

From the Adjunction Theory to the Head Theory of Particles

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1. Introduction

Particles, - focus particle (FP) as well as discourse particles (DiP) (alias modal particles) - are traditionally and also in much formal linguistic work analyzed as optional elements that are adjoined to an XP in the style of adverbial adjunction. In what follows, I will challenge this analysis by taking a close look at German as well as more briefly at modern Indo-Aryan as an example of more strictly head-final languages. The result of my investigation will be that particles have head status, more precisely the status of functional heads. It will be shown that under this assumption many of the key properties of particles fall into place, and that the adverb theory is unlikely to derive these properties in an explanatory way. The article is organized as follows: Section 2 will refer to proposals of the recent past: a. the so-called *Particle Theory* (PT) and b. the so-called *Mixed Theory* (MT); and it will pin down problems these theories give rise to. Section 3, the central part, will defend a theory according to which particles are functional heads which project features but cannot project a syntactic category. In this section, the technical side of the head theory will be introduced, and its advantages will be discussed. In section 4, comparative support for the head theory will be presented. A conclusion will follow in section 5.

2. Adjunction to v P, TP, CP

Particles – focus as well as discourse particles – are by semantic criteria sentential operators. For instance, the semantic contribution of the FP *only* must be computed with reference to a syntactic structure that can ultimately be mapped onto a proposition, i.e. a semantic structures that is subject to truth conditions, or in the case of discourse particles to speech acts. In cases such as *Only John likes insects*, this is quite obvious. (If someone likes insects, this person is John and nobody else), but it holds also in cases such as *Many only weakly gifted students could pass this test*. Here, *only* does not have clausal scope. Its scope is confined to the containing DP, ultimately a consequence of the NP-island constraint. Why is *only* nevertheless allowed here? The reason is that *weakly gifted* is a predicate with a background set of alternatives (average gifted, highly gifted, ...) that happens to be predicated of students. Something similar holds for discourse particles such as German *doch*, which roughly means “as you should know”. With *doch* (p), the speaker communicates that he/she assumes that the hearer already knows p but needs be reminded that p holds. Thus, the computation of the particle’s semantic contribution appears to require syntactic merger with something proposition-like. This seems to have been the major incentive for various linguists to propose that particles can only be merged with proposition-like structure. The conclusion was first explicitly drawn in Jacobs (1983). Buring & Hartmann (2001), Kleemann-Krämer (2010), Hole (2015) and other followers of Jacobs’ original proposal insist that FPs must adjoin to propositional domains which in modern syntax

correspond to either ν P or TP or CP.¹ Adjunction to DPs, PPs and argumental XP in general should be impossible. Chomsky (1986) is seen as a forerunner of this anti-argument restriction. In Chomsky (1986), however, the restriction concerns only adjunction as movement and not base-generated adjunction. Since nobody has argued that particles adjoin via movement, this is less relevant. The more general *Adjunction Prohibition* has been worked out in more detail in McCloskey (2005). More about it below. At this stage, let me note that this assumption, although based on plausible semantic inspirations, leads to enormous complications. The most widely known one is that it is incompatible with natural constituency.

- (1) *Nur Klaus hat LGB gelesen*
only Klaus has LGB read
- (2) *John has read only LGB*
- (3) *Gianni ha letto solo LGB*

German obeys the Verb-Second (V2) constraint by which the finite verb is preceded by a single major constituent.² If in (1) *nur* is not adjoined to the name *Klaus* but to CP, V2 is violated. Similarly, V and the object-DP must be adjacent in English unless DP is extra heavy and undergoes Heavy-NP-Shift (HNPS). The DP *LGB* in (2) is not heavy. Thus, *only* as an intervening adverb – like *yesterday* – should make (2) ungrammatical, contrary to fact. Similarly for Italian. It turns out that, by all standard criteria and available tests which I do not want to repeat here, *nur Klaus*, *only LGB* and *solo LGB* are constituents. This is usually denied in accounts that suggest a special "Particle Theory" (PT). Cornerstones of PT are those listed in (4).

- (4) Cornerstones of PT³
 - i. particles are adverbs
 - ii. particles are adjoined
 - iii. adjunction to arguments is forbidden

We will show that (4i) and (4ii) are not tenable. (4iii) is in need of qualification. In Chomsky's (1986: ch.12) original proposal, the ban on adjunction to arguments holds for adjunction as a movement operation. Since movement of a particle must be seen as part of obsolete stages of syntactic theory, this option should not be considered here. Thus, (4iii) must be intended to pertain to base-adjunction. McCloskey (2005: 9) suggests an Adjunction Prohibition that bans adjunction to lexically selected XPs (arguments) in general, i.e. both adjunction by movement and base adjunction.⁴ Assuming the Adjunction Prohibition, it needs to be seen whether it is a

¹ Hole (2015) essentially defends this theory but develops tools to avoid conflicts with natural constituency that will be described below.

² There are widely discussed counterexamples or apparent counterexamples. Most of the time, these have special properties such as prosodic pauses or unclear constituency as in English *Yesterday the guy on the next table, he was stern drunk* where it is unlikely that *yesterday* is adjoined to the DP *the guy on the next table*.

³ For details see Buring and Hartmann (2001: 266).

⁴ The cases considered by him are, however, mainly leftward movements. In English, adjunction to DP seems to be impossible, s. McCloskey (2005: 12), but for German this cannot be true in general unless one could argue for movement into the DP's specifier, which for some reason would not be available in English.

(i) [Von Manon Lescaut]₁ eine gute Aufführung t₁ dauert zirka zwei Stunden
of M.L a good performance lasts about two hours

reason for the postulation of exceptional constituent structure in examples like (1), (2) and (3). For particles, (4iii) can only be relevant if they are adverb-like XPs and as such can in principle be adjoined in the traditional form of Chomsky Adjunction.⁵

Most accounts which reject the PT as sketched above nevertheless assume (4i) and (4ii). If particles are base-adjoined to arguments, (4iii) needs to be dropped, contrary to McCloskey's version of the Adjunction Prohibition. This leads to what Reis (2005) calls the "mixed theory" (MT). Particles are either adverbs (attached to VP, TP), or they may adjoin to other major constituents (DP, PP, CP) be they arguments or not.⁶ Given adjunction, I infer that particles should be adverbs also in the latter cases.

2.1. LF movement?

Both the PT as well as the MT are in need of constraints that guarantee interpretation. According to standard semantic wisdom, FPs require a scope domain. The PT assumes for the German example (1) that *nur* is adjoined to the CP *Klaus hat LGB gelesen*. In its bare form, this makes (1) indistinguishable from cases with *nur* as a clause-linker similar to English *however* as in *Wir wollten spazieren gehen, nur # Klaus hat LGB gelesen. Also mußten wir warten* ('We wanted to take a walk, however, Klaus read LGB. Therefore we had to wait'). Notice that there is a slight pause, indicated by #. But the particle *nur* in (1) is certainly an FP and not a clause linker. Ancillary assumptions are required. (2) and (3) pose other obstacles; *only/solo* are by no means in a scope position.⁷ Perhaps the construction must be categorized as an "exception". But how attractive is a theory in which the most elementary sentences come out as exceptions? LF-movement (or some equivalent semantic operation) could be invoked to fix up (2) and (3). For the MT, this seems to be less of a problem than for the PT because the FP can adjoin to DP.

- (5) a. *only LGB* [*John has read t*]
 b. $\forall x$ (John has read x) \rightarrow $x = \text{LGB}$

LF-movement predicts movement constraints which in fact can be observed (cf. Longobardi, 1991; Bayer 1996 among others).

Minimalist syntactic theory has changed in a way in which LF-movement does not seem to be a desirable solution. Assuming, more in the spirit of minimalist syntax, a potential pre-vP

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- (ii) [Nach München]₁ den Zug t₁ erreichst du leider nicht mehr
 to Munich the train reach you unfortunately no longer

⁵ Considering only phrasal movement, Chomsky Adjunction moves an element YP to some node XP such that the newly created mother node is a copy of XP. According to Chametzky (1994), there is no such rule.

⁶ Reis (2005: 462) characterizes the MT as follows:

- (i) FPs must be adjoined to a maximal projection.
 (ii) FPs can be adjoined to maximal projections of all kinds.
 (iii) FPs must c-command the focus.
 (iv) FPs must be adjoined to a clause-internal maximal projection.

⁷ Unless one wants to argue that *only* is adjoined to a VP whose head has been raised. But such a step would prevent standard interpretations that have been discussed already by Taglicht (1984).

operator position, (5a) could be replaced by probe-goal agreement as in (6a) in which an operator with an unvalued feature probes a matching DP. This results in a form in which [*only* DP] is decomposed with the focused DP staying behind as in (6b).

(6) a. [TP *John has* OP_{uFP} [_{VP} ~~*John*~~ read [_{DP} *only LGB*]]
└────────── AGREE ─────────┘

b. [TP *John has* [OP_{uFP}] [_{VP} ~~*John*~~ read [_{DP} ~~*only*~~ LGB]] FP = *only*

A solution along these lines could meet the semantic requirements without throwing natural constituency over board. I will not try to develop this sketch any further because my goal is more general.

2.2. Adjunction?

Let us for a moment ignore the Adjunction Prohibition and consider the traditional view according to which certain phrases can be right-adjoined to XPs of different sort. In (7), the bracketed phrase could be right-adjoined to DP, VP and TP.

(7) a. <i>Donald Trump</i> [<i>who owns the Trump Tower in NY</i>]	Rel.clause
b. <i>the man</i> [<i>in front of the house</i>]	loc. PP
c. <i>this guy</i> [<i>here</i>]	loc. Adv
d. <i>visit Hamburg</i> [<i>in October</i>]	temp. PP
e. <i>I didn't change my clothes</i> [<i>although I was soaked</i>]	concessive CP

Prototypical modification by adjunction looks deeply different from what both PT and MT propose for particle constructions. Most striking is the word order. In the western languages, FPs usually precede a focus (or focus-containing) XP. The bracketed phrases from (7) mostly don't.

(8) a. *[*who owns the Trump Tower in NY*] *Donald Trump*
 b. *[*in front of the house*] *the man*
 c. *[*here*] *this guy*
 d. *[*in October*] *visit Hamburg*
 e. [*although I was soaked*] *I didn't change my clothes*

These are exactly the cases that McCloskey (2005) has in mind with the Adjunct Prohibition. If particles are adverbs, they must be subject to a rule which adjoins them to the left. The MT should freely allow this. Curiously, their word order properties are by and large the exact opposite of what we see in modification by right-adjunction. Consider (9) and the distinction between * and #. The hedge symbol # stands for grammatical but “highly marked” [more on this below].

- (9) a. *only Donald Trump* ~ #/??**Donald Trump only*
 b. *even Donald Trump* ~ #*Donald Trump even*
 c. *even/only visit Hamburg* ~ **visit Hamburg even/only*

Whatever we believe about adjunction, we must acknowledge that an FP's adjunction to a major category would be something deeply different from the adjunction of a standard modifier phrase. The first puzzle is that particles should be allowed to left-adjoin at all. There is no intuitive sense in which particles would modify an XP.⁸ The second puzzle is why right-adjunction leads to extreme markedness or to straight ungrammaticality.

Consider next the peculiar fact that the *Vorfeld* in German V2-clauses, in sloppy parlance SpecCP, can sometimes host more than a single constituent. St. Müller (2005) offers a large collection and argues for a quasi remnant movement account implemented in HPSG. In some cases, it looks as if an adverb or adverbial had been adjoined to an XP.

- (10) a. *Gestern Abend der Typ mit den langen Haaren hätte mich beinahe umgerempelt.*
 yesterday evening the guy with the long hair had me almost down-knocked
 'Yesterday evening, the guy with the long hair almost knocked me down'
 b. *Voraussichtlich sein hohes Einkommen wird den Mann dazu veranlassen, zu ...*
 perhaps his high income will the man there.to condition to
 'Perhaps, his high income will cause the man to ...'
 c. *Vermutlich im tieferen Wasser hat der Schwimmer plötzlich Panik bekommen*
 presumably in.the deeper water has the swimmer suddenly panic got
 'Presumably in the deeper water, the swimmer suddenly panicked'

These elements can also be right-adjoined without giving rise to special effects, markedness, let alone extreme markedness, or even ungrammaticality. There does not seem to be a prosodic difference either. According to my (untrained) ear, the modifier is in both (10) and (11) part of a phonological phrase (ϕ).

- (11) a. *Der Typ mit den langen Haaren gestern Abend hätte mich beinahe umgerempelt.*
 b. *Sein hohes Einkommen voraussichtlich wird den Mann dazu veranlassen, zu ...*
 c. *Im tieferen Wasser vermutlich hat der Schwimmer plötzlich Panik bekommen*

Even if we consider only the formal side, these cases are fundamentally different from XPs which are prefixed with a particle.

Most adverbs that play a role in such modification cannot be from below $\text{Mod}_{\text{possibility}}$ in Cinque's (2013) hierarchy shown in (12).

⁸ In the same way, one may argue that an article modifies an NP.

- (12) Mood-speech act (frankly,..)
 Mood-evaluative (fortunately,..)
 Mood-evidential (allegedly,..)
 Mood-epistemic (probably,..)
 Tense-past/future (then,..)
 Mod-necessity (necessarily,..)
 Mod-possibility (possibly,..)

 Aspect-habitual (usually,..)
 Aspect-repetitive (again,..)
 Aspectf-requentative (frequently,..)
 Mod-volition (willingly,..)
 Aspect-celerative (quickly,..)
 Tense-anterior (already)
 Aspect-terminative (no longer,..)
 Aspect-continuative (still,..)
 Aspect-continuous (always,..)
 Aspect-retrospective (just,..)
 Aspect-durative (briefly,..)
 Aspect-prospective (imminently,..)
 Mod-obligation (obligatorily,..)
 Aspect-frustrative (in vain,..)
 Aspect-completive (partially,..)
 Voice-passive/manner (well,..)

- (13) *_{[DP} *Gewöhnlich / oft / freiwillig / schnell / immer / soeben / kurz / vergebens / teilweise / zaghaft* _{[DP} *die Studenten*]] *fahren in den Urlaub*
 'Usually / often / willingly / quickly / always / just / briefly / in vain / partially / hesitatingly
 the student go on vacation'

In German, adverbs under Tense_{anterior} and Aspect_{continuative} would be *schon* and *noch*. These are prototypical particles, however; see Altmann (1976), König (1979). In (14c,d) they appear in their function as DiPs.

- (14) a. [**Schon** *die Römer*] *hatten Zentralheizungen*
 already the romans had central.heating
 'The Romans had already central heating'
- b. [**Noch** *im 18. Jahrhundert*] *wurden Hexen verbrannt*
 still in.the 18th century were witches burned
 'Witches where still burnt in the 18th century'
- c. *Komm schon rein!*
 come SCHON in
 'Go ahead! Come in! (don't hesitate!)

- d. *Wie war noch Ihr Name?*
how was NOCH your name
'What was your name again? (I can't recall it)'

While the adjoinability of higher adverbs (as in (10b,c) and (11b,c)) remains a problem, the rest of the facts seems to be clear enough: Those adverbs in (12) from *Aspect* downwards which can in German be attached to DPs and PPs may be "special" adverbs. Usually, they are known as *particles* of various kinds: degree particles, focus particles, discourse particles. Lumping them together with all other adverbs is certainly not helpful.

2.3. State of the art

Up to now, linguists could not settle on an analysis which gives a special status to particles. For most semanticists, they are generally adverbs. Not much thought is usually given about their syntactic behavior.⁹ Among syntacticians, opinions vary. With respect to Italian and Italian dialects, Manzini (2015) insists on adverb status; Munaro & Poletto (2003) argue for head status. Coniglio (2008) and Cardinaletti (2011) assign DiPs the special status of "weak adverbs". In terms of X-bar theory, they are intended to be XPs, nevertheless. For German, Meibauer, (1994) found evidence which speaks in favor of head status but remained neutral. In my own work since Bayer (1996), I argued in a series of publications for head status of the particles under consideration.¹⁰ In the next section, we will explore the merits but also potential problems of the head analysis.

3. Particles as heads

In the following somewhat more technical part, I will defend the view that particles should be analyzed as heads. Since particles are syncategorematic elements, this leads to questions about projection in *Bare Phrase Structure*, the residue of phrase structure and X-bar principles in minimalist theory. In the second part of this section, we will consider questions of the particle's scope, movement of smaller phrases which are composed with a particle and their reconstruction (copy movement).

⁹ An extreme case is the otherwise insightful dissertation Karagjosova (2004) on whose 260 pages the word 'syntax' does not occur once.

¹⁰ This cannot preclude their additional use in the sense of XPs. In German, *nur, sogar, auch, doch*, etc. alongside the negator *nicht* can appear in the Vorfeld. Their dual status is diachronically quite plausible. The same duality can, by the way, be observed in Bangla and Hindi. See note 23 below on Bangla *abar*. See also Lakshmi Bai (1977) on Hindi.

3.1 Projection in Bare Phrase Structure

Lexical (incl. functional) items project their syntactic category when they undergo the merge operation: $\{\alpha\{\alpha,\beta\}\}$, e.g. $\{eat, \{eat, rice\}\}$, $\{the, \{the, kitchen\}\}$. Adjunction leads to a 2-segmented category: $K = \{\alpha\{\alpha,\beta\}\}$, $L = \{\gamma\{\gamma,\delta\}\} \Rightarrow \{<K,K> \{K,L\}\}$, e.g. $K = \{eat, \{eat, rice\}\}$, $L = \{in \{in J\}\}$, $J = \{the \{the, kitchen\}\}$ results in *eat rice in the kitchen*.

If a particle is a (functional) head, merger with a phrase will result in a "particle phrase", e.g. *only rice* = $\{only \{only, rice\}\}$. The problem is that particles are "syncategorematic", i.e. *only rice* is some sort of NP whereas *only in the kitchen* = $\{only \{only, \{in \{in \{the \{the, kitchen\}\}\}\}\}$ is some sort of PP etc. Thus, if merger with arbitrary XPs is permitted, the conclusion must be that the particle is either an adverb, i.e. a phrase, or a head that lacks a syntactic category. If it is an adverb, and the adverb is a potential XP, the Adjunction Prohibition is violated. If it is a head, this problem does not exist.

According to various pieces of evidence some of which will be presented here, particles are heads. So let us assume they are heads that lack a syntactic category. If particles contribute features but no syntactic category, the result of merger will be a "particle phrase" albeit a phrase with the syntactic category of the XP that the particle had been attached to. *Prt* by itself simply does not contribute a category that would compete with +N, +V, +A, +P etc. Nevertheless, merger of *Prt* with XP yields an XP that is "enriched" by the features that *Prt* imports. These features are obvious semantic in nature. Thus, merger returns the syntactic category of the *Prt*-head's sister, but it does not return its semantic category. The semantic category is whatever the particle introduces. In the case of an FP it is a quantifier of some sort, in the case of negation it is mostly a negative quantifier. For DiPs it is so far unclear, but it will become clear that DiPs can follow the same line and produce a "small particle phrase" which is then subject to strict condition for full interpretation. If so we are entitled to the following generalization

(15) The merge operation seen in $\{\alpha\{\alpha,\beta\}\}$ may have two effects, (i) an effect of syntactic category if α has a categorial feature structure, and/or (ii) an effect of semantic category if α has a semantic feature structure but an empty categorial feature structure. In the latter case, the syntactic label of $\{\alpha\{\alpha,\beta\}\}$ is β .

As long as we are allowed to treat syntactic category features side by side with formal semantic features, the generalization in (15) should not shock anyone. In fact we are all familiar with it. Think about the syntax of *wh* and the syntax of negation. We speak of a "*wh*-phrase" or a "negative quantifier" and normally do not mention the category label. If, for example *wh* is merged with DP, the result is a +*wh* DP; if it is merged with a PP, the result is a +*wh* PP. The same for negation.

(16) a. <i>what</i> = wh + NP	a <i>whP</i> of categorial type NP
b. <i>where</i> = wh + PP	a <i>whP</i> of categorial type PP
c. <i>which book</i> = wh + DP	a <i>whP</i> of categorial type DP

- | | |
|-----------------------------------|------------------------------|
| (17) a. <i>nothing</i> = neg + NP | a NegP of categorial type NP |
| b. <i>nowhere</i> = neg + PP | a NegP of categorial type PP |
| c. <i>no book</i> = neg + DP | a NegP of categorial type DP |

What, where, which book are all *wh*-phrases albeit with different syntactic categories. *Nothing, nowhere, no book* are all neg-phrases albeit with different syntactic categories.

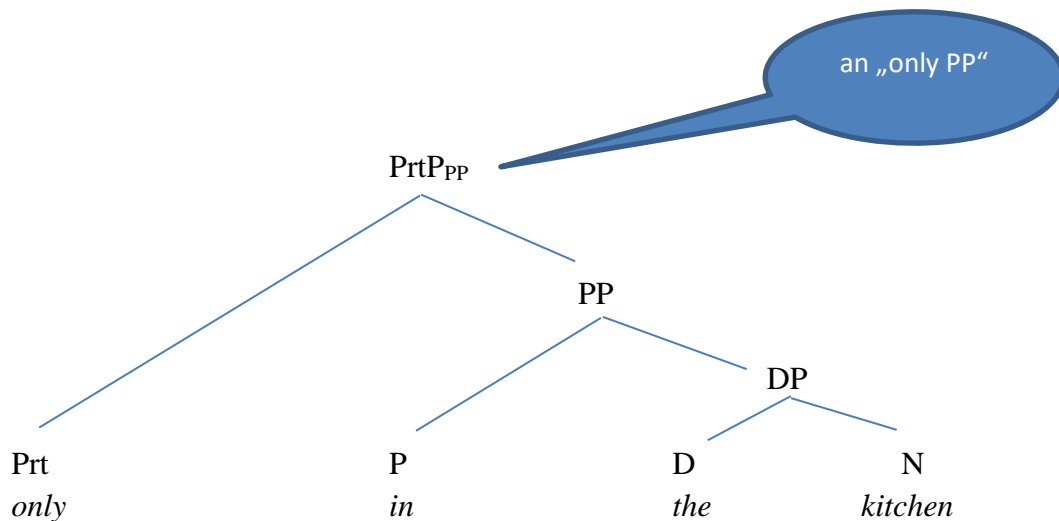
Particles work along the lines of these features. The only innovation that may lead to raised eyebrows is that features are sub word morphemes while particles are (in the examples considered so far) words. Let me suggest here that this difference is a matter of morphology and not of (core) syntax.¹¹

In order to visualize the consequence of this, let us write the syntactic label as an index on the particle-headed phrase.

¹¹ Consider here in particular Wiltschko (1998: 155) where the German dative plural DP *den Frauen* is split into a number of syntactic projections that would traditionally have been taken to be morphological or even sub-morphological features.

(i) [DP d [PersP en [NumP Frau_i-en [NP t_i]

(18)



What we see in (18) is intended to be an *only* phrase of the syntactic category PP in quite the same way in which *in which room* or *where* are *wh* phrases of the category PP. The proposal is close to Rothstein (1991), who proposes next to the category-inducing lexical and functional heads a third type of head, namely a "minor functional head".¹² The use of Rothstein's proposal in the account of FPs in Bayer (1996; 1999) was adopted by various authors since.

3.2 Scope and copy movement

PrtPs like (18) cannot be interpreted because Prt satisfies only one of two requirements. It satisfies focus association because it has a focus-marked sister, but it cannot execute its operator property. Being an operator, it should actually have propositional scope. Cases in which Prt is merged with ν P or an extension of it (as it happens when Prt is merged recursively) would do because ν P qualifies as a *Complete Functional Complex* (CFC) in the sense of Chomsky (1986).

(19) [PrtP Prt[✓] [ν P ...]] ν P being a propositional domain

In (19), the scope of the particle is fixed, as indicated with [✓]. It cannot be changed in the course of the derivation. In PrtPs of type NP, DP, PP such as (18) etc., however, scope is usually unfixed. These phrases, which I dub "small particle phrases" (SPrtP), need to be raised to a position in which Prt attains scope.

¹² Rothstein (1991: 107f.) suggests the following tripartite distinction:
Type I: Lexical heads which have θ -grids and project categorial features.
Type II: functional heads, such as DET and INFL, which bind θ -positions in the grid of their complements, subcategorize, and project category features.
Type III: minor functional heads which subcategorize, but do not have θ -grids, do not bind θ -positions, and do not project category features.
Heads of type III – minor functional heads – fit particles rather well, one difference being that particles do not subcategorize. As we know, they may undergo merger with any kind of XP.

etc., it moves on to SpecTP. However, the movement we see between (21e) and (21g) has nothing to do with the particle. It takes place because SPrtP is categorially an NP and is thus involved in Case/EPP checking. The deactivated particle is simply pied-piped along.

Following the lead of Jacobs (1983), various linguists have argued that in German the particle always takes scope in its surface position: ‘What you see is what you get’ (WYSIWYG) was the slogan. But WYSIWYG is only correct for cases like *John only likes BEER*, in which *only* immediately precedes *vP* and is in an unalterable scope position (c-commanding the associated focus). Cases like (2) are not captured. In fact, according to a rigorous understanding of the PT such examples should not exist in the first place.

The arguments in favor of the PT were partially built on controversial data (see the debate in Buring & Hartmann, 2001, Reis, 2005, Meyer & Sauerland, 2009, Bayer & Trotzke, 2015, Bayer 2018a), or they plainly did not consider certain data. Assume for a moment that WYSIWYG holds because the PT is right, and every particle is adjoined right from the outset in its proper scope position. Consider now the fact that multiple particles appear in a particular order.¹⁴ For example, the German DiP *doch* precedes the FP *nur*. Their reversal leads to ungrammaticality.

- (22) a. *Es hat **doch** die Polizei **nur** den PETER eingesperrt* *doch > nur*
 it has DOCH the police only the Peter imprisoned
 '(speaker reminds hearer:) the police locked up only PETER'
- b. **Es hat **nur** den PETER **doch** die Polizei ~~den PETER~~ eingesperrt* **nur > doch*

Miraculously, however, (23) is grammatical although in this case *nur* is equally preceded by *doch*.

- (23) ***Nur** den PETER hat **doch** die Polizei eingesperrt*
 only the Peter has DOCH the police imprisoned

If *nur* were adjoined to the root CP because this CP is a permissible scope domain, as predicted by the PT, (23) is unexpected. Notice, that according to the PT, *nur* would invariably take wide scope. The MT seems to stand a better chance. If *nur* is adjoined to the focus DP, one can argue that this phrase reconstructs into a position below (i.e. the c-command domain of) *doch*. It is unclear, however, how adjunction to DP could be undone so that *nur* can scope out of DP. One may re-invoke the idea that a YP adjoined to XP is not actually dominated by XP.¹⁵ Technical sophistication of this sort is not needed if the head approach is chosen. In the head approach, *nur den PETER* is a SPrtP whose head *nur* is entirely scope-inactive where we see it in (23). Its scopal activity has been stopped before the phrase has been moved on to SpecCP. The relevant details of the derivation can be seen in (24).

¹⁴ See Cinque (1999) for adverbs and Thurmair (1989) and Coniglio (2011) for German DiPs.

¹⁵ See work in the GB-framework that started with May's (1985) Scope Principle.

(24) *Nur den PETER hat* [_{PrtP2} *doch* [_{PrtP1} *nur den PETER* Prt° ✓ [_{vP} *die Polizei* ~~*nur den PETER*~~ *eingesperrt*]]] *doch > nur*

Following the derivational steps seen in the English example (21), the SPrtP *nur den PETER* is merged in vP. From there it moves into the specifier of the vP-initial particle phrase and agrees with its head Prt°. According to standard minimalist assumptions, this head has an unvalued feature that is valued in this process. As a result the operator *nur* is de-activated and takes scope right at this point (✓). In (24), another particle is merged, namely the DiP *doch*, in accordance with the rule that in case of merger of *doch*, *nur* must be in its scope and not the other way round. Finally, the SPrtP moves to SpecCP. This last step occurs for independent reasons. It has nothing to do with the scope of *nur*; *nur* is already deactivated and moves along in the style of pied-piping.¹⁶

What can we conclude from this simple demonstration? We can conclude that the WYSIWYG philosophy underlying the PT is in trouble. The claim that *nur* always takes scope right where we see/hear it seems to be far from the truth. On the other hand, free adjunction to XPs of all sorts as suggested by the MT escapes elementary problems of natural constituency and may cope – with additional assumptions – the ordering problem, but it remains unclear how in a phrase like *nur den PETER* the FP can move out of its adjoined position. In sharp contrast to these proposals, the head theory is in agreement with natural constituency, and it escapes the jeopardy of ordering paradoxes and scope problems. It does all this without stipulative assumptions that fall outside the domain of the usual minimalist merge and move machinery.

3.3 Head versus XP-adjunct: a summary so far

The advantages of the head-theory over the adverb theory should now be clear enough.

- (i) Given that particles import semantic features but lack a syntactic category of their own, the result of merger between a particle Prt and some XP is essentially the same as under adverbial adjunction: syncategorematicity. This explains why particles are mostly taken to be adverbs (of some sort) and are therefore thought to be adjoined.
- (ii) Merger of Prt with an arbitrary XP types XP as a PrtP without changing XP's phrase structural label.

¹⁶ Can one argue that multiple particles act as interveners? As far as I can see, one can not. The reason is that when *nur PETER* moves in (24), *nur* has already been deactivated. A dead man is no enemy.

- (iii) Merger of *Prt* with a potential proposition such as *vP* deactivates *Prt*.¹⁷ Its scope is frozen. Merger of *Prt* with an argument or adjunct leaves *Prt* active in search of a scope position.¹⁸
- (iv) Unlike in the PT/MT no stipulation about the adjunction site is necessary. Since there is no adjunction here, the question of a violation of the Adjunction Prohibition cannot arise.
- (v) In the head-theory, the particle is a functional head *Prt*^o; associated with *Prt*^o can be a specifier. Raising *SPrtP* to *SpecPrt* for feature valuation amounts to spec-head agreement. This process echoes familiar processes that are known from other constructions, see Rizzi's (1991/1996) *Criterion* approach ("Wh-criterion", "Neg-Criterion") and the notion of *Criterial Freezing*, s. Bayer (2018a).
- (vi) A comparable explanation is not even remotely in sight in the adverb/adjunction theories.

3.4 Further consequences

3.4.1 Displacement

The head theory and the adverb theory of particles make different predictions. Adverbs can move to peripheral clausal positions. Functional heads can not.¹⁹ One can test these predictions, but one has to be aware of the fact that one and the same lexeme has occasionally different functions. In one function it may be a DiP, in the other an adverb; in one function it may be an FP, in the other a clause liker or something of this sort. German *aber* and *doch* are notorious cases.

¹⁷ *vP* is not the only case. Sub-sentential scope can be found both with FPs and with DiPs. (i) clearly differs in truth conditions from (ii)

(i) They care about some **only** WEAKLY gifted students

(ii) They **only** care about some WEAKLY gifted students

While (i) is true if they care about some students who are not more gifted than weakly gifted, (ii) is true if they do nothing except care about some weakly gifted students. Respecting NP-islands, (ii) cannot be derived from (i) by LF-movement.

(iii) Gernot hat eine **ja** ziemlich unerträgliche Freundin

Gernot has a JA rather unbearable friend_{fem}

(iv) Gernot hat **ja** eine ja ziemlich unerträgliche Freundin

Example (iii) is felicitous if the speaker conveys that the unbearable of Gernot's girlfriend must be known to the addressee, while (iv) is felicitous if the speaker conveys that the fact that Gernot has a rather unbearable girlfriend must be known to the addressee. Occasionally hard to distinguish but nevertheless real.

In (i) and (iii), the particle has scope over a smaller domain than the root clause. In (i) the domain is the degree of giftedness from which *only* excludes all instances above the degree 'weak'. In (iii) the domain is the ascription of a high degree of unbearable. In both cases, there is a predication structure P which results from ascribing it to some x. For more details see Bayer (1996).

¹⁸ A classical example is the scopal ambiguity of *only* in

(i) They forced Mary to learn **only** RUSSIAN

in comparison with

(ii) They forced Mary to **only** learn RUSSIAN

and

(iii) They **only** forced Mary to learn RUSSIAN

The example in (i) with *only* a co-constituent of RUSSIAN leaves two options for scope assignment, namely the one in (ii) and the one in (iii). On the other hand, both (ii) and (iii) are scope unambiguous. In these cases, *only* is in operator positions. See Taglicht (1984); with respect to negation, the insight is as old as Klima (1964).

¹⁹ s. Thurmair (1987)

- (25) a. *Mathilde ist hochbegabt **aber** sie hat keine Lust zu üben*
 M. is highly gifted but she has no desire to exercise
 ‘Mathilde is highly gifted but she lacks the impetus to practice’
- b. *DIE ist **aber** begabt!*
 she is ABER gifted
 ‘Wow, how gifted she is!’

Both share a common meaning of adversativity, but *aber* in (25a) is a clause linker like *and* plus adversativity whereas *aber* in (25b) is a DiP that functions in exclamatives and has the function of expressing surprise of the speaker. Adversativity still plays a role. The speaker expresses with *aber* that according to his/her world of thought the degree of her giftedness was lower than it is in the actual world. Nevertheless, *aber* is a DiP in (25b) but not in (25a). If *aber* in (25b) is a functional head, it is not expected that it can move, and indeed (26a,b) are close to incomprehensible.

- (26) a. **Aber ist DIE begabt!*
 b. **DIE ist begabt aber!*

Something similar could be demonstrated for *doch*. A good example is also *vielleicht*. As an adverb, *vielleicht* is an XP that can move around and even undergo extraposition.

- (27) a. *Der Heinz kommt **vielleicht** gar nicht*
 the Heinz comes perhaps not
 ‘Perhaps Heinz will not come at all’
- b. ***Vielleicht** kommt der Heinz gar nicht*
- c. (?)*Heinz kommt gar nicht **vielleicht***

Although (27c) may be perceived as slightly awkward in written form, such utterances in fact abound in spoken language. Notice now that *vielleicht* as a DiP does not enjoy the freedom of the adverb. As a DiP, it is something like an emphasizer in exclamatives. In this role, it cannot undergo any displacement.²⁰

- (28)a. *Der HEINZ ist **vielleicht** ein Idiot!*
 the Heinz is VIELLEICHT an idiot
 ‘Wow, what an idiot Heinz is!’

²⁰ In the Austro-Bavarian dialect of Vienna, the DiP-version of *vielleicht* is the reduced form *leicht* as seen in (i)
 (i) Bist **leicht** deppert? ‚Are you mad?’
 Unlike the full form *vielleicht*, the reduced form is strictly excluded in displaced positions.
 (ii) **Vielleicht**/***leicht** is der z’deppert für d’Uni. ‘Perhaps he is too unintelligent to go to the university.’
 (iii) Der is z’deppert für d’Uni ?**vielleicht**/***leicht**

b. **Vielleicht* is der HEINZ ein Idiot!

c. **Der HEINZ ist ein Idiot vielleicht!*

Thus, lumping together particles with adverbs would lead to elementary problems. Linguists who try to argue for adverb status are mostly aware of this. They tend to add stipulations to the theory. Cardinaletti (2011), who takes particles to be adverbs and therefore potentially maximal projections, classifies them as “weak adverbs”. Given that the weak pronoun *es* can appear in SpecCP and weak PPs such as *drauf* can move to the post-verbal domain, it remains unclear why weak adverbs should resist similar displacement. If particles are functional heads instead, the question of displacement does not arise. Functional heads build up the clausal spine, and this spine must not be broken.

3.4.2 Forming SPrtP

As was already shown in section 3.2, German permits the formation of SPrtPs. It is not obvious why such creatures should occur in the first place, and in which way they contribute anything extra to the semantic representation of sentences with particles. The suggestion here is that SPrtPs, XPs with DiPs as well as XPs with FPs, are the result of merger of a head with XP. How can we know that the particle is a head and not simply an adverb? Recall my examples (10b,c) and (11b,c). The ordering between adverb and DP/PP makes close to no difference; *voraussichtlich sein hohes Einkommen* is as good as *sein hohes Einkommen voraussichtlich*. This is not so when we consider genuine particles. Consider reordering in examples (14a,b).

(29) a. [*Die RÖMER schon*] hatten Zentralheizungen!

the romans already had central.heating
‘The Romans had already central heating’

b. [*Im 18. Jahrhundert noch*] wurden Hexen verbrannt!

in.the 18th century still were witches burned
‘Witches were still burnt in the 18th century’

In comparison with (4a,b), (29a,b) are highly marked utterances with an emotional potential that approaches exclamation. The speaker presents the proposition as an especially noteworthy fact. The literature speaks of mirativity and mirative fronting; see de Lancey (1997) and following work. Bayer & Obenauer (2011) suggest a syntactic operation by which XP undergoes emphatic fronting. The particle is endowed with an unvalued feature *Emp* that gets valued by an emphatically focused XP under XP-fronting. This operation could hardly involve an adverb adjoined to XP as there would not be a functional head involved that could induce such movement. (30) gives a slightly simplified version of the derivation proposed in Bayer & Obenauer (2011). In this derivation, the particle is, of course, a functional head that gives rise to a specifier position into which XP moves and values the *Emp*-feature on the particle.

- (30) a. $\text{Prt}^{\circ}_{\mu\text{Emp}} \text{XP}_{\text{Emp}} \Rightarrow$
 b. $\text{XP}_{\text{Emp}} \text{Prt}^{\circ}_{\mu\text{Emp}} \cancel{\text{XP}_{\text{Emp}}}$

As shown by Bayer & Obenauer (2011), Bayer & Trotzke (2015) and Bayer (2018a), a very similar formation of an emphatic-marked SPrtP can be found with DiPs in *wh*-questions. Consider the difference between (31a) and (31b).

- (31) a. *Wie soll ich dir **nur** widerstehen?*
 how should I you NUR resist
 ‘How on earth should I resist you?’
 b. *Wie **nur** soll ich dir widerstehen?*

The particle *nur*, which is primarily known as an eliminative quantifier, is here a DiP that roughly signals that the speaker has exhausted all possibilities to find a value for the gap bound by the *wh*-operator. In (31a), *nur* is in an irreversible pre-*vP* scope position, but in (31b) it is not. In (31b) it forms a single constituent together with the *wh*-phrase. Given the V2-constraint of German, movement to SpecCP is the only viable option. We argue that the Prt-head undergoes merger with the *wh*-phrase forming a SPrtP. This phrase moves via the specifier of the regular PrtP where Prt takes scope. All this is fully along the lines of (21) and (24). From there, the SPrtP moves on to SpecCP where the *wh*-phrase obtains interrogative scope. The DiP, which is already deactivated, is pied-piped along. The only difference between *wh*-phases and non-*wh* phrases is that the order Prt + *wh*-phrase is ungrammatical; **nur wie* cannot surface. The explanation must be that the DiP does not associate with focus as the FPs do. The only purpose for the DiP is to attract XP in order to derive an emphatic reading. The emphatic reading can, however, only be derived by emphatic (alias mirative) fronting. The unattested order **nur wie* does not surface because it would be uninterpretable.

To sum up, both the data about displacement and the data about the formation of SPrtPs with an emphatic interpretation call for a theory according to which particles are functional heads. Thus, the theory sketched in section 3.2 is strongly supported. Achieving the same result with adverbial adjunction is inconceivable.

4. A comparative note on Indo-Aryan

The purpose of adding this short comparative section is to show that the head theory defended in this article against adjunction theories of particles also finds support outside the European languages. No detailed discussion will be offered here, and the section can as well be skipped as it is only added for further illustration.²¹

²¹Interested readers may want to consult Bayer & Dasgupta (2016) for an in-depth comparative case study of German and Bangla that involves the Bangla multi-functional particle *je*.

In Indo-Aryan languages, various particles are clitics. In Hindi, the so-called "emphatic particle" *bhii* is attached to the right of the associated XP. When *bhii* is focused, it translates into *too, also*. When its associate is focused, *bhii* translates into *even*.

- (32) *raam bhii aayaa*
 ram BHII came
 'Also Ram came'/'Even Ram came' U. Lahiri, 1995

In its function as 'even', *bhii* forms negative polarity items. *bhii* and its correspondents among the emphatic clitics in Bangla - the focus marker *i* and *o* ('also', 'too') - are clitics and certainly no XPs.²²

In Hindi and also in Bangla, the discourse particle *to* (roughly 'however' or German 'doch') is a clitic element which has a non-clitic counterpart. According to Lakshmi Bai (1977), the conjunctive *to* in Hindi must be distinguished from what she calls the "emphatic" *to*. The former is a clause linker and as such a free form, whereas the second is a clitic element that attaches to major constituents of the clause.

For Bangla, Dasgupta (1980; 1984; 1987) developed a theory in which *to* as well as other clitic particles are called "anchors". The term alludes to the fact that these particles freely attach to major constituents, NPs, PPs, and even to entire clauses.

- (33) a. *dilip to kal aSbe*
 Dilip TO tomorrow come.fut.3
 'As for Dilip, he will come tomorrow, won't he?'
 In German: 'Was Dilip betrifft, der wird doch morgen kommen, oder?'
- b. *Dilip kal to aSbe*
 'As for tomorrow, Dilip will come, won't he?'
 In German: 'Was morgen betrifft, so wird Dilip doch kommen, oder?'
- c. *Dilip kal aSbe to*
 'Dilip will come tomorrow, won't he?'
 In German: 'Dilip wird doch morgen kommen, oder?'

In (33a,b), *to* is a discourse particle comparable to German *doch*,²³ but simultaneously a topic marker with a function comparable to clefting. In (33c), *to* has an all-focus function. In Bayer, Dasgupta, Mukhopadhyay & Ghosh (2014), this variation is accounted for by merger of *to* with the clause, followed by raising topical constituents or the entire clause *to* its specifier.

²² See Bayer and Lahiri (1990) for the role of Bangla emphatic clitics in morphological processes.

²³ For a comparison between Bangla *to* and German *doch* see Bayer (2018b).

In any case, *to* is an enclitic element. In this analysis, it is a functional head with a fixed position in clause structure. The word order variation results from the movement of XP-constituents of different size to the specifier of *to*.

In the eastern Indo-Aryan languages Bangla, Assamese and Oriya, one can find a number of discourse particles that work accordingly, see Dasgupta (1987) for an overview, and Bayer and Dasgupta (2016) for a case study of the particle *je*, which derives from a relative pronoun that has developed into the standard complementizer of the language.

Interestingly, the syntax of these particles is the very same as the syntax of the polarity question marker *ki* as it appears in matrix questions.

- (34) a. *tumi ki kal aSbe?*
 you Q tomorrow come.fut.2
 'As for you, will you come tomorrow?'
- b. *tumi kal ki aSbe?*
 'As for tomorrow, will you come?'
- c. *tumi kal aSbe ki?*
 'Will it be the case that you come tomorrow?'

We see an exact counterpart of (33). Since Q-markers are invariably functional heads, we can almost be sure that discourse particles with a closely comparable function and distribution are functional heads as well.

This short digression into modern Indo-Aryan languages has shown that at least some particles of Hindi and Bangla are clitics and therefore syntactic heads. This provides indirect motivation for the analysis of particles in the Western languages as heads rather than XP-type adverbs. The Indo-Aryan languages certainly also have particles or particle-like words which are not clitics. For these, it needs to be determined whether they are adverbial modifiers or particles with the properties we could identify in the present study.²⁴

²⁴ A particularly convincing example is Bangla *abar* (lit. 'again'). As Sibansu Mukhopadhyay (p.c.) points out to me, the adverbial version of *abar* can move in the clause while the DiP-version is stationary.

- (i) a. *robi kalke rate abar birokto koreche*
 Ravi yesterday night again trouble made
 'Ravi made trouble again last night'
- b. *robi abar kalke rate birokto koreche*
- c. *abar Robi kalke rate birokto koreche*
- (ii) a. *robi abar dilip-er bhay*
 Ravi ABAR Dilip-Gen brother
 'Ravi is Dilip's brother after all.'
- b. **abar robi dilip-er bhay*

In (ii), *abar* cannot move. On the semantic side, we observe that the sibling relation cannot be suspended. Thus, in (ii) Ravi cannot "again" be Dilip's brother. And in fact, the meaning of *abar* has changed into the more elusive meaning of a DiP, - a typical process of historical recycling of an existing adverb into a DiP. It is a case of grammaticalization by which, roughly speaking, a content word is changed into a function word.

In a study of the question-sensitive German DiP *denn* in Bayer (2012), I showed that *denn* (lit. ‘then’) can undergo reduction to the clitic element *-n*, and that in the Bavarian dialect this *-n* is ultimately reduced to an obligatory interrogative marker in *wh*-questions, with a concomitant loss of its original meaning. Had the DiP *denn* been a major category of type AdvP, this grammaticalization path would be highly surprising. If *denn* was already a head, however, reduction to a weak form and ultimately a clitic (or an even more reduced element like an inflection) is a natural process that echoes a diachronic trend that is well established within and across languages.

5. Conclusion

I hope to have shown that a closer look at the syntax of particles, focus as well as discourse particles, can be rewarding. It may change the widespread but somewhat naïve view that particles are simply adverbs, and that they are as such adjoined. While adjunction is a peculiar operation in a merge-based system of structure building anyway, we see that it creates various problems when applied to the syntax of particles. For German, it is very obvious that particles can undergo merger with categories that should be excluded by the Adjunction Prohibition. If particles are heads, this conflict disappears. Particles appear to be functional heads in the skeleton of clause structure on a par with T, C, Neg etc. In clause structure they occur in an irreversible scope position. When they undergo merger with arguments and adverbs, however, they form what we called “small particle phrases” (SPrtP). These elements undergo movements to scope positions in which the particle is deactivated. As part of an SPrtP, the particle proper can be pied-piped along, but its scope has been determined before this happens. The syntactic processes we observe can hardly be formulated within adverb theories of particles such as the PT or the MT, both of which assume that particles are adverb-like elements that get Chomsky-adjoined to other major categories. Unlike the head-theory proposed here, such theories cannot explain why particles do not undergo displacement, and neither can they explain why the XP in SPrtPs can undergo fronting and systematically give rise to an emphatic (or mirative) interpretation. A comparison with modern Indo-Aryan languages such as Hindi and Bangla shows that particles in these languages are often clitics, i.e. typical heads. Processes of grammaticalization by which XP-type elements are reduced to X-type elements in conjunction with typical semantic processes and obligatorizations give independent support to the head theory and provide further arguments against adjunction theories.

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