannot be cyclic); thus, I will adopt a movement-based approach to resumption (see Boeckx 2003, Klein 2013). However, it will turn out that postulating movement of some item α alone does not suffice for resumption constructions in German. The reason is that the A-information that is needed in B is not in and of itself located on the moved item (either inherently, as a lexical property, or as a consequence of Agree, via standard assumptions about feature valuation, as with wh-, case, ϕ-, and other features of this type); rather, the A-information that is needed in domain B is *contextual*, i.e., it comes from the syntactic context of the moved item α in A. For concreteness, I will argue that the contextual information that is needed on the moved item α in a construction like (2) specifies whether a copy has been made of α (that is morphologically realized as a resumptive pronoun), and whether α has encountered an island on its way from A to B.

The main claim of the present article will then be that the backtracking problem with resumption in German can be solved if one postulates *syntactic buffers* which temporarily store minimal aspects of the derivational history on a moved item. The locus of this storage is the movement-related feature of the moved item (e.g., [rel] for relative operators), more precisely, its value, which is viewed as a (first-in-first-out) list that constantly changes throughout the derivation but must qualify as legitimate in criterial positions. The concept of buffers is shown to underlie a systematic explanation of otherwise mysterious properties of improper movement and remnant movement in a local derivational approach in Müller (2014); so it is not just a technical means to account for resumption constructions. From a more general point of view, the concept of syntactic buffers emerges as the opposite of the concept of SLASH-feature percolation proposed in Gazdar (1981, 1982); Gazdar et al. (1985): In the latter approach, properties of the moved item are registered on the syntactic context; in contrast, in the approach to be developed below, properties of the syntactic context are registered on the moved item.

There are some general assumptions about movement in a phase-based approach that I will make in this article. They are the following (see Müller 2011): First, all phrases are phases (though nothing substantial would change if one were to adopt a less local approach in which, say, only vP and CP are phases). Second, all syntactic operations are driven by designated features: Structure-building features ([•F•]) trigger internal and external Merge, and probe features ([∗F∗]) trigger Agree. And third, intermediate movement steps are triggered by category-neutral edge features ([•X•]) that can be inserted on active phase heads (where 'activity' will be made precise below) if they have an effect on output; edge features are neither inherent properties of phase heads (as in Chomsky 2008), nor are they "flavoured", i.e., versions of the structure-building features in criterial positions (as proposed by McCloskey 2002 and Abels 2012).

2 Relativization and resumption in German

Varieties of German exhibit resumptive relativization constructions of a type similar to those known from Swiss German and Southern German dialects (see Riemsdijk 1989, Salzmann 2006, 2012), but with somewhat different properties. The first thing to note is that in cases of clause-bound dependencies that are completely transparent for standard movement, this resumption strategy is not available. The examples in (3) illustrate that movement of an empty relative operator to the specifier of a relative clause complementizer *wo* ('where') is possible for accusative objects (cf. (3-a)) and nominative subjects (cf. (3-b)), stricly blocking the resumptive strategy (here involving a pronoun *es* ('it')) in these contexts. In the case of dative object relativization (cf. (3-c)), neither strategy is available in German (in contrast to varieties of Swiss German, where both strategies can be legitimate, and optionality arises.)

(3) a. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich t$_1$/*es$_1$ gelesen habe]
this is a book where I it$_{acc}$ read have

b. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] t$_1$/*es$_1$ mir gefallen hat]
this is a book where it$_{nom}$ me$_{acc}$ pleased has

c. Das ist ein Mann [$_{CP}$ Op$_1$ [$_C$ wo] ich *t$_1$/*ihm$_1$ gedankt habe]
this is a man where I him$_{dat}$ thanked have

Before proceeding, it should be pointed out that the non-resumptive strategies in (3-a) and (3-b) are confined to highly colloquial, substandard varieties of German, and are generally stigmatized. In what follows, I will not take this to be particularly significant from a theoretical point of view: There is an alternative relativization strategy involving an overt relative pronoun, which is clearly preferred by normative grammar (and, accordingly, the only strategy that can be heard or read in the media); cf. (4-abc).[1]

(4) a. Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich t$_1$/*es$_1$ gelesen habe]
this is a book I it$_{acc}$ read have

b. Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] t$_1$/*es$_1$ mir gefallen hat]
this is a book it$_{nom}$ me$_{acc}$ pleased has

c. Das ist ein Mann [$_{CP}$ dem$_1$ [$_C$ Ø] ich t$_1$/*ihm$_1$ gedankt habe]
this is a man I him$_{dat}$ thanked have

Another clause-bound context that is transparent for movement involves postpositions (i.e., postposition stranding). Suppose, following standard reasoning, that a precondition for extraction from PP in German is that a left-peripheral specifier position can be occupied by the moved item (see Riemsdijk 1978, Koster 1987, Grewendorf 1989, Abels 2012, among many others). On this basis, it looks as though the empty operator Op can be merged to the left of a P element like *für* ('for') (see (5-a)), just like R-pronouns like *da* ('there') (see (5-b)), and in contrast to regular pronouns like *ihn* ('him') or *den* ('which') (the latter would also qualify as the regular relative pronoun here; see (5-c)). Resumption with either the R-pronoun or the standard personal pronoun is impossible in this context (see (5-de)).

(5) a. Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht [$_{PP}$ t$_1$ für] gestimmt habe]
this is a proposal where I not for voted have

b. Da$_1$ habe ich nicht [$_{PP}$ t$_1$ für] gestimmt
there have I not for voted

c. *Das ist ein Vorschlag [$_{CP}$ den$_1$ [$_C$ Ø] ich nicht [$_{PP}$ für t$_1$] gestimmt habe]
this is a proposal which I not for voted have

d. *Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht [$_{PP}$ da-für] gestimmt habe]
this is a proposal where I not there for voted have

e. *Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht [$_{PP}$ für ihn$_1$] gestimmt habe]
this is a proposal where I not for him$_{\text{inan}}$ voted have

Interestingly, in this context where the strategy preferred by normative grammar is impossible (cf. (5-c)), it seems that the empty operator movement strategy (cf. (5-a)) is not only possible; it is in fact much less perceived as belonging to substandard (or 'dialectal') varieties than the examples in (3-a) and (3-b), where there is an alternative with an overt relative pronoun, and without a complementizer *wo* (cf. (4-a), (4-b)) – at least, this holds for those speakers of German who permit postposition stranding in the first place, i.e., for

[1]Note that C can in principle also be realized by *wo* in (4-a), which then again relegates the sentences to a stigmatized substandard variety of German. One may speculate that normative prohibition against using *wo* in relative clauses (no matter what the relative operator looks like, i.e., whether it is an overt pronoun like *dem* or an empty operator) also plays a role in accounting for the perceived illformedness of (3-c): On this view, two factors conspire in cases like (3-c): On the one hand, it has been noted that there is a general, independently verifiable recoverability problem with dative arguments in the absence of any morphological cues (see Bayer, Bader & Meng 2001), which presumably also underlies the fact that the resumptive strategy is an option in this transparent context in varieties of Swiss German (as argued by Salzmann 2012); and on the other hand, there is the general prescriptive ban on using *wo*, which does not exist in this form in Swiss German and regional varieties of German (see Grewendorf 1988).

whom (5-b) is unproblematic.[2]

Another context that is transparent for extraction in German involves postposition stranding within object DPs (see Koster 1987 and Grewendorf 1989, among others). Here, the strategy in terms of regular empty operator movement and a complementizer *wo* is available, and resumption is blocked (both with an R-pronoun and a normal personal pronoun); see (6).

(6) a. Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] er [$_{DP}$ ein Buch [$_{PP}$ t$_1$ über]] geschrieben hat]
this is a plan where he$_{nom}$ a book$_{acc}$ about written has

b. ?*Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] er [$_{DP}$ ein Buch [$_{PP}$ da$_1$-r-über]] geschrieben hat]
this is a plan where he$_{nom}$ a book$_{acc}$ there EPENTH about written has

c. *Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] er [$_{DP}$ ein Buch [$_{PP}$ über ihn$_1$]] geschrieben hat]
this is a plan where he$_{nom}$ a book$_{acc}$ about him$_{\text{inan}}$ written has

In contrast, resumption with an R-pronoun improves signficantly in subject contexts, where standard movement is excluded, whereas resumption with a normal personal pronoun continues to be blocked; see (7)).

(7) a. *Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] [$_{DP}$ ein Buch [$_{PP}$ t$_1$ über]] Maria beeindruckt hat]
this is a plan where a book$_{nom}$ about Maria$_{acc}$ impressed has

b. ?Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] [$_{DP}$ ein Buch [$_{PP}$ da$_1$-r-über]] Maria beeindruckt hat]
this is a plan where a book$_{nom}$ there EPENTH about Maria$_{acc}$ impressed has

c. *Das ist ein Plan [$_{CP}$ Op$_1$ [$_C$ wo] [$_{DP}$ ein Buch [$_{PP}$ über ihn$_1$]] Maria beeindruckt hat]
this is a plan where a book$_{nom}$ about him$_{\text{inan}}$ Maria$_{acc}$ impressed has

[2] One might think that the item *wo* in (5-a) is in fact not a complementizer, but a moved wh-pronoun of the same type as the wh-marked R-pronoun in (i-a), which would then be used as a relative pronoun in (5-a) in roughly the same way as the wh-pronoun in (i-b) is used as a relative pronoun.

(i) a. Wo$_1$ hat sie [$_{PP}$ t$_1$ für] gestimmt ?
where has she for voted

b. Das ist ein Buch [$_{CP}$ was$_1$ keiner t$_1$ kaufen wollte]
this is a book what$_{acc}$ no-one$_{nom}$ buy wanted

Such a reanalysis, however, is unlikely to be correct. Like, e.g., the marked wh-relative pronoun *was*, the R-pronoun *wo* cannot bear a plural feature (cf. (ii-a)) and, accordingly, leads to illformedness under a plural interpretation in the absence of an explicit distributor like *alles* ('all'); and it cannot be interpreted as human either in most varieties of German (cf. (ii-c); see Müller 2000 for systematic exceptions in Northern varieties, where such a sentence is indeed well formed). However, in a context like (5-a), these restrictions are lifted (cf. (ii-b) and (ii-d), respectively), which supports the analysis in terms of an empty operator (that is not subject to special number and animacy requirements) and a complementizer (rather than pronoun) status of *wo*.

(ii) a. Hier sind einige Vorschläge. Wo$_1$ hat sie ?*(alles) [$_{PP}$ t$_1$ für] gestimmt ?
here are some proposals where$_{\text{plur}}$ has she all for voted

b. Hier sind einige Vorschläge dabei [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht [$_{PP}$ t$_1$ für] stimmen werde
here are some proposals included where I not for voted will

c. *Wo$_1$ hast du gerade [$_{PP}$ t$_1$ mit] geredet ?
where have you just with spoken

d. Das ist jemand [$_{CP}$ Op$_1$ [$_C$ wo] ich gerade [$_{PP}$ t$_1$ mit] geredet habe]
this is someone where I just with spoken have

Consider next cases of dependencies that are not (strictly) clause-bound. Here, the data are not always crystal-clear, and there is some variation among speakers. Resumption would seem to be completely impossible with restructuring verbs like *versuchen* ('try') as in (8-a), which on many analyses do in fact not involve a biclausal structure (as is indicated here). The resumption strategy improves somewhat with non-restructuring verbs like *ablehnen* ('reject'), especially if the infinitival complement is extraposed; see (8-b). In a dependency crossing a finite CP embedded under a bridge verb, a resumptive pronoun becomes tolerable, see (8-c). Adding negation in the matrix clause (see (8-d)) further improves resumption, and resumption becomes perfect with non-bridge predicates like *know*, as in (8-e).

(8) a. *Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{VP}$ es$_1$ zu kaufen] versucht habe]
this is a book where I it to buy tried have

b. ?*Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich abgelehnt habe [$_{CP}$ es$_1$ zu kaufen]]
this is a book where I refused have it to buy

c. ??Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich gedacht habe [$_{CP}$ dass sie es$_1$ kaufen würde]]
this is a book where I thought have that she it buy would

d. ?Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht gedacht hätte [$_{CP}$ dass sie es$_1$ kaufen würde]]
this is a book where I not thought had that she it buy would

e. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich gewusst habe [$_{CP}$ dass sie es$_1$ kaufen würde]]
this is a book where I known have that she it buy would

The increasing degree of wellformedness of resumption from top to bottom in (8) correlates with a decrease of acceptability of the standard movement option. This is shown for movement of an empty operator in (9).

(9) a. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{VP}$ t$_1$ zu kaufen] versucht habe]
this is a book where I to buy tried have

b. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich abgelehnt habe [$_{CP}$ t$_1$ zu kaufen]]
this is a book where I refused have to buy

c. ??Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich gedacht habe [$_{CP}$ dass sie t$_1$ kaufen würde]]
this is a book where I thought have that she buy would

d. ?*Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich nicht gedacht hätte [$_{CP}$ dass sie t$_1$ kaufen würde]]
this is a book where I not thought had that she buy would

e. *Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich gewusst habe [$_{CP}$ dass sie t$_1$ kaufen würde]]
this is a book where I known have that she buy would

As before, the well-formed examples in (9) belong to substandard or regional varieties and are stigmatized from a normative grammar perspective. Versions of (9-ab) involving an overt relative pronoun like *das* ('that') and an empty complementizer are fully well formed (cf. (10-ab)). In contrast, extraction of an overt relative pronoun from a finite clause is not completely unproblematic. As noted by Bayer & Salzmann (2009), many speakers of German do not permit long-distance relativization here (in contrast to wh-movement or topicalization); see, e.g., (10-c).[3] Movement of *das* becomes even worse with matrix negation and under non-bridge verbs; see (10-de).[4]

(10) a. Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich [$_{VP}$ t$_1$ zu kaufen] versucht habe]
this is a book that I to buy tried have

b. Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich abgelehnt habe [$_{CP}$ t$_1$ zu kaufen]]
this is a book that I refused have to buy

[3] Also see Plank (1983: 11) and Grewendorf (1988: 92) for some preliminary remarks in this direction.

[4] Note that the illformedness of (10-c) is not related to homophony of the relative pronoun and the embedded complementizer; Bayer & Salzmann (2009) give examples where the morphological forms of the two items are distinct.

c. ?*Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich gedacht habe [$_{CP}$ dass sie t_1 kaufen würde]]
this is a book that I thought have that she buy would

d. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich nicht gedacht hätte [$_{CP}$ dass sie t_1 kaufen würde]]
this is a book that I not thought had that she buy would

e. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich gewusst habe [$_{CP}$ dass sie t_1 kaufen würde]]
this is a book that I known have that she buy would

Turning finally to island contexts in which standard movement is always blocked, resumption becomes the only available strategy to express a long-distance dependency. The acceptability of resumption is shown for Complex Noun Phrase Condition (CNPC) islands in (11-a), and for adjunct islands in (11-b); both sentences are completely unmarked.

(11) a. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ einen Mann t_{CP}] getroffen habe [$_{CP}$ der es$_1$
this is a book where I a man$_{acc}$ met have who it
gelesen hat]]
read has

b. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich eingeschlafen bin [$_{CP}$ nachdem ich es$_1$ gelesen
this is a book where I fallen asleep have after I it read
habe]]
have

In contrast, movement of an empty operator without resumption is impossible in these island contexts; see (12-ab).

(12) a. *Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ einen Mann t_{CP}] getroffen habe [$_{CP}$ der t_1
this is a book where I a man$_{acc}$ met have who
gelesen hat]]
read has

b. *Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich eingeschlafen bin [$_{CP}$ nachdem ich t_1 gelesen habe]]
this is a book where I fallen asleep have after I read have

The same goes for movement of an overt relative pronoun; see (13-ab).

(13) a. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich [$_{DP}$ einen Mann t_{CP}] getroffen habe [$_{CP}$ der t_1
this is a book that I a man$_{acc}$ met have who
gelesen hat]]
read has

b. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich eingeschlafen bin [$_{CP}$ nachdem ich t_1 gelesen habe]]
this is a book that I fallen asleep have after I read have

As for dependencies that reach into PPs, recall that if PP is a complement and there are no other islands, resumption is blocked (see (5-a) vs. (5-d), (5-e)), independently of whether the resumptive pronoun is an R-pronoun *da* ('there') or a regular pronoun like *ihn* ('him'). In contrast, if PP is embedded in an island, e.g., a CNPC island, resumption becomes obligatory (see (14-a) vs. (14-b)). Interestingly, it is only the R-pronoun that is completely unproblematic in this context; the sentence with the regular pronoun is much degraded in comparison (see (14-b) vs. (14-c)). This latter fact can arguably be viewed as an empirical argument that resumption does indeed involve movement, an assumption that is forced under a local derivational approach to syntax: However the ban on preposition stranding in German is ultimately derived, it seems clear that we are dealing with a constraint on *movement*.[5]

[5]This is also supported by the fact that extraction from PP is subject to freezing effects in German, on a par with its English counterpart (cf. Postal 1972); see Müller (1998).

(14) a. *Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ jemanden t$_{CP}$] kenne [$_{CP}$ der nicht [$_{PP}$ t$_1$
this is a proposal where I someone$_{acc}$ know who not
für] gestimmt hat]]
for voted has

b. Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ jemanden t$_{CP}$] kenne [$_{CP}$ der nicht [$_{PP}$
this is a proposal where I someone$_{acc}$ know who not
da$_1$-für] gestimmt hat]]
there for voted has

c. ?*Das ist ein Vorschlag [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ jemanden t$_{CP}$] kenne [$_{CP}$ der nicht [$_{PP}$ für
this is a proposal where I someone$_{acc}$ know who not for
ihn$_1$] gestimmt hat]]
him$_{\text{inan}}$ voted has

The realization of a long-distance dependency by resumption is confined to relativization in German; as shown in (15-ab), the construction is not available with wh-movement or topicalization, even though movement without resumption is also not possible in the island contexts present here (a non-bridge verb context for wh-movement, a CNPC context for topicalization).[6]

(15) a. *[$_{CP}$ Was$_1$ hast du gewusst [$_{CP}$ dass sie t$_1$/es$_1$ kaufen würde]
what$_{acc}$ have you known that she it buy would

b. *[$_{CP}$ Solche Bücher$_1$ habe ich [$_{DP}$ einen Mann t$_{CP}$] getroffen [$_{CP}$ der t$_1$/sie$_1$ gelesen hat]]
such books$_{acc}$ have I a man$_{acc}$ met who them read has

And not only that: Resumption in relativization contexts is confined to an empty operator and a complementizer *wo*; in particular, regular overt relative pronouns can never co-occur with resumption; see (16-ab).

(16) a. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich gewusst habe [$_{CP}$ dass sie es$_1$ kaufen würde]
this is a book that I known have that she it buy would

b. *Das ist ein Buch [$_{CP}$ das$_1$ [$_C$ Ø] ich [$_{DP}$ einen Mann t$_{CP}$] getroffen habe [$_{CP}$ der es$_1$
this is a book that I a man$_{acc}$ met have who it
gelesen hat]]
read has

In view of the evidence from (15) and (16), one might be tempted to speculate that *wo* in resumptive constructions is not actually a complementizer accompanied by an empty operator, but used here in its independently available function as a locative relative pronoun (see footnote 2 above for arguments against a non-complementizer status of *wo* in contexts without resumption). However, this cannot be right: Ungrammaticality results if there is no argument slot corresponding to the head noun in all the relevant constructions in (7), (8), (11), and (14) where *wo* co-occurs with a resumptive pronoun. Thus, compare the legitimate locative relative pronoun use of *wo* modifying a head noun like *Ort* ('place') in (17-a) with the ill-formed case in (17-b), where a locative interpretation is excluded and there is no argument variable (pronoun or other) that the empty relative operator Op$_1$ could bind ((17-b) = (11-a) without the embedded CP providing the required argument slot). Thus, it can be concluded that *wo* in (7), (8), (11), and (14) is a true complementizer of relative clauses accompanied by an empty operator.

(17) a. Das ist ein Ort [$_{CP}$ wo ich einen Mann getroffen habe]
this is a place where I a man met have

[6] In line with this, the experimental (magnitude estimation-based) study carried out by Alexopoulou & Keller (2003), which only considers wh-questions in German, shows that resumption is never preferred to a resumption-less strategy in German wh-clauses; i.e., resumption does not help to avoid islands in this context.

b. *Das ist ein Buch [$_{CP}$ wo ich einen Mann getroffen habe]
this is a book where I a man met have

To sum up so far: There is strong evidence that resumption in German relative constructions with an empty operator and a complementizer *wo* is a *last resort* operation. With some (minimal) idealization of the empirical evidence, and assuming that all finite clauses are barriers for resumption-less relative movement in German (as opposed to other movement types like wh-movement and topicalization), we can state that resumption not only *can* circumvent island effects in German (as it can in most other languages where the phenomenon shows up), but actually *must* cross an island to be legitimate in this language.

At this point, a remark on the status of the phenomenon in (7), (8), (11), and (14) is in order. It has become customary to distinguish between two types of resumption: those where the strategy is fully *grammaticalized* (and typically able to circumvent islands) on the one hand, and those where the strategy is *intrusive* (and purely a last resort operation to save constructions in contexts where there is no legitimate way out) on the other; see Sells (1984), Boeckx (2003), and McCloskey (2006). In cases of intrusive resumption, the operation does not seem to belong to the grammar as such, but qualifies as what is essentially a metagrammatical device. A standard case of intrusive resumption shows up under the (optimality-theoretic) analysis that Pesetsky (1997, 1998) develops for the sentence pair in (18) in English: Assuming a high-ranked (non-local) constraint according to which two members of a movement chain must not be separated by an island (such as the wh-island in (18)), the only way to realize the input in this context is by partial spell-out of the trace (which is assumed to have the status of a copy).

(18) a. *[$_{NP}$ Which picture of John]$_1$ were you wondering [$_{CP}$ whether t_1 was going to win a prize at the exposition] ?
b. #[$_{NP}$ Which picture of John]$_1$ were you wondering [$_{CP}$ whether it$_1$ was going to win a prize at the exposition] ?

As indicated by #, the use of a resumptive pronoun in (18-b) does not really represent a grammaticalized way of realizing the long-distance dependency. It is worth pointing out that the German relativization by resumption construction in (7), (8), (11), and (14), although confined to last resort contexts, is decidedly not intrusive but rather fully grammaticalized. There are various pieces of evidence to support such a conclusion. First, the examples are generally perceived as completely natural and unmarked, in all varieties of German. In particular, they neither convey the impression of substandard language use in the way that resumption-less examples with *wo* complementizers like (3-a) and (3-b) (but, as noted, not (5-a)) do, nor do they look like the result of a meta-grammatical perfomance-based mechanism designed to say what one wants to say in the absence of the grammatical means to do so. Second, as shown above, there is a clear difference between the well-formed resumption construction in contexts with an empty operator and a complementizer *wo* and the constructions involving wh-movement, topicalization, and overt relative operators in (15) and (16), which would be completely unexpected if they all involved the same phenomenon (viz., intrusive resumption).[7] Finally, Sells (1984) develops some tests to distinguish grammaticalized from intrusive resumption (also see McCloskey 2006). A crucial difference arises in contexts with quantificational antecedents: A grammaticalized resumptive pronoun can have all kinds of quantificational antecedents (including *every* and *most*), but an intrusive resumptive pronoun cannot. As shown by the examples in (19), resumptive pronouns in German relativization constructions with an empty operator can take quantificational antecedents without problems.

(19) a. Jedes Buch [$_{CP}$ OP_1 [$_C$ wo] man einschläft [$_{CP}$ nachdem man es_1 gelesen hat]] ist nicht gut
every books where one falls asleep after one it read has is not good

[7] In fact, constructions like those in (15) and (16), even though there can be little doubt about their status as ungrammatical, can sometimes be heard in actual discourses, and may therefore be assumed to be instantiations of truly intrusive resumption of the type that Sells (1984) has in mind for English-type languages.

b. Die meisten Bücher [$_{CP}$ OP$_1$ [$_C$ wo] man niemanden finden kann [$_{CP}$ der sie$_1$ gelesen
the most books where one no-one find can who they read
hat]] sind auch nicht gut
has are also not good

Thus, we end up with the conclusion that German has an island-based last-resort operation of resumption that is fully grammaticalized.[8] In the next section, I develop a local derivational (more specifically, phase-based) analysis of the phenomenon.

3 A local derivational approach to resumptive movement

3.1 Resumption as movement

First, I would like to contend that in a local derivational (phase-based) approach to, it is not possible to adopt a base-generation approach to resumption, as it is otherwise standardly assumed.[9] There is simply no way how any syntactic relation could be posited between a base-generated resumptive pronoun and a base-generated displaced item that is separated from it by an arbitrarily large number of phases.[10] Consequently, if cyclic Agree is excluded, resumption must be derived by movement, and the differences between "standard" movement and resumptive movement with respect to locality constraints (as well as possibly other factors, like weak crossover) must be explained in some different way (see Boeckx 2003 and Klein 2013, and to some extent Koopman 1984, Engdahl 1985, and Aoun, Choueiri & Hornstein 2001).[11]

It is worth emphasizing that exactly the same consequence holds for other local approaches to syntax, even if they are declarative rather than derivational in nature.[12]

3.2 Buffers for resumption

Given this state of affairs, and given the generalizations about island violation in the preceding sections, there are three questions that need to be addressed: First, how can resumptive movement in German circumvent islands? Second, why does resumptive movement in German *have to* cross an island (as an instance of a *last resort* operation, see Shlonsky 1992, Pesetsky 1998)? And third, how can the locality (i.e., backtracking) problem be solved that arises under a local derivational approach? This last problem consists in

[8] This, as such, is not unusual given, e.g., Shlonsky's (1992) analysis of the Highest Subject Restriction (i.e., the ban on resumptive pronouns in subject positions that are close to the eventual landing site) in Hebrew and other languages (where resumption is fully grammaticalized) as an instance of last-resort. Here and in what follows, I will remain agnostic as to how the Highest Subject Restriction can be derived; see Klein (2013) for a recent proposal in terms of orders of elementary operations.

[9] Note that this is so independently of whether there are strong empirical arguments against a base-generation approach; in this context, see, e.g., the arguments for movement based on reconstruction advanced by Salzmann (2006) for (Swiss) German.

[10] In the same way, it is not possible to envisage an "A-bar bound *pro*" strategy for modelling long-distance dependencies, as it has been suggested by Cinque (1990) for cases of displacement that seem to selectively violate certain constraints on movement.

[11] Boeckx (2003) assumes that resumption arises as a result of stranding: The resumptive pronoun is a D category that stays in situ, and the operator that has been merged as a complement of D then undergoes movement; also see Grewendorf (2002) for such an approach to resumptive pronouns occurring with left dislocation in German. This implies that movement dependencies with and without resumption have a different source. In contrast, Klein (2013) proposes that there is a single source for both derivations, viz., a ϕP embedding a DP throughout. On this view, whether resumptive movement or standard movement takes place depends on the order of elementary operations: If the next higher phase head (e.g., v) carries out Agree with the ϕP first, the latter becomes transparent for extraction (as suggested by Rackowski & Richards 2005 as a general means of rendering phases transparent for extraction), and DP undergoes (intermediate) movement to the edge of the phase, stranding ϕ, which is realized as a resumptive pronoun. If, on the other hand, the next higher phase head (e.g., v) triggers Move (internal Merge) first, ϕP still intervenes, and so DP cannot be attracted to an intermediate position alone but rather has to pied-pipe the ϕp; this instantiates the strategy of movement without a resumptive pronoun. As Klein (2013) shows, this approach in terms of the order of elementary operations makes it possible to straightforwardly derive the Highest Subject Restriction.

[12] Thus, resumption has been modelled in terms of the same kind of mechanism underlying regular movement (viz., SLASH feature percolation) in the GPSG approaches developed in Maling & Zaenen (1982) and Sells (1984) (although the latter eventually abandons this analysis in favour of a purely semantic approach), and in the HPSG analyses developed in Vaillette (2002) and Assmann et al. (2010).

the observation that, at the point where it encounters an island, a moved item (an empty operator Op_1 in the German sentences above) must "know" whether there is a resumptive pronoun in the base position or not.[13]

I would like to suggest that a buffer-based approach makes a unified account of all three problems possible. More specifically, solving the problem of passing on information from the bottom of the dependency by postulating an appropriate symbol on the moved item's buffer in cases of resumptive movement will be shown to simultaneously address the other two problems (why an island can be voided, and why it has to be voided).

To begin with, suppose that resumption involves a copy mechanism applying to DP. This implies that regular, non-resumptive movement does *not* involve copying. In fact, I will go even further here and assume that movement normally does not leave anything behind. More specifically, I contend that a strictly local derivational approach forces the conclusion that with regular, non-resumptive movement, there are no traces (no copies either, and also no occurrences in a multidominance approach), at least not as objects that syntactic constraints could refer to. Attributing such a role to traces (copies, occurrences) invariably presupposes a non-local approach: In a non-local approach, a constraint on traces (copies, occurrences) may lead to different results than postulating the respective constraint on the movement operation as such (because changes may have affected the context of the position from which movement takes place; in fact, this is how traces are motivated in work like Fiengo 1977, Lasnik & Saito 1992); in a local approach adopting (something like) the PIC, such contextual differences cannot arise. This leaves, as the sole possible remaining motivation for postulating traces (copies, occurrences), principles of semantic interpretation, an issue that I have nothing to say about (see, e.g., Jacobson 1999, Unger 2010 for approaches to semantic interpretation that make it possible to dispense with traces).[14]

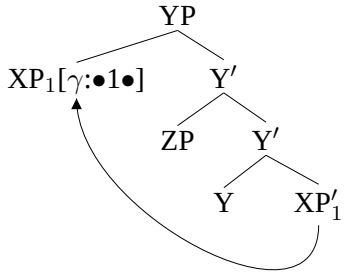
In a language like German, where only null operators participate in resumptive movement, it can be postulated that this first operation of generating a copy for resumptive movement is simply excluded for wh-phrases, topics, overt relative operators, etc. The situation is somewhat different in other languages, where other movement types can give rise to resumption, and resumptive movement can affect overt items. Next, I assume, following Pesetsky (1998), Toman (1998), McCloskey (2006), and many others, that independent principles ensure that the copy is spelled out as a pronominal element, i.e., as the minimal well-formed realization of a DP. Third, and most importantly, resumption *does not come for free*. The creation of a copy in the base position (as part of the movement operation) is registered on the moved item, more specifically, on the value of a movement-related feature (like [wh], [top] or [rel]) on the moved item that acts as a buffer: A symbol like $\bullet 1 \bullet$ indicates that there is a copy of a category with index 1 in the tree that should be merged with the moved item again; in other words, on the moved item the information is present that a copy has been split off, and is now missing. Thus, a feature [rel] on an empty relative operator undergoing movement will have as its value $\bullet n \bullet$ if a copy with index n has been generated, and an empty list if no copy has been generated; movement-related features thus do not have simply binary values like $\pm$ anymore.[15] The generation of a copy in resumptive movement constructions is shown in (20) (where γ is a movement-related feature like [rel]); the copy (XP'_1) remains in the base position, and the original item (XP_1) undergoes an intermediate movement step to the phase edge, because of the PIC (recall that I have assumed that all phrases are phases).

[13] See Lavine (2003) for an early formulation of this kind of problem in phase-based syntax.

[14] All that said, I continue to enrich some examples with traces, for expository purposes.

[15] This technically addresses the "deep mystery" raised by the existence of resumptive movement that is mentioned in McCloskey (2006: 113): If resumption is available (and arguably preferable from a functional point of view because it can show up in many contexts where pure movement is blocked *and* because it would seem to simplify parsing efforts), why is non-resumptive movement possible in the first place? In the present approach, the answer is that resumption involves an additional, hence costly, operation, viz., the generation of a copy; languages, by assumption, would ideally want to avoid that, and consequently register this on the moved item.

(20) *Initial steps of resumptive movement*

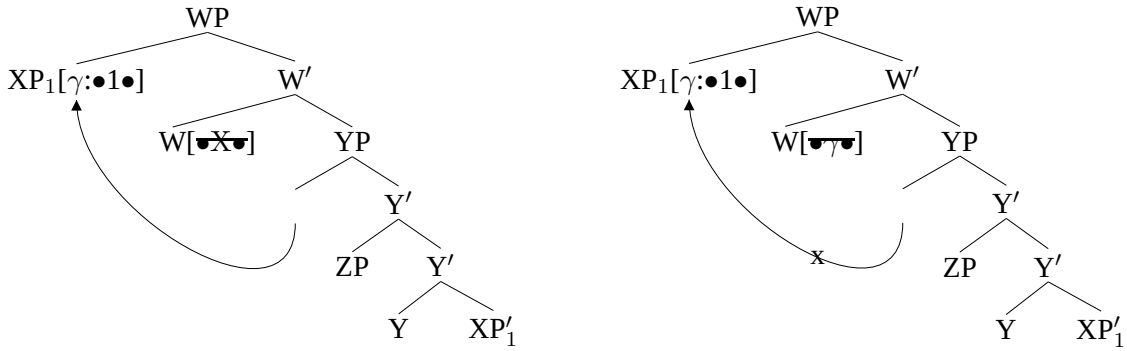


Application of the copy operation (to items where it is permitted, like empty operators in German) is optional throughout (recall, e.g., that an empty operator is available in transparent non-resumptive contexts in German; cf. examples like (3-a), (3-b) (both restricted to substandard varieties), (5-a), and (6-a)). However, when it applies, as in (20), its application is registered on the value of the movement-related feature of the moved item. This means that after the first movement step, resumptive movement and standard, non-resumptive movement can be distinguished in a local way in the derivation: Moved items that are accompanied by a resumptive pronoun in the base position are singled out by a •*n*• symbol on their buffer, where *n* is the index shared by the resumptive pronoun and the moved item. Resumptive movement of an item with a symbol •*n*• on its buffer must be unproblematic as such. However, suppose that a symbol •*n*• on the value of a movement-related feature of some moved item implies a *temporary defectivity* that a derivation can live with for a while, but that must be remedied before the moved item reaches a criterial position (i.e., a position in which an intrinsic structure-building feature of some lexical head it satisfied, rather than an all-purpose edge feature). For present purposes, this requirement can be formulated as the Buffer Filter in (21).[16]

(21) *Buffer Filter*:
A movement-related feature (like [rel]) must have an empty list as its value in a criterial position.

Consequently, a symbol indicating the early generation of a copy (i.e., resumption) must be removed from an item before it reaches a criterial position (a specifier of a $C_{[\bullet \mathrm{rel} \bullet]}$, in the case at hand). (22-a) shows a legitimate case of intermediate resumptive movement where the Buffer Filter is satisfied vacuously because the moved item XP_1 is not in a criterial position yet; (22-b) shows how criterial resumptive movement leads to illformedness; here the moved item XP_1 is attracted by a head intrinsically requiring XP_1 to become its specifier. (~~[•X•]~~, ~~[•γ•]~~ stand for structure-building features – edge features and inherent features of a head, respectively – that have been discharged and deleted.)

(22) a. *Intermediate steps of resumptive movement* b. *Criterial steps of resumptive movement*



Thus, the locality (backtracking) problem with resumption is solved: The information that a resumptive

[16]This is a simplification; see Müller (2014) for a more comprehensive approach that also covers improper movement and remnant movement restrictions, and that systematically distinguishes between well-formed and ill-formed symbol sequences on buffers of moved items; on that view, a feature value containing a symbol like •*n*• will invariably belong in the latter class.

pronoun has been split off earlier in the derivation is accessible at later stages because it has been placed on the buffer associated with the moved item.

3.3 Circumventing islands by resumption

Next, the task is to show how the presence of such a symbol can make it possible to circumvent what is otherwise an island for movement. Here, the worst case scenario would be that one has to stipulate that a moved item with a symbol •*n*• on the list that acts as the value of its movement-related feature can cross an island whereas a moved item without such a symbol cannot.[17] Still, depending on the properties of the theory of islands that is assumed as background, simpler approaches may be available.

I would like to suggest that given the present assumptions about resumption, island circumvention follows without further ado under the approach to locality constraints on movement developed in Müller (2011). I briefly outline this approach in the next subsection, and return to resumption after that.

3.3.1 An approach to islands

In Müller (2011), it is argued that island effects can be derived from the PIC: Last-merged specifiers and adjuncts (and, in some cases, complements) are islands because their entering the phase is the *final* operation taking place in a phase that is triggered by the (structure-building or probe) features of the phase head. After a phase head has discharged its final (structure-building or probe) feature, it becomes inactive. This has a potentially fatal consequence fo the legitimacy of movement given that edge features required to effect intermediate movement steps to phase edges cannot be assigned anymore if the phase head is inactive: It follows that no edge feature can be provided for moved items in last-merged XPs of a phase head, and subsequent extraction will have to violate the PIC.

More specifically, the approach works as follows. Recall that all phrases are phases; that all operations are driven by features (structure-building or probe features); and that intermediate movement steps require edge features which can be inserted on phase heads only if they have an effect on outcome and the phase head is still active. This latter requirement can be formulated as the Edge Feature Condition in (23).

(23) *Edge Feature Condition*:
An edge feature [•X•] can be assigned to a head π of a phase only if (a) π is active and (b) this has an effect on outcome.

Activity in the sense of (23) is defined as in (24).

(24) *Activity of a phase head*:
A phase head is active iff it has not yet discharged all its structure-building or probe features.

Furthermore, the PIC (cf. Chomsky 2001) presupposes a non-recursive definition of edge (such that the specifier of a specifier of a phase head is not accessible from outside the phase); see (25).

(25) *Phase Impenetrability Condition* (PIC):
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations.

Finally, one additional assumption that is required is that the structure-building features that a head is inherently equipped with (i.e., subcategorization features and features triggering movement operations) are *ordered*; this brings about linking (i.e., correlating the lexically determined argument structure with the hierarchical order of arguments in syntax). Thus, inherent structure-building features of lexical items come in

[17] However, as such, such a step would arguably not be radically different in nature from what is standardly assumed, viz., that resumptive pronouns (and, possibly, *pro*s in some cases, see footnote 10) can find an antecedent outside an opaque domain whereas traces (or copies that are not phonologically realized) cannot.

stacks (first-in/last-out lists). Edge Features assigned in accordance with (23) always end up on top of an existing stack, and are discharged before the structure-building feature below is. Consequently, the lowest structure-building feature on a given stack will introduce an XP in the syntax for which an edge feature (normally) cannot be provided anymore.

Let us look at the consequences of this set of assumptions. Three cases need to be taken into account: (i) last-merged specifiers (including, by assumption, adjuncts, and hence also relative CPs); (ii) non-last-merged specifiers and complements; and (iii) last-merged complements (where complements are defined as sisters of lexical items and specifiers are defined as sisters of complex items).

Consider last-merged specifiers first. The relevant changes on the stack of structure-building features of the phase head are shown in (26). Here, [•β•] is the last structure-building feature associated with the phase head π. After discharging this feature and merging with the XP (β) that becomes its specifier, π does not have any structure-building feature left (on the question of probe features, see below). Therefore, π is inactive at this point, and an edge feature [•X•] cannot be generated, given the Edge Feature Condition. However, if an edge feature cannot be inserted on a phase head π, an intermediate movement step of some category α in the last-merged specifier XP (β) to Specπ is blocked, and a PIC violation will arise once the derivation moves beyond the phase headed by π and tries to extract α (given a non-recursive concept of phase edge).

(26) *Last-merged specifiers as islands*:

	π: [•β•]
→	π: —
→	π: [•X•]

$\rightsquigarrow$ violates (23)

This derives the illformedness of extraction from subject DPs (and other last-merged specifiers), as shown for wh-movement from in-situ subjects in German in (27).

(27) a. *Was$_1$ haben denn [$_{\text{DP}_3}$ t$_1$ für Bücher] [$_{\text{DP}_2}$ den Fritz] beeindruckt ?
what have PRT for books$_{nom}$ the Fritz$_{acc}$ impressed

b. *[$_{\text{PP}_1}$ Über wen] hat wohl [$_{\text{DP}_3}$ ein Buch t$_1$] [$_{\text{DP}_2}$ den Fritz] beeindruckt ?
about whom has PRT a book$_{nom}$ the Fritz$_{acc}$ impressed

Turning to non-last-merged specifiers and complements next, the situation looks as in (28). Here, the phase head still has two subcategorization features on its stack of structure-building features. The feature at the top, viz., [•δ•], is discharged first. (If the XP merged in virtue of [•δ•] is the first item merged with the phase head, it qualifies as a complement, and if there has been another Merge operation triggered by a previous subcategorization feature, XP is a specifier; but the analysis does not distinguish these two cases.) Since, after discharge of [•δ•], there is still another structure-building feature left on the phase head, it is still active at this point, and an edge feature can be generated that attracts an item out of the non-last-merged complement or specifier, thereby satisfying the PIC on the next cycle.

(28) *Non-last-merged complements as non-islands*:

	π: [•δ•] $\succ$ [•β•]
→	π: [•β•]
→	π: [•X•] $\succ$ [•β•]
→	π: [•β•]
→	π: —

$\rightsquigarrow$ violates nothing

An interesting consequence is that this approach actually predicts a transparency for extraction for those subjects where the phase head (v) has yet another structure-building feature left after merging the subject. This situation obtains with cases of scrambling to an outer specifier of v in languages like German or Czech; and indeed, subjects turn out to lose island status if there is extremely local scrambling to a position in

front of it. This *melting effect* induced by local movement to an outer specifier is illustrated by the German examples in (29-a) vs. (29-b).

(29) a. *Was$_1$ haben [$_{DP}$ t$_1$ für Bücher] [$_{DP_2}$ den Fritz] beeindruckt ?
what have for books$_{nom}$ the Fritz$_{acc}$ impressed
b. Was$_1$ haben [$_{DP_2}$ den Fritz] [$_{DP}$ t$_1$ für Bücher] t$_2$ beeindruckt ?
what have the Fritz$_{acc}$ for books$_{nom}$ impressed

Finally, as for last-merged complements, one might at first sight expect them to be islands in the same way that last-merged specifiers are: In both cases, it looks as though the phase head has become inactive after the Merge operation. This is shown in (30).

(30) *Last-merged complements as islands*?

$$\rightarrow \boxed{\begin{array}{l}\pi\text{: } [\bullet\beta\bullet] \\ \pi\text{: } — \\ \pi\text{: } [\bullet \mathrm{X} \bullet]\end{array}} \qquad \rightsquigarrow \text{violates (23)}$$

However, it is argued in Müller (2011) that the island status of a last-merged complement can be voided by a probe feature on the phase head (that shows up there on a separate stack) in a way that the island status of a last-merged specifier can never be. (31) shows how a probe feature ([$*$F$*$]) can keep a phase head that has discharged all its structure-building features active, and thereby permit extraction from a last-merged complement.

(31) *Last-merged complements as non-islands*:

$$\rightarrow \boxed{\begin{array}{l}\pi\text{: } [\bullet\beta\bullet] \\ \quad\ [*\mathrm{F}*] \\ \pi\text{: } [*\mathrm{F}*] \\ \pi\text{: } [\bullet \mathrm{X} \bullet] \\ \quad\ [*\mathrm{F}*]\end{array}} \qquad \rightsquigarrow \text{violates nothing}$$

Such a way out is available for complements but not for specifiers because of the interaction of two requirements: First, discharge of a probe feature via Agree requires c-command (so it cannot help a last-merged specifier directly); and second, strict cyclicity precludes carrying out an Agree operation with a complement after a specifier has been merged. As a consequence, extraction from a last-merged specifier is still blocked throughout, and extraction from a last-merged complement can only take place when there is an Agree relation between the phase head and the complement. Evidence for this latter prediction comes from the observation that extraction from a complement CP is typically only possible with bridge verbs, and that extraction from an object DP also depends on the choice of embedding verb.

Let me now show how the assumption that resumption leaves a symbol $\bullet n\bullet$ on the movement-related buffer of the moved item accounts for the absence of island effects against the background of this approach.

3.3.2 Münchausen movement

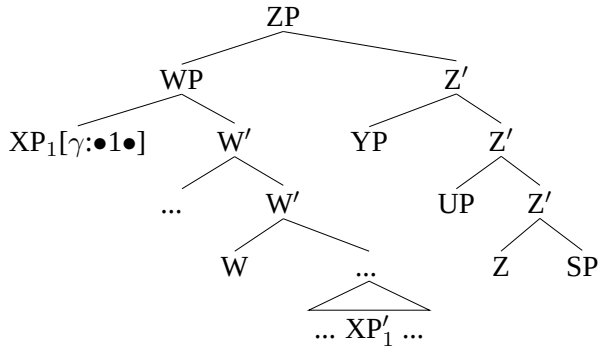
At this point, the analysis is straightforward. With resumptive movement, there is simply no need for an edge feature when an island (i.e., simplifying a bit, a last-merged item) is encountered: A moved XP$_1$ bears a symbol $\bullet 1\bullet$, and thus *brings its own designated edge feature* that may transport it (but no other category) to the specifier of an otherwise inert, non-active phase, thereby making the crossing of what would otherwise be an island possible. The symbol $\bullet 1\bullet$ is discharged as a result of this operation. This is an instance of what has been called *Münchhausen* movement.[18] (32) shows how an XP$_1$ that undergoes resumptive movement

[18]Baron Münchhausen escapes from a swamp (where he is trapped on the back of his horse) by pulling himself up by his hair. The use of the name 'Münchhausen' in syntactic theory for operations that resemble such an escape from a swamp arguably goes

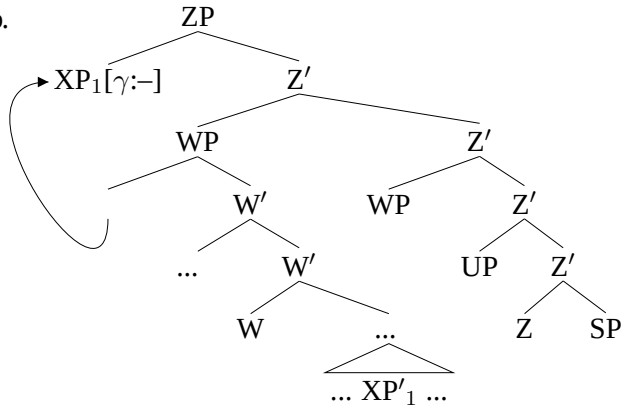
(and hence, has the symbol •1• as part of the value of its movement-related feature γ) can extract from what would normally be a barrier (a last-merged specifier WP, in the case at hand) to the phase edge of the next-higher category ZP (so as to avoid a PIC violation on the ensuing cycle, outside of ZP) even though Z has already been rendered inactive at the point where movement of XP_1 must take place, and therefore cannot be assigned an edge feature attracting XP_1 anymore: •1• on XP_1 functions as an instruction to merge a category with index 1 anew.

(32) *Circumvention of island effects with resumptive movement*

a.



b.



Suppose that all the well-formed examples involving resumption in German discussed above involve islands can be reduced to inactive phase heads (cf. relativization in subject island contexts in (7-b), relativization in what otherwise acts as a bridge environment in (8-c), relativization in the presence of matrix negation in (8-d), relativization in non-bridge contexts in (8-e), relativization from a CNPC island in (11-a), (14-b) and (19-b), and relativization from an adjunct island in (11-b) and (19-a)). Then it follows that resumptive movement is possible here whereas non-resumptive movement is not. And indeed, as argued in Müller (2011), in all these contexts there is a phase head that is inactive at the stage of the derivation where the phrase containing the moved item (in its left edge) is merged with it, with one proviso: To derive the island status of CP complements embedded under bridge verbs for the movement type relativization (see (8-c), (9-c), and (10-c)) – but not, say, for topicalization or wh-movement – by invoking a ban on edge feature insertion (due to an inactive phase head) and the PIC, it seems that is has to be assumed that there can be no probe feature for the last-merged CP in just this context that would keep the matrix V phase head active and accessible. At least from a purely technical point of view, this does not pose a problem in the approach developed in Müller (2011): It is possible to postulate an incompatibility of a probe feature on V (required for edge feature generation for an item contained in a last-merged CP complement) and a moved item that needs to undergo an intermediate step in the course of relativization.[19]

back to Sternefeld (1991); also see Fanselow (2003) on head movement by reprojection.

[19]The reason is that the latter information is locally available at this point. However, the technical viability of such an account of course still leaves open the more fundamental question *why* relativization behaves differently from wh-movement and topicalization

This analysis has two immediate consequences, both of which turn out to be confirmed by the evidence from resumption in German relative clauses. First, •*n*• can only be used to circumvent *one* island, not multiple islands. And second, •*n*• needs to find an island in order to be deleted from the buffer, as required by the Buffer Filter. I address these two consequences in the next two subsections.

3.3.3 Multiple islands

Given that, like regular structure-building features, •*n*• on a buffer of a moved item is discharged once it has brought about a structure-building (Münchhausen) operation, the prediction arises that from this point onwards, an item undergoing resumptive movement is actually not distinguishable anymore from other kinds of moved items. Consequently, crossing of more than one island by resumptive movement should result in ungrammaticality. Perhaps somewhat surprisingly, this prediction seems to be confirmed for German. Consider the following examples. In (33-a), there is resumptive movement across two islands: First, a CP island is crossed (part of a CNPC context), and second, a subject DP island is crossed. This produces ungrammaticality; there is a striking contrast between (33-a) (with resumptive movement from a subject DP) and (33-b) (= (11-a), with resumptive movement from an object DP).[20]

(33) a. *Das ist ein Buch [$_{CP}$ OP$_1$ [$_C$ wo] [$_{DP}$ ein Mann t$_{CP}$] die Maria getroffen hat [$_{CP}$ der
this is a book where a man$_{nom}$ the Maria$_{acc}$ met has who
es$_1$ gelesen hat]]
it read has

b. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich [$_{DP}$ einen Mann t$_{CP}$] getroffen habe [$_{CP}$ der es$_1$
this is a book where I a man$_{acc}$ met have who it
gelesen hat]]
read has

The same goes for cases of resumptive movement combining first an adjunct island and then a CNPC island, as in (34-a); again, there is a (subtle, but clear) contrast with bare resumption across an adjunct island, as in (34-b) (= (11-b)).

(34) a. ?*Das ist ein Buch [$_{CP}$ OP$_1$ [$_C$ wo] ich [$_{DP}$ einen Mann t$_{CP}$] getroffen habe [$_{CP}$ der
this is a book where I a man$_{acc}$ met have who
eingeschlafen ist [$_{CP}$ nachdem er es$_1$ gelesen hat]]
fallen asleep has after he it read has

b. Das ist ein Buch [$_{CP}$ Op$_1$ [$_C$ wo] ich eingeschlafen bin [$_{CP}$ nachdem ich es$_1$ gelesen
this is a book where I fallen asleep have after I it read
habe]]
have

Still, it might be that there are instances of resumptive movement in the world's language that do not exhibit this restrictive pattern, but actually permit multiple circumvention of islands.[21] To accomodate such conflicting pieces of empirical evidence, it would suffice to postulate that the symbol •*n*• on a buffer of a moved item can also be treated differently from regular structure-building features in languages (perhaps as a marked option), such that it does not necessarily disappear after effecting an intermediate movement step.

in this respect.

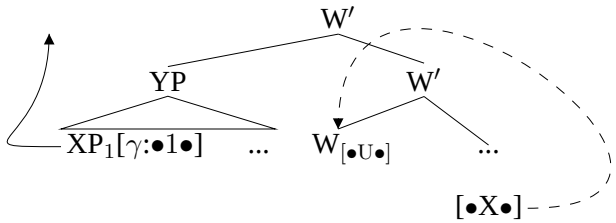
[20] This account of (33-a) presupposes that extraction of the relative operator takes place before CP extraposition, thereby producing a counter-feeding interaction of operations (i.e., extraposition would feed resumptive movement by making it possible to circumvent the subject DP phrase but comes too late to have this effect).

[21] Relevant examples that would clearly show this are hard to find in the existing literature, and judgements will invariably be complicated, given the obvious increase in parsing efforts. Still, Polish might be a case in point; see Müller (2014).

3.3.4 Required islands

So far, we have seen that, in the current system, a natural way of expressing the fact that a copy of a moved item with index *n* has been generated is to assume that this is registered by a symbol •*n*• on the moved item's buffer, and that this symbol can be used to bring about an intermediate movement step of the moved item in cases where no edge feature is available (i.e., in island contexts, given that these are reducible to the PIC via an absence of edge features). However, it is clear that such a symbol is not quite a proper edge feature, even if it can fulfill the latter's tasks as a last resort. Thus, a natural conclusion would seem to be that a symbol •*n*• on a moved item cannot normally be used to bring about intermediate movement, in contexts where an edge feature would also be available; it provides a last resort when all else fails. This means that in a situation like the one depicted in (35), where XP_1 in the specifier of Y needs to undergo movement to a specifier of the next phase head W (which is active, as signalled by [•U•]), the derivation can only proceed by assigning an edge feature [•X•], not by discharging the special symbol •1• recording the presence of a resumptive pronoun in XP's base position.

(35)



As a matter of fact, a preference for category-neutral edge features over category-specific (index-sensitive) structure-building symbols on buffers of moved items follows automatically if the Edge Feature Condition in (23) is minimally strengthened in such a way that edge feature generation is viewed as obligatory rather than optional (in contexts where the phase head is still active, and where there is an item that needs to be moved to the next higher phase head, i.e., where this "has an effect on outcome"); see (36).

(36) *Edge Feature Condition* (revised):
An edge feature [•X•] is assigned to a head π of a phase iff (a) π is active and (b) this has an effect on outcome.

(36) implies that an edge feature is generated when it can be generated, and given that an unchecked edge feature would lead to a crash of the derivation in the same way that other structure-building features do, it must be discharged instantaneously. A symbol registering the creation of a resumptive pronoun on the buffer of a moved item, on the other hand, does not immediately lead to a crash of the derivation; it can be tolerated by the derivation in intermediate movement steps. However, the presence of such a symbol •*n*• on a moved item will lead to a violation of the Buffer Filter if it is not discharged before a criterial position is reached. This, then, derives the last resort nature of resumption in German: A symbol •*n*• on a buffer must be discharged before a criterial position is reached, and the only way to delete it is to use it in a context where a regular edge feature cannot be generated – i.e., in an island context.

Still, resumptive movement is not always a last resort phenomenon. The situation that resumption can circumvent islands but does not always have to do so is familiar from a variety of languages, including Hebrew (Shlonsky 1992), Arabic (Aoun et al. 2001), and Irish (McCloskey 2002), among others (see Boeckx 2003, McCloskey 2006, Klein 2013 for overviews). For languages where resumption is possible in non-island contexts, it can be assumed that the feature can be deleted on buffers if a Buffer Filter violation would otherwise be unavoidable.[22] Taken together, the space for cross-linguistic variation in the realm of symbols registering resumption on buffers then comprises the option of deleting or maintaining the symbol after it has effected an intermediate movement step, and the option of maintaining or deleting the symbol in cases where it has not effected an intermediate step, with the latter choices arguably emerging as the more marked

[22] This symbol would thus behave similarly to what is assumed for probe features in general in Preminger (2011).

ones (from a conceptual point of view at least, if not based on the actual distribution of the patterns among the world's languages). Since the variation would seem to be empirically well established, it is not clear whether further restrictions could – or should – be established; at any rate, the current approach locates the variation in a low-level domain (manipulation of symbols on syntactic buffers), and not in deeply embedded parameters that yield several further consequences in potentially unrelated domains.

Needless to say, the present approach raises many further questions (e.g., concerning wh-islands, which give rise to resumption in German relativization constructions but are not derived from the PIC via edge feature unavailability in Müller 2011), and I have made no attempt here to compare the present analysis with other movement-based approaches to resumption that are designed to account for island violability (see Boeckx 2003, Klein 2013). However, for reasons of space I will leave it at that.[23]

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[23] For a discussion of these issues, see Müller (2014: ch. 4), which contains a more comprehensive version of the analysis given here that also addresses some of the substantial cross-linguistic variation by integrating evidence from Slavic.

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