

Wh-copying and wh-scope marking by External Merge

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Abstract. This paper develops a syntactic analysis for long-distance interrogatives featuring multiple overt wh-elements in a single wh-dependency, namely wh-copying and wh-scope marking interrogatives in varieties of German and Dutch. Based on the analysis of control in Chomsky (2021a, b), we propose that the structures under investigation represent cases where Internal Merge of an element is prevented (despite Internal Merge ordinarily being the most economical option) – specifically, a wh-phrase cannot reach its scope position via Internal Merge because it enters into a labeling configuration and is frozen in place. Higher wh-phrases enter the derivation independently via External Merge, and are interpreted as occurrences (copies) of the same phrase via the rule of FormCopy. Issues relating to parametric variation in the availability of (patterns of) wh-copying/scope-marking are also addressed.

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1 Introduction

In some varieties of German (and Dutch), long-distance interrogatives can be formed by means of different strategies, in addition to (long-distance) *wh*-movement (1a), namely *wh*-copying (1b) and *wh*-scope marking (1c). In (1b), two (or more) overt occurrences of the same *wh*-phrase are involved in a single *wh*-dependency. In (1c), a default *wh*-pronoun marks the scope of *wh*-movement, while the contentive *wh*-phrase remains in a lower position.

- (1) a. *Wen* glaubst du *dass* Irina liebt?
 who believe you that Irina loves
 ‘Who do you believe that Irina loves?’
- b. *Wen* glaubst du *wen/den* sie liebt?
 who believe you who she loves
 ‘Who do you think she loves?’
- c. *Was* glaubst du *wen* Irina liebt?
 what believe you who Irina loves
 ‘Who do you believe that Irina loves?’

The phenomena in (1) have long been discussed within generative frameworks, (e.g. McDaniel 1989). We propose that successive-cyclic Internal Merge (IM) is not the construct that unifies the examples in (1a-b).¹ Rather, in *wh*-copying (1b), the same interpretive result as in long-distance movement (1a) is achieved by External Merge (EM) of *wh*-copies (cf. Den Dikken 2018). In addition, we propose that (1b) and (1c) should be given a unified treatment (cf. Barbiers, Koenenman & Lekakou 2010 in an IM framework). As indicated, both of our proposals are previously attested in the literature, but neither of them is standardly embraced.

One problem for the IM derivation of *wh*-copying comes from dialects of German and Dutch that involve partial copies in the non-scope positions, as in (2) (see section 3 for further data).

1. In order to facilitate reading, we indicate here some of the abbreviations more frequently found in the article – though many of them are standard: IM (Internal Merge), EM (External Merge), INT (the Interpretation procedure), EXT (the Externalization procedure, SEM (the Semantic interface), PHON (the Phonological interface).

- (2) a. *Wen* glaubst du *den* ich gesehen habe? German
 whom believe you this I seen have
 ‘Who do you think that I have seen?’ (*Pankau 2009: 206*)
- b. *Wie* denk je *die* ik gezien heb? Dutch
 who think you who I seen have
 ‘Who do you think I saw?’ (*Barbiers, Koenenman & Lekakou 2010: 2*)

Analyses of wh-copying based on IM require an account of how the copies in (2) can acquire distinct morphophonological realizations. We argue that the partial identity of the members of the wh-dependency can be accounted for more straightforwardly if such copies are drawn from the lexicon, i.e., introduced in the derivation by EM.

Quite independently of morphophonological issues, moreover, we argue that the EM derivation arises as an automatic consequence of the grammatical framework we assume (i.e., Chomsky 2013, 2021b). Specifically, given the standard assumption that the grammar lacks look-ahead, we argue that wh-phrases may undergo partial wh-movement (Fanselow 2017) as a default. At least in languages like German or Dutch we propose that the wh-dependency can then be extended by EM of wh-phrases interpreted as copies of the partially moved wh-phrase under the mechanism of FormCopy proposed for control in Chomsky (2021b,a).²

The article is structured as follows. After introducing the adopted framework and the main ingredients of the analysis in section 2, in section 3 we apply the analysis to different patterns of wh-copying in German and Dutch. We then extend the analysis to wh-scope marking in section 4, where we address some issues for our attempt at unification. Issues of cross-linguistic variation are discussed in section 5. Section 6 concludes the discussion.

2. As far as we can judge, the proposal we elaborate in this article is half-way between IM derivations of wh-copying and the box approach put forth by Chomsky (2024) without an actual formalization. The idea of box theory is that wh-phrases move from their position of EM to the nearest phase edge. This is the only syntactic derivational step. Other processes, such as the assignment of scope or the spell-out of the wh-phrase (in the scope position, in intermediate positions, or other) is a matter of Transfer from syntax to the interfaces. In some respects, at least in relation to wh-copying, the present analysis is comparable to Chomsky’s. Specifically, the only instance of IM corresponds to the lower link in the wh-dependency. There are no other instances of IM, but only EM of (partial) copies to feed Transfer processes, whether FormCopy (applying a part of INT[erpretation]) or EXT(ernalization) processes. It seems clear that whatever formalization Chomsky may have in mind for box theory it does not involve EM – however precisely the absence of formal details means that the whole matter must be left here for further research. Unfortunately, Chomsky’s (2024) paper became available to us only when this article had already been written, so that it is not crossreferenced in the text.

2 Outline of the analysis

In discussing raising and control, Chomsky (2021b,a) argues that IM is more economical than EM whenever available. This is because under IM, the Search Σ operation is restricted to a term within a syntactic object, whereas under EM, Σ has access to the entire Workspace. Therefore, natural principles of computational efficiency (cf. Chomsky’s 2021: 9 Resource Restriction) demand that EM occurs only if IM is impossible. In control configurations, EM of controller and controllee, as opposed to IM from the controlled position to the controlling one (cf. Hornstein 1999) is forced by the language-specific principle of Duality of Semantics (DoS) in (3).

- (3) *Duality of Semantics* (Chomsky 2021b: 30)
For A-positions, EM and EM alone fills a theta-position.

Importantly, Chomsky (2021b,a) argues that the Copy relation is established between the independently merged controller and controllee - exactly as between any two copies created by IM. In fact, he argues that this is desirable on minimalist grounds, as the Markovian property of derivations implies no access to previous stages of the Workspace. Therefore, the rule of FormCopy (FC) (or equivalently, the Copy relation Copy $\langle X, Y \rangle$), part of the interpretive (INT) procedure at phase level, has no way of distinguishing whether identical inscriptions are created by IM or EM. Applying to either, Copy determines an equivalent result also as part of Externalization (EXT), namely deletion of the lower copy.

In this article, we propose that the impossibility of IM and the application of anti-economical EM is also triggered in wh-copying, as stated in (4a) below (we return to wh-scope marking in section 4). Of course, DoS plays no role in preventing IM of wh-phrases to higher positions, see (4b). Rather, taking seriously the idea that the grammar does not have look-ahead, we argue that it is impossible to prevent the derivation from stopping at some arbitrary phase edge. Thus, in (1b), (2a) the wh-phrase (*wen, den*) can halt at the edge of the lower CP, labelling the resulting constituent by Agree with C, in the terms of Chomsky’s (2013, 2015) Labelling Algorithm. The wh-phrase is then frozen in place (cf. Rizzi’s (2006, 2015) Criterial Freezing), see (4c). We propose that full or partial copies enter the derivation by EM as a way to circumvent such a dead end, as in (4d), extending the scope of the wh-phrase at SEM via the Copy relation.

- (4) *Derivation of wh-copying by EM: Syntax*

- a. The mechanism of impossibility of IM and repair by anti-economical EM is set in motion in wh-copying.
- b. DoS is irrelevant to (a).
- c. The local nature of the derivation (i.e., no look-ahead, no backtracking, etc.), implies that the IM derivation may stop at an arbitrary phase edge, via Agree between the wh-phrase and the phase head and labeling of the resulting constituent.
- d. As IM is blocked under (c), EM of a (partially) identical wh-phrase may take place at the next phase edge (identified with the lower wh-phrase under the Copy relation).

It is worth commenting straight away on steps (4c)-(4d). In examples such as (1b), (2a), the embedded wh-phrase involved in step (4c) labels the subordinate clause by Agree with C - but the subordinate clause itself is not interrogative. Now, note that such properties as Q (Question) are computed only as part of the interpretive INT procedure; this takes place upon Transfer, hence at the next phase up. One possibility then is that Q is selected by an interrogative predicate and the embedded sentence is interpreted as interrogative. However, there is at least another possibility, involving no interrogative status of the embedded clause. This is precisely that the Copy relation applies between the embedded wh-phrase at the edge of the subordinated clause and the wh-phrase merged under step (4d), interpreting Q as part of the Copy pair, cf. (6) below.³

In turn, step (4d) requires EM in non-theta position. This step is fully compatible with the version of DoS proposed in Chomsky (2021b), as in (3), whose sole requirement is that theta-positions be filled via EM. Crucially, (3) does not require EM to fill only theta-positions. On the other hand, Chomsky (2021a) formulates a more restrictive version of DoS. The version of DoS in (3') restricts application of EM to theta-positions, while IM alone is associated with A'-positions.

(3') *Duality of Semantics* (Chomsky 2021a: 21)

3. Independently of the present proposal, Roussou & Vlachos (2023) and references therein, note that potential violations of the selectional properties of propositional attitude verbs can be rescued by operations taking place at a distance. Thus *believe* does not normally admit wh-complements (i); yet (ii) is perfectly well-formed.

(i)*I believe who has arrived(!)

(ii) I can't believe who has arrived!

The obvious conclusion is that selection by an interrogative/exclamative predicate is a sufficient but not a necessary condition for the well-formedness of the embedded wh-sentence – and that furthermore well-formedness cannot be decided under sisterhood (selection) but requires reference at least to phasal domains.

- a. for A-positions, EM is one-one associated with theta-positions, IM is one-one associated with argument positions;
- b. IM alone yields A'-positions

Our view is that this version is too restrictive, independently of the type of phenomena that are of direct interest in this article. An obvious counterexample to (i) in the A-domain is provided by subject expletives (e.g. English *there*), which are standardly taken to undergo EM in non-theta position, in violation of (a). With respect to the A'-domain, Rizzi (1990, 2001) has provided arguments to the effect that *why* undergoes EM directly in the left periphery of the clause, in violation of (b). We therefore adopt the weaker version in (3). We do not exclude that these arguments can be circumvented and the stronger version maintained - we are merely claiming that some further research is required.

Let us then go back to (4). At the phase level, we have assumed that the Copy relation applies as part of the INT procedure, as in (5a). The properties of Copy $\langle X, Y \rangle$ are that it obeys Minimal Search (MS) (5b) and the Phase Impenetrability Condition (PIC) (5c) and it is Markovian (5d), i.e. it treats identical inscriptions formed by EM or IM in the same way, being oblivious to their derivational history.⁴

- (5) *FormCopy/Copy* $\langle X, Y \rangle$
 - a. is a component of INT
 - b. it appropriates the freely available principle Minimal Search (MS) ('Search Σ searches as far as the first (relevant) element it reaches and no further')
 - c. it operates under the PIC
 - d. it is strictly Markovian

Needless to say, if we apply Copy to instances of partial wh-copying, we have to clarify what we mean by Copy working under identity. To begin with, Identity and other relations/operations in minimalism are defined with respect to formal features (FFs). Even so, if identity of FFs proves too strong a condition, we can retreat to a weaker condition of non-distinctness, defined as follows: A and B are non-distinct if the intersection of their FFs is not empty and the FFs they share have non-contradictory values. Following the syntactic derivation in (4), we propose that INT includes the step in (6a), yielding the interpretation in (6b) at the SEM interface.⁵

4. Copy is a departure from previous minimalism, where IM automatically forms copies and control does only to the extent that it is taken to involve IM (Hornstein 1999).

5. In the model of grammar adopted here, where operations are optional and free to apply when they can (Chomsky 2021b), nothing prevents application of Copy in cases

- (6) *Derivation of wh-copying by EM: INT*
- a. Copy $\langle X, Y \rangle$ applies between two EM-ed phrases on grounds of non-distinctness in formal features FFs.
 - b. Members of the Copy relation are interpreted as consisting of occurrences (copies) of the same constituent.

Finally, consider the EXT procedure.⁶ The most obvious surface difference between the wh-movement derivation in (1a), and the wh-copying derivation in (1b) is that non-scope copies are externalized in the latter. We assume that deletion at EXT requires the deleted (wh-)phrase not to be in a halting (i.e., labeling) configuration, as in (7b). Therefore, though Copy applies to both (1a) and (1b), the lower wh-copy deletes in (1a) but not in (1b), because it labels (by hypothesis (4c)) in the wh-copying structure.

- (7) *Derivation of wh-copying by EM: EXT*
- If Copy $\langle X, Y \rangle$, Y deletes only if
- a. Recoverability of deletions is satisfied
 - b. Y is not in a halting configuration (i.e. it does not label)

In a nutshell, the lack of derivational look-ahead predicts that long-distance dependencies can be constructed by IM, but also (less economically) by iterated applications of EM. At INT, both derivations yield the same interpretation under Copy $\langle X, Y \rangle$. At EXT, iteration of EM (unlike IM) yields multiple spell-outs. It is important to keep in mind that we are not setting up IM (regular fronting) and EM (copying) derivations to be mutually exclusive in a given context. The general idea is that either of them could apply, because at some crucial step in the

like (i) – or their German counterparts. In the IM derivation (i) is straightforwardly excluded by DoS – but what excludes a control-like derivation?

(i)*Who₂ [_{VP} t₂ wonders [_{CP} who₁ [_{TP} [t₁ came to the party]]]]?

Informally, (i) violates the segregation of A and A' syntax – which here is simply stated (as is generally the case in generative frameworks). This is the issue directly addressed by Chomsky's box idea (see also Safir 2019 for alternative discussion and implementation). In other words, the problem at hand would disappear if in the well-formed examples in (1)-(2) the higher copy of wh- is not EMed, unlike in (i), but introduced as part of Transfer. This must be left for future research, cf. also fn2.

6. The present discussion is neutral between a view under which syntax and morphology are two separate components (roughly as in Distributed Morphology, Halle & Marantz 1993) and a view under which there is a single morphosyntactic component (as in Manzini & Savoia 2007, Collins & Kayne 2020 or in a very different way in nano-syntax, Starke 2009). We favor the morphology in syntax approach, but nothing hinges on it. The complex matter of Lexical Insertion is also orthogonal to the present discussion. We just adopt the standard view in minimalism that the syntax is blind to lexical content, however it is introduced.

derivation, more than one outcome is allowed by the grammar. In the following sections, we apply the general derivational mechanism to the data in section 1, as well as additional data, accounting for differences internal to wh-copying languages and of course between wh-copying and non-wh-copying languages.

3 Wh-copying

3.1 Basic data and previous analyses

The wh-copying phenomenon in languages like German or Dutch is often taken to be evidence in favor of the conclusion that long-distance wh-movement proceeds in a successive-cyclic fashion (notable exceptions are Koster (2009) and Den Dikken (2018)). In this perspective, a wh-copying example like (8) is viewed as resulting from successive-cyclic movement and from the overt realization of multiple copies of the wh-phrase along the movement path (e.g., Fanselow & Mahajan 2000, Fanselow & Ćavar 2001, Felser 2004).

- (8) *Wen* glaubst du *wen* sie liebt?
 who believe you who she loves
 ‘Who do you think she loves?’

However, matters are not as simple as they may appear in (8), because of the existence of numerous examples in which partial wh-copying is found. Thus, in German (9a) and Dutch (9b), d-pronouns are involved in intermediate positions (i.e. *den*, *die* respectively) as opposed to identical wh-pronouns — though speakers who accept (8) do not necessarily accept (9a). D-pronouns are otherwise found in relative clauses, as well as in free relatives in (varieties of) German and Dutch.

- (9) *d-dialects*
- a. *Wen* glaubst du *den* ich gesehen habe? German
 whom believe you this I seen have
 ‘Who do you think that I have seen?’ (Pankau 2009: 206)
- b. *Wie* denk je *die* ik gezien heb? , Dutch
 who think you who I seen have
 ‘Who do you think I saw?’ (Barbiers, Koeneman & Lekakou 2010: 2)

Another type of partial wh-copying found in some varieties involves a complex wh-phrase in scope position and simplex wh-pronouns (or d-pronouns, depending on the variety) in intermediate positions, as in (10).

- (10) *complex wh-copying*
- a. *Welchem Mann* glaubst du *wem/dem* sie das Buch gegeben
 which man believe you who she the book given
 hat?
 has
 ‘Which man do you think she has given the book to?’ German
 (adapted from Anyadi & Tamrazian 1993: 4)
- b. *Welke jongen* denk je *wie/die* het gedaan heeft? Dutch
 which boy think you who it done has
 ‘Which boy do you think has done it?’
 (adapted from Boef 2012: 115)

The mirror configuration in which a lower wh-phrase has its scope marked by higher pronominal wh-copies is also instantiated in Dutch, as in (11).

- (11) *complex wh-copying*
- Wie* denk je *welke jongen* ik gezien heb? Dutch
 Who think you which youngsters I seen have?
 ‘Which young people do you think I saw?’ (Koster 2009: 28)

Let us consider how the data just reviewed can be accounted for under the standard view that copies are spell-outs of the copy left by IM. Of special interest here is the analysis of Barbiers, Koeneman & Lekakou (2010), who argue for a unification of wh-copying and of wh-scope marking. Following Déchaine & Wiltschko (2002), they assume that noun phrases and pronouns have the internal structure $[_{DP} D [_{\varphi P} \varphi [_{QP} Q \dots]]]$. They then propose that a movement chain may begin as a DP and end up as either a φP or as a QP — for instance in (9b) the movement chain begins with *die* (a DP) and ends up with *wie* (a φP). In general, in this way, they are able to capture wh-dependencies characterized by the presence of partial wh-copies higher up and of a richer wh-phrase lower down.

On the other hand, the analysis of Barbiers, Koeneman & Lekakou (2010) does not account for the fact that d-pronouns, which by hypothesis realize a full pronominal structure, are found in a higher clause than wh-pronouns assumed to contain fewer structural layers in examples like (12) (cf. Boef 2012).

- (12) a. *Wen* glaubst du *den* Peter denkt *wen* sie geküsst hat?
 who believe you who Peter thinks who she kissed has
 ‘Who do you think Peter believes she has kissed?’ German
 (Pankau 2013: 50)
- b. *Wie* denk je *die* Jan zei *wie* het gedaan heeft? Dutch
 who think you who Jan said who it done has?
 ‘Who do you think John said has done it?’ (adapting Boef 2012: 83)

Another empirical difficulty for Barbiers, Koenenman & Lekakou (2010) has to do with cases of complex wh-copying like (11) above. If *wie* in the scope position is derived from *welke* in the intermediate SpecCP, then even leaving aside the question of how *wie* ‘who’ can be derived from *welke* ‘which’, a violation of the Left Branch Condition (LBC; Ross 1967) would ensue (cf. Koster 2009). In turn, the LBC is needed to rule out the ungrammatical wh-copying sentences in (13).

- (13) a. **Welches* denkst du *welches Schweinderl* er nehmen wird?
 which think you which piggie he take will
 ‘Which piggie do you think he will take?’ German
 (Fanselow & Ćavar 2001: 124)
- b. **Welke* denk je *welke man* ik gisteren gezien heb?
 which think you which man I yesterday seen have?
 ‘Which man do you think I saw yesterday?’ (Boef 2012: 69) Dutch

Finally, patterns of the type in (10), with a full wh-phrase in scope position and lower pronominal copies, cannot be subsumed by the analysis of Barbiers, Koenenman & Lekakou (2010) (cf. Pankau 2013: 102-4). Indeed, the authors assume that cases like (10) require a separate analysis. They argue that complex wh-phrases are base-generated in their surface position (cf. van Craenenbroeck 2004) and are connected to the intermediate simplex copy via semantic construal. The question then arises why this solution couldn’t extend to wh-copying generally. This is what we propose to do here, at least to the extent that Copy is part of Transfer to SEM. We first address examples of pronominal wh-copying — by which we mean examples where only simple pronominal elements are involved, as in (8)-(9). We then return to phrasal wh-copying, as in (10)-(11).

3.2 Pronominal wh-copying: analysis

The simplest instances of *wh*-copying involve identical wh-pronouns. Consider German (8), repeated below as (14) for convenience.

- (14) *Wen* glaubst du *wen* sie liebt?
 who believe you who she loves
 ‘Who do you think she loves?’

The main challenge posed by wh-copying consists in formalizing the dependency between the overt copies. We meet it by two assumptions: first, under the mechanism regulating IM vs EM (namely computational efficiency), EM is a last resort (cf. (4) above). Second, Copy applying as part of INT feeds SEM (cf. (6) above). As indicated in section 2, the

gist of our proposal is that the intermediate wh-copies are frozen in a halting configuration at the edge of embedded CPs, i.e., they undergo partial wh-movement (cf. Fanselow 2017). The scope of the wh-phrase is established via (i) EM of a wh-pronoun in the scope position (or in as many intermediate positions as necessary); and (ii) application of Copy among the independently EMed wh-phrases.

For the sake of explicitness, we begin by providing a derivation of a regular wh-fronting example like (15).

- (15) *Wen* glaubst du *dass* Irina liebt?
 who believe you that Irina loves
 ‘Who do you believe that Irina loves?’

In the initial steps of the derivation, the wh-pronoun *wen* ‘who’ undergoes EM with V and then moves successive-cyclically. Current formulations of the PIC (Chomsky 2001) require the initial movement of the object to be to the edge of vP, from where it can be moved to the edge of CP, as in (16a). In the next clause up, the two stage movement in (16a) is repeated, via the edge of the matrix vP to end up in the scope position at the edge of the matrix CP, as in (16b). The latter is a criterial Q position in the terms of Rizzi (2006, 2015). In the terms of Chomsky (2013, 2015) it is an Agree configuration. In particular, we adopt Chomsky’s (2013) suggestion that there is “a force feature F, subsuming Q as a special case” (p. 46); the feature F may be associated with a wh-phrase, and be compatible with a range of interpretations, “its interpretation as interrogative, relative, exclamative determined by structural position” (Chomsky 2015: fn. 16). In accordance with these assumptions, the root node is labeled $\langle F, F \rangle$ where F = Force. The Q interpretation may be the result of an enrichment of the INT procedure (cf. Portner 2004).

- (16) a. ... [_{CP}*wen* *dass* [_{IP} Irina [_{vP}*wen* liebt *wen*]]]
 b. [_{<F, F>} *wen* glaubst [_{IP} du [_{vP}*wen* glaubst [_{CP}*wen* *dass* [_{IP} Irina [_{vP}*wen* liebt *wen*]]]]]]]

At each phase Copy applies yielding copy pairs, e.g. $\langle \textit{wen}, \textit{wen} \rangle$ in the v-phase. The Copy relation determines deletion of lower members of the wh-sequence at PHON and their interpretation as copies of the same item at SEM.

With these assumptions in place, let us now turn to the derivation of (14). The initial steps of the derivation are identical to the derivation just provided for regular wh-fronting, with EM of *wen* in theta-position followed by IM first to the edge of the embedded vP and then to the edge of the embedded CP, as in (17a). Crucially, at the edge of CP, wh-copying

grammars allow the *wh*-phrase to check a formal feature *F*, labelling the constituent by Agree in the terms of Chomsky (2013, 2015). This is not a necessary step, see for instance (16a). However, it is a possible step. Given that the grammar lacks look-ahead, the derivation cannot decide which option to take, for instance on the basis of contextual restrictions imposed from above (i.e. selection). Taking the second option, then, the *wh*-phrase projects the label, as in (17b).

- (17) a. ... [*wen* C [_{IP} Irina [_{VP} *wen* liebt *wen*]]]
 b. ... [_{<F, F>} *wen* C [_{IP} Irina [_{VP} *wen* liebt *wen*]]]

By entering into labeling, *wen* is rendered unavailable for further IM. The derivation however can proceed by EM of an additional *wh*-phrase directly at the edge of the *v* phase, as in (18a). The newly merged *wh*-phrase subsequently moves to SpecCP and (consistently with the preceding discussion) concurs to labeling the root sentence as <F, F> (18b).

- (18) a. ... [_{VP} *wen* [_{VP} *v* [_{VP} glaubst [_{<F, F>} *wen* C [_{IP} Irina [_{VP} ~~*wen*~~ liebt ~~*wen*~~]]]]]]]
 b. [_{<F, F>} *wen* glaubst [_{IP} du [_{VP} ~~*wen*~~ glaubst [_{<F, F>} *wen* Irina liebt ~~*wen*~~] ...

The crucial derivational step in (18a) presupposes that IM, which is in principle the most economical option, is impossible, so that recourse to EM is legitimate. By hypothesis, in the previous step (17b) *wen* labels its constituent. Recall that under standard minimalist assumptions, Formal Features (FFs) are associated with phase heads, including *F* on the embedded *C* phase head in (17)/(18), triggering Agree with the *wh*-phrase. Technically, FFs on phase heads are uninterpretable/unvalued [*uF*] and this triggers Agree. Now, syntactic objects that label their constituent are unmovable - the rationale being that their deletion as part of IM would create an illegitimate label (Chomsky 2015). The IM derivation is therefore impossible if *F*-Agree and labelling takes place in the embedded clause as in (17b).

At this point, we have a provisional answer as to why IM and EM derivations appear to alternate freely in German, yielding long *wh*-movement as in (15) or *wh*-copying as in (14). In essence, movement to the edge of CP may return a CP label - or an Agree label <F, F>. In the first instance, the IM derivation continues, ultimately yielding regular *wh*-fronting, as in (15). In the second case, the IM derivation must stop since *wen* is now frozen in place - and the formation of a long *wh*-dependency can only resort to EM, as in (17)-(18). The means to do so is Copy (as anticipated in section 2), to which we return below.

Before turning to Copy, note that in (17)-(18) the embedded $\langle F, F \rangle$ label differs interpretively from the $\langle F, F \rangle$ root label, since only the latter correspond to an interrogative interpretation, i.e. to the scope of an interrogative Q operator. The embedded sentence — though labelled $\langle F, F \rangle$ like the matrix sentence — is the complement of a declarative verb; therefore, it must have declarative force. Now, a number of sentences introduced by a wh-phrase are in fact declarative, including relatives and free relatives. These are open propositions ultimately closed by an antecedent (relatives), definite/existential quantification (free relatives), etc., in line with Chomsky's (2015) idea that F allows any number of interpretations, determined by context.⁷

Rather, the issue to be clarified is how exactly EM in (17)-(18) succeeds in creating a wh-dependency equivalent to that produced by successive-cyclic wh-movement in (16). The solution we have already suggested is the application Copy at Transfer. Recall that by the Markovian property, Copy cannot distinguish syntactic objects that have entered the derivation by EM or IM. Hence nothing prevents independently merged instances of *wen* to be interpreted as being in the Copy relation at SEM. The Copy-pairs (or sequences) constructed by the INT procedure in (16) and in (17)-(18) receive the same interpretation at SEM. In both instances, the lowest member of the sequence satisfies a theta configuration by EM with the embedded verb, and the other members of the sequence are therefore theta-linked (cf. Chomsky 2021b: 26). As just discussed, a wh-phrase is not necessarily interrogative. In order for interrogative interpretation to accrue to a wh-phrase, we need a question operator. This we assume to be introduced in the matrix clauses of both (16) and (18).

Differences between (16) and (18) arise at PHON. In (7) above, we have already assumed that while the deletion of copies in wh-copying is impossible because they enter into labeling (i.e., freezing configurations) - unlike copies of IM. Consider partial wh-copying in so-called d-dialects, where the higher wh-pronoun in a wh-copying sequence has wh-morphology, but the lower pronoun has d-morphology. In all varieties of

7. A hypothesis that has often been entertained as to the nature of partial wh-movement is that it represents movement to a Focus position (Sabel 2000 for a crosslinguistic overview). In present terms, then, the label on the sentential complement in (17) may in principle be interpretable as a focalization of the wh-phrase at the C-I interface. At the same time, the embedded clause can have a different focus, as in (i). Assuming that there can only be one focus per clause, then the Focus interpretation of the *wh*-phrase is excluded.

(i) Was glaubst du, wer DAS ist?
 'Who do you think THAT is?'

German, d-pronouns serve as relative pronouns —whereas wh-pronouns are impossible in headed relatives, as in (19a). Some varieties of German have only wh-headed free relatives - i.e. only *wen* is allowed in (19b). These varieties have only wh-pronouns in wh-copying (Pankau 2013). In some varieties of German, free relatives can be introduced both by wh-pronouns and by d-pronouns, cf. (19b). According to Pankau (2013), these are the varieties where d-pronouns surface in wh-copying.

- (19) a. Der Mann *den*/**wen* sie liebt ist ein Idiot.
 the man who she loves is an idiot
 ‘The man whom she loves is an idiot.’
- b. Ich lade ein *wen/den* alle mögen. German
 I invite in who everyone likes
 ‘I invite who is liked by all’ (Pankau 2013: 91, 52)

The derivation of partial wh-copying is largely indistinguishable from the derivation outlined above for identical wh-copying. The first steps of the derivation involve EM of the lower pronoun, here a d-pronoun, in theta-position, followed by its IM first to SpecvP then to SpecCP. Our analysis depends on the lower d-pronoun being endowed with the F feature and labeling the embedded sentence $\langle F, F \rangle$ by Agree with C, as in (20a). The derivation then proceeds by externally merging *wen* in the matrix SpecvP, as in (20b). At the phase level, *wen* and *den* in the lower SpecCP can establish a Copy relation on the assumption that they share φ - and F-features, forming the copy pair $\langle \textit{wen}, \textit{den} \rangle$, under the definition of non-distinctness defined in the discussion of (6) above. Finally, IM of *wen* to the matrix SpecCP and labeling close the derivation, as in (20c).

- (20) a. ... [$\langle F, F \rangle$ *den* C [_{IP} ich [_{VP} *den* sah]]]
 b. ... [_{VP} *wen* [_{VP} v [_{VP} glaubst [$\langle F, F \rangle$ *den* C [_{IP} ich [_{VP} *den* sah]]]]]
 c. [$\langle F, F \rangle$ *wen* glaubst [_{IP} du [_{VP} ~~*wen*~~ glaubst [$\langle F, F \rangle$ *den* ich sah]

Evidently, *wen* and *den* have different spell-outs. What is more, since they are not interchangeable in the scope position, there must be some reason why only *wen* is compatible with the Q reading of Force. Under the notion of non-distinctness in (6), the distinction may be imputed to some extra feature characterizing one but not the other member of the pair. Following Barbiers, Koenenman & Lekakou (2010) we may assume that this is a D feature present on *den* but not on *wen*.⁸

8. The adoption of this proposal does not imply that we inherit the problems noted at the beginning of section 3. In particular, for what concerns example (12), the difficulties of Barbiers, Koenenman & Lekakou (2010) depend on their proposal that the

3.3 Phrasal wh-copying involving a wh-pronoun

Let us now turn to wh-copying involving phrasal wh-constituents. Consider the Dutch example in (11), reproduced as (21a) for ease of reference. We assume that the complex wh-phrase undergoes EM in theta position, followed by IM to the embedded SpecCP. Following labeling of the embedded complement as $\langle F, F \rangle$ and freezing of the complex wh-phrase in place, the derivation can only be continued by EM, specifically, in this case, of a wh-pronoun, as in (21b). Copy applies as part of INT based on shared wh-/F and ϕ -features. The derivation is closed by IM in the matrix SpecCP, labeling of the matrix root node and by interpretation in the scope of a question operator, as in (21c).

- (21) a. *Wie* denk je *welke jongen* ik gezien heb?
 Who think you which youngsters I seen have?
 ‘Which young people do you think I saw?’
- b. ... [_{VP} *wie* [_{VP} v [_{VP} denk [_{\langle F, F \rangle} *welke jongen* C [_{IP} ik [_{VP} *welke jongen* ...]]]]]]]
- c. [_{\langle F, F \rangle} *wie* denk [_{IP} je [_{VP} *wieden*k [_{\langle F, F \rangle} *welke jongen* ik gezien heb]]]]]

In order to understand how the wh-phrase enters Copy with the wh-pronoun in (22c), we need to consider first of all the internal structure of the wh-determiner *welke* ‘which’ (or its German counterpart *welche*). We assume that *welk-* includes a wh-head (labeled as Q(uantifier) in (22)-(23)) which embeds an adverbial modifier denoting D-linking in the sense of Pesetsky (1987), namely *-lk*; *welk-* is then followed by ϕ -features, along the lines of (22). In turn, in the example at hand *welk-/welch-* is restricted by an nP, as in (23).

- (22) [[[_Q wh-] [_{D-LKD} lk-/lch-]] e]

- (23) [_{QP} *welke* [_{nP} *jongen*]]

Based on (22), we assume that in (21c), Copy is made possible by the identity of the wh-/F and ϕ -features of the head of the wh-phrase and of the wh-pronoun \langle *wie*, *welke* \rangle . We assume that the D-linking properties contributed by the *-lk-* affix combining with wh-/F and ϕ -features do not stand in the way of Copy under the non-distinctness condition in (6). The nP restrictor is simply not part of Copy.

IM derivation peels off layers from the d-phrase. In present terms, there is no IM derivation and therefore no necessity for a lower wh-phrase to be identical to or poorer in features than a higher one. The present approach turns out to be weaker – but as anticipated in section 1, this seems to be what the evidence requires.

In the other attested configuration for complex wh-copying, the wh-phrase is in scope position and the lower copy is a pronoun (of the wh-/d-variety). We reproduce the German example (10a) in (24a). The derivation follows the pattern outlined above. The wh-pronoun *wem* undergoes EM in theta-position, followed by IM to SpecCP, as in (24b). Following the analysis adopted so far, the wh-pronoun labels its constituent by Agree with C and further IM becomes impossible. The derivation therefore can only be continued via EM of the complex wh-phrase in (24c), followed by IM to SpecCP and labeling of the resulting constituent (24d). Following again the schema of analysis laid out in (21), the nP-restrictor is not part of the Copy relation.

- (24) a. *Welchem Mann* glaubst du *wem* sie das Buch gab?
 which man believe you who she the book
 ‘Which man do you think she gave the book to?’
- b. ... [_{<F, F>} *wem* C [_{IP} sie [_{VP} *wem* das Buch gibt]]]
- c. ... [_{VP} *welchemMann* [_{VP} du [_{VP} glaubst [_{<F, F>} *wem* C [_{IP} sie [_{VP} *wem* ...]]]]]]]
- d. [_{<F, F>} *welchem Mann* glaubst [_{IP} du [_{VP} *welchemMann* glaubst [_{<F, F>} *wem* ...]]]]]

3.4 Other phrasal wh-copying

In the examples of partial wh-copying discussed so far, at least one of the copies involved is a simple wh-/d-pronoun. Examples also appear in the literature where both copies may present a complex internal structure. In some varieties of German/Dutch, a complex *welch-/welk*-phrase in scope position can be resumed by a *welch-/welk*-pronoun, as in (25).

- (25) a. *Welche Person* glaubt John *welche* Mary getroffen hat?
 which person believes J. which M. met has
 ‘Which person does John believe Mary has met?’ German
 (Rett 2006: 15)
- b. *Welke boeken* denk je *welke* zij gekocht heeft? Dutch
 which books think you which she bought has
 ‘Which books do you think she bought?’ (Koster 2009: 23)

Following the schema of derivation adopted so far, the embedded SpecCP hosts the wh-phrase originally merged in argument position. In (25a), on the other hand, *welche* looks to be a Determiner, rather than a pronoun. Let us provisionally assume that it involves an empty nP restrictor,

namely [*welche* [nP]], as in (26a). Since *welche* nP labels the intermediate sentential projection, and it is frozen in place, the derivation cannot continue by IM. A wh-phrase then undergoes EM in the matrix SpecvP, as in (26b), followed by Copy, which applies based on identity/non-distinctness, as in other derivations. IM of the wh-phrase to matrix SpecCP closes the derivation, as in (26c).

- (26) a. ... [_{<F, F>} *welche* nP [_{IP} Mary [_{VP} *welche* nP getroffen] hat]]]
 b. ... [_{VP} *welche* Person [_{VP} glaubt [_{<F, F>} *welche* nP [_{IP} Mary getroffen hat]]]]]
 c. [_{<F, F>} *welche* Person glaubt [_{IP} John [_{VP} [_{<F, F>} *welche* nP Mary getroffen hat]]]]]

The derivation in (26) differs from those previously considered in this section, in that it effectively involves two wh-phrases, albeit only one has an overt restrictor. Interestingly, varieties of German/Dutch that allow the pattern in (25) seem to agree in rejecting the inverse pattern, with *welch-/welk-* in scope position and a lower complex wh-phrase, as in (13a), reproduced as (27).

- (27) **Welches* denkst du *welches Schweinderl* er nehmen wird?
 which think you which piggie he take will
 ‘Which piggie do you think he will take?’ German
 (Fanselow & Ćavar 2001: 124)

The asymmetry in (25) vs. (27) is especially noteworthy in that so far we have found that wh-phrases in partial wh-copying structures can typically switch between higher and lower positions (though not necessarily in the same language, see section 5). Indeed, in present terms, the derivation of (27) is the same as for (25), except for the position of the empty nP restrictor. The lower wh-phrase consisting of the determiner *welches* and of its restrictor *Schweinderl* is merged in theta position, followed by IM in SpecCP and labeling as in (28a). At the next step up, however, EM of *welches* nP in SpecvP yields ungrammaticality as in (28b).

- (28) a. ... [_{<F, F>} *welches Schweinderl* [_{IP} er nehmen wird]]]
 b. * ... [_{VP} *welches* nP [_{VP} du [_{VP} denkst [_{<F, F>} *welches* *Schweinderl* [_{IP} er nehmen wird]]]]]]]

In short, the copy pair <*welche* Person, *welche* nP> in (26b) is well-formed - but the opposite order, namely <*welches* nP, *welches Schweinderl*> in (28b) is ill-formed. The natural conclusion suggested by this asymmetry is that deletion of the nP restrictor is involved. Thus the actual structure of (25) is as in (26’), where the two wh-determiners are in

a Copy relation - nor can the lower one be deleted given that it labels. However nothing stands in the way of deleting the nP restrictor.

(26') [_{<F, F>} *welche Person* glaubt [_{IP} John [_{VP} [_{<F, F>} *welche Person* Mary getroffen hat]]]]

The deletion operation postulated in (26') is independently needed as part of the Matching analysis of relative clauses (e.g. Sauerland 1998), where the nP pied-piped by the wh-pronoun is deleted under c-command by the head of the relative clause, as roughly illustrated in (29). It may therefore be the case that deletion of the nP restrictor in examples like (26') falls together with that observed in the Matching analysis of relative clauses.

- (29) a. The man who John saw
 b. The man [_{CP} [_{DP} who [_{NP} man]] [_{IP} John saw ~~who man~~]]
 c. The man [_{CP} [_{DP} who [_{NP} man]] [_{IP} John saw ~~who man~~]]

By contrast with (27), the wh-copying pattern involving a higher wh-determiner and a lower wh-phrase, seems to be attested with *wieviel* 'how many', as in (30).

- (30) *Wieviel* sagst du *wieviel Schweine* ihr habt? German
 how many say you how.many pigs you
 'How many pigs do you say that you have?'

(Fanselow & Ćavar 2001: 124)

According to Fanselow & Ćavar (2001: 124), Pankau (2013: 79ff.), Boef (2012: §2.7.1) for Dutch, the contrast in (27) vs. (30) depends on *wieviel* being allowed to undergo Left Branch Extraction in the relevant varieties, as opposed to *welche*; see (31). Therefore, the correlation between (27)/(30) and (28) provides a potential argument in favor of an IM derivation of wh-copying, under which subextraction of *wieviel* is possible in (30) as in (31b), while subextraction of *welches* is barred in (27) as in (31a).

- (31) a. **Welchen* hat sie Mann eingeladen?
 which has she man invited?
 'Which man did she invite?'
 b. *Wieviel* habt ihr Schweine?
 How.many have you pigs?
 'How many pigs do you have?'

However, simply invoking the parallelism between (30) and (31b) begs the question of what makes the (apparent) extraction of the determiner possible in either instance. One line of explanation is suggested by the comparison with Romance languages, where ‘how many’ embeds a pseudopartitive complement overtly visible in French, e.g. *combien de cochons* ‘lit: how many of pigs’, making subextraction of *combien* legitimate. In Italian, *quanti* ‘how many’ directly quantifies over an nP, but subextraction of *quanti* is possible if it strands a *ne* clitic, as in (32).

- (32) a. Quanti maiali vedi?
 how.many pigs you.see
 ‘How many pigs do you see?’
 b. Quanti ne vedi?
 how.many of.them you.see
 ‘How many of them do you see?’

A long line of analysis of pseudopartitives holds that the quantifier is constructed as a modifier of nP, rather than as a determiner embedding it (Selkirk 1977 on English, Pesetsky 1982 on Russian, cf. Manzini & Franco 2019 on Italian). We may surmise that this is the reason it can be extracted from the noun phrase, also in German where no pseudopartitive structure is evident. Consider then (30). In the embedded sentence, we merge *wieviel Schweine* ‘how many pigs’, moving it to the edge of CP which it labels, as in (33a). Further IM is impossible, but the derivation can be continued by EM of *wieviel*, as in (33b). In (33b) we assume that merger of *wieviel* alone is possible - for the same reason why *wieviel* can strand its nP restrictor without violating the LBC in (31b). Since no nP deletion is involved the derivation is legitimate.

- (33) a. ... [_{<F, F>} *wieviel Schweine* [_{IP} ihr habt]]
 b. ... [_{VP} *wieviel* [_{VP} du [_{VP} sagst [_{<F, F>} *wieviel Schweine* [_{IP} ihr habt]]]]]]

Finally, in both German and Dutch, full-fledged copying of entire complex wh-phrases is excluded. In other words, at least one of the two copies must be a wh-pronoun/determiner/modifier for Dutch/German speakers. Nevertheless, wh-copying involving two identical wh-phrases is attested in Afrikaans, as in (34) (data attributed to Theresa Biberauer).

- (34) *Watter meisie sê hy watter meisie kom vanaand kuier?*
 which girl said he which girl come tonight visit
 ‘Which girl did he say is coming to visit tonight?’ Afrikaans
 (Lohndal 2010)

We assume that the usual derivational mechanism is at play, the lower wh-phrase being merged in argument position and frozen in the embedded SpecCP. In Afrikaans, the derivation can then be continued by EM of an identical copy, essentially by the same mechanism described by Chomsky (2021b,a) for control.

4 Wh-scope marking

4.1 Basic data and analysis

In this section we discuss the possibility of extending the analysis proposed here for wh-copying to wh-scope marking (cf. German (35)). While the derivation by EM of the wh-scope marker, *was* in (35), is standard, the present proposal clarifies why the resulting structure does not constitute a violation of computational efficiency, though it is in free alternation with long wh-movement.

- (35) *Was glaubst du wen Irina liebt?*
 what believe you who Irina loves
 ‘Who do you believe that Irina loves?’

Following the analysis of wh-copying, we assume that in wh-scope marking, the argument wh-phrase, e.g. *wen* in (35), undergoes partial wh-movement. The scope position is then taken by the EMed wh-word *was* ‘what’, which in turn forms a Copy pair with the wh-phrase in the lower phase.

Let us go through the derivation stepwise. The first steps involve EM of the lower copy in argument position, followed by IM to the edge of the embedded vP and on to the edge of the embedded CP, as in (36a). By hypothesis, movement of the wh-phrase to the edge of CP labels the resulting constituent as $\langle F, F \rangle$, as in (36b). The most economical option for extending the derivation, namely IM, is made impossible by the fact that the wh-phrase, labeling its constituent, is frozen in place. The derivation is then extended by EM of a wh-pronoun which in German we may take to be the minimal wh-pronoun (much in the sense of Kratzer 2009), i.e. a pure exponent of wh-, realized as *was* (with default φ -features), as in (36b).⁹ The minimal wh-pronoun *was* subsequently moves to SpecCP and labels the root sentence, as in (36c).

9. We assume that *was* does not carry an [inanimate] feature, as it admits answers ranging over events, propositions and both animate and inanimate entities (cf. English *what*, Italian *che*, etc.). Thus *what do you see from the window?* can be answered by *my uncle*. The reason why only *what* can have an inanimate entity as an answer is that *who* is instead restricted to animates (as, e.g., *wer* in German, etc.).

- (36) a. ... [*wen* C [_{IP} Irina [_{VP} ~~*wen*~~ liebt ~~*wen*~~]]]
 b. ... [_{VP} *was* [_{VP} v [_{VP} glaubst [_{<F,F>} *wen* C [_{IP} Irina [_{VP} ~~*wen*~~ liebt]]]]]]]
 c. [_{<F,F>} *was* glaubst [_{IP} du [_{VP} ~~*was*~~ glaubst [_{<F,F>} *wen* Irina liebt ~~*wen*~~]]]]

At Transfer, Copy applies between the two wh-phrases in (36) because of their identical wh-/F feature and the non-distinctness of their φ -features. The members of the Copy pair $\langle was, wen \rangle$ are then interpreted as occurrences of the same referential and thematic content. The system thus forms a direct dependency between the scope-marker and the lower wh-phrases (van Riemsdijk 1983, McDaniel 1989). While this direct dependency treatment seems to be fairly standardly accepted for wh-scope marking in Dutch (e.g. Barbiers, Koenenman & Lekakou 2010, Boef 2012), it is highly debated in German, where the so-called indirect dependency approach may have gained the upper hand in more recent years (e.g. Felser 2004, Rett 2006, Bruening 2006, Pankau 2013).¹⁰ We return to this issue immediately below (section 4.2).

Before proceeding, we note that Fanselow (2017) lists several combinations of partial wh-movement and wh-scope markers in German, when two or more levels of embedding are involved. In (37a), we assume that IM is responsible for successive-cyclic movement of *wen* from the thematic position to an intermediate SpecCP. The second part of the derivation involves EM of *was*, along the lines of (37b).

- (37) a. *Was* denkst du *wen* sie glaubt *dass* Fritz meint *dass* sie
 what think you who she believes that Fritz means that she
 liebt?
 loves
 ‘Who do you think that she believes that Fritz means that she loves?’
 b. *Was* denkst du *wen* sie glaubt ~~*wen*~~ *dass* Fritz meint ~~*wen*~~ *dass* sie
 liebt ~~*wen*~~?

In the example in (38), IM is again responsible for movement of *wen* from the thematic position to an intermediate SpecCP. The interesting fact in (38) is the presence of two copies of *was*. If *was* is inserted in the second lowest sentence and undergoes IM to the matrix sentence, we expect the lower copy to delete. Therefore we are led to conclude that the same lexical item *was* enters into two distinct EM operations, once in an intermediate sentence and once in the matrix sentence, as in (38b),

10. The indirect dependency account has first been proposed in relation to the partial wh-movement of Hindi (Dayal 1994) and Hungarian (Horvath 1997) – but see Manetta (2010) on Kashmiri.

labeling the constituent in both instances and therefore being frozen in place (no movement, no deletion; recall (7)).

- (38) a. *Was denkst du was sie glaubt wen Fritz meint dass sie*
 what think you what she believes who Fritz means that she
liebt _?
 loves
 ‘Who do you think that she believes that Fritz means that she loves?’
 b. *Was denkst du was sie glaubt wen Fritz meint wendass sie liebt*
wen?

4.2 The indirect dependency issue

The analysis developed so far falls under direct dependency approaches to wh-scope marking, where the wh-scope marker is related with some lower wh-phrase by the same operation relating two wh-phrases in wh-copying. However, as noted above, the literature on German has often embraced the so-called indirect dependency approach for wh-scope marking, where the wh-scope marker is instead related to the entire embedded wh-clause. As a second-best option, we aim at maintaining the crucial insight as to the *syntactic* unification of wh-copying and wh-scope marking, by showing that the indirect dependency approach can be modelled via Copy between *was* and an embedded CP.

Much evidence in favor of indirect dependencies revolves around islands - which have not been discussed so far, not even in relation to wh-copying. The present approach to wh-copying makes the same predictions as a movement approach - namely that wh-copying examples will undergo all and only the islands observed on long wh-movement. This is because Copy is subject to Locality restrictions, cf. (5) above. On the other hand, wh-scope marking and wh-copying have been claimed to differ w.r.t. their availability with subject islands, of the kind illustrated in (40) (Pankau 2013: §2.3.2). While wh-scope marking is licensed (39a), wh-copying is not (39b). Pankau (2013: fn. 11) suggests that the contrast is expected under an indirect dependency approach to wh-scope marking, if *was* is associated with the entire sentential subject.

- (39) a. *Was ist dir aufgefallen wen sie eingeladen hat?*
 what is you apparent who she invited has
 ‘Who was it apparent to you that she invited?’
 b. **Wen ist dir aufgefallen wen sie eingeladen hat?*
 who is you apparent who she invited has
 ‘Who was it apparent to you that she invited?’

Suppose we accept the explanation for the contrast in (39) based on the indirect dependency approach to wh-scope marking. We contend that the syntactic derivation of (39a) can proceed as already outlined in (36), namely by EM of *wen* in theta-position, IM to the edge of CP, labeling and freezing in place, followed by EM of *was*, as in (40a).¹¹ When (40a) is transferred, our characterization of Copy based on non-distinctness is permissive enough for *was* to enter Copy with the entire CP subject island, as in (40b). As required under (6), their intersection is not empty, since they share wh-/F features (recall that the embedded sentence is labelled $\langle F, F \rangle$); otherwise, they do not appear to share any FFs (avoiding contradictory values). Our point then is that the same *syntax* characterizes wh-copying and wh-scope marking independently of whether a direct dependency or an indirect dependency is involved in wh-scope marking.¹²

- (40) a. [$\langle F, F \rangle$ *was* ist [_{IP} [_{VP} *dir* ausgefallen] [$\langle F, F \rangle$ *wen* sie [*wen* eingeladen] hat]]]]
 b. Copy \langle *was*, [$\langle F, F \rangle$ *wen* sie eingeladen hat] \rangle

Other evidence revolves around weak islands and different classes of matrix predicates (negation, factive verbs, light verb constructions). For instance, wh-scope marking seems to be ruled out with negated matrix predicates, as in (41a), while wh-copying is accepted by at least some speakers, as in (41b). Evidence like (41) is doubly problematic, first because of disagreement among speakers - and more importantly, because it is not clear how adopting the indirect dependency approach contributes to enforcing the island. The explanation may be semantic, but this provides further reason to leave the matter open here.¹³

11. In fact, it does not even matter where exactly *was* is EM-ed. Dayal's (1994) original treatment has the Hindi counterpart of *was* as an argument of the matrix verb.

12. One way to save the direct dependency approach, would be to say that the indirect dependency kicks in just as a repair precisely to avoid the sentential subject island violation.

13. A clearly interpretive difference between wh-copying vs. wh-scope marking concerns quantifier scope. According to Pafel (2000: 340), (i) can have a pair-list reading, imputable to *wo* 'where' taking wide scope over *jeder* 'everyone' - but this reading is impossible in (ii). This means that in wh-scope marking, but not in wh-copying, the scope of *wo* is limited to the embedded sentence.

(i) *Wo* glaubt jeder, *wo* die besten Weine wachsen?
 where believe everyone where the best wines grow
 'Where does everyone think that the best wines grow?'

- (41) a. **Was glaubt sie nicht wen Hans liebt?*
 what believes she not who Hans loves
 Who doesn't she believe Hans loves?
 (Fanselow & Mahajan 2000: ex 57b)
- b. %*Wen glaubst du nicht wen sie gesehen hat?*
 who believe you not who she seen has
 'Who don't you think she has seen?' (adapting Pankau 2013: ex 34)

Going beyond German, crosslinguistic evidence involves the shape of wh-scope markers and of embedded complementizers. Recently, Fujiwara (2021) notes that Japanese can employ either a 'what' or a 'how' scope marker. The latter type of scope marker has independently been exemplified in the literature, e.g., by Stepanov (2000) for Slavic, by Legate (2011) for Walpiri. Legate connects it to the use of *how* to denote a propositional variable, as seen also in familiar languages like English (42a) or Italian (42b) or in the use of *how* as an apparent synonym of the *that* complementizer in English (Legate 2010).

- (42) a. How/what do you mean?
 b. Come/cosa (dici)?
 how/what say.you
 '(I don't understand...) What (are you saying)?'

By the same token, however, uses of 'how' in apparent free distribution with 'what' and requiring a non-propositional answer are also found, see for instance English *how/what do you call it?*. Fujiwara (2021: 633) concludes that the use of 'how' as a scope markers provides a simplicity/naturalness argument in favour of the indirect dependency approach, "although this does not conclusively show that other approaches are incorrect".

More to the point, Fujiwara (2021) shows that in Japanese wh-scope marking, the embedded sentence displays an interrogative complementizer, in addition to the contentive wh-phrase. Recall that it is part of the indirect dependency analysis that the embedded sentence is interrogative - while under an IM derivation of direct dependencies, this is not the case. As it turns out, in our approach the lower sentence is labeled $\langle F, F \rangle$, where F is ultimately interpreted in the scope of an interrogative operator. Therefore, the argument seems inconclusive.

- (ii) *Was meint jeder, wo die besten Weine wachsen ?*
 what believe everyone where the best wines grow
 'Where does everyone think that the best wines grow?'

5 On parametric variation

In the previous sections we have derived wh-copying and eventually wh-scope-marking by assuming that long-distance interrogative formation via IM can be halted by labeling of the wh-phrase at any intermediate phase edge (partial wh-movement) - after which scope enlargement can only proceed via EM and Copy. This kind of derivation is in principle available not only in German but in all languages, raising the issue of what blocks it, say, in English. Furthermore even in languages like German, which in principle allow wh-copying/scope marking, the issue arises why different specific patterns (i.e., perfect copying vs. partial copying vs. complex copying) are available to different sets of speakers. Our aim in this section is therefore to consider issues related to parametric variation and show that the attested patterns of variation can fall within the proposed account.

It is important to clarify right at the outset exactly what theoretical status we impute to parameters. We do not take parameters to be a set of choices internal to grammar (unlike Chomsky 2021b, Baker 2001, a.o.) - nor do we take them to be structured by schemata or hierarchies (Longobardi 2017, Roberts 2019). Following Chomsky, Gallego & Ott (2019: 251), they “reflect not UG specifications but rather the absence thereof”. In this perspective, parameters are descriptive statements, setting out how the learner can converge on a target language based on the input available. The reason why they need to be stated at all is that for this convergence, it is necessary that the language belongs to the range of language defined by UG. Therefore, parameters must correspond to choices stateable in terms of UG. Parameters like those we formulate below therefore simply go towards showing that some basic learnability conditions (essentially, consistency with UG) are met by the grammars investigated. They are not part of grammar themselves.

The first parameter that must be addressed is that wh-copying and scope-marking are ungrammatical in English, which only allows regular wh-fronting, as in (43a).

- (43) a. Who do you believe Irina loves?
 b. *Who do you believe who Irina loves?

In (43a), the wh-pronoun labels the root node by Agree with the C phase head as in (44). By present assumptions, lack of derivational look-ahead means that the same labeling should in principle be available at any C (phasal) head in the derivation, yielding for instance (43b) - contrary to fact.

(44) [_{<F, F>} Who do you believe [_{CP} ~~wh~~θ Irina loves ~~wh~~θ]]

One possibility to account for the German/English contrast is to assume that wh-copying/scope marking in English contravenes some language-specific EXT condition. Suppose that in English, Copy <X, Y> must result in deletion of the lower member of the pair at EXT. The relevant parameter can be formulated along the lines of (45).

(45) Parameter: copy deletion
If Copy <X, Y> ,

On the basis of the grammar in section 2, combined with the parameter in (45), we can account for the ungrammaticality of English (43b), with the structure in (46). By entering into labeling, the lower wh-phrase is not deletable in (46). However, by parameter (45) English Copy-pairs are restricted at EXT so that only the head of the sequence can be spelled out. Consequently, wh-copying is excluded in English, though it is perfectly well-formed in German. Therefore, in English the only option for constructing a wh-sequence is successive-cyclic IM.

(46) [_{<F, F>} Who do you believe [_{<F, F>} ~~wh~~θ Irina loves ~~wh~~θ]] → * at EXT

Let us then consider the parameter discriminating between wh- and d-varieties of copying in German. According to Pankau (2013), only speakers that allow free relatives headed by a d-pronoun allow wh-copying involving embedded d-pronouns. Now, the application of our analysis depends on the lower wh-pronoun labeling the constituent it forms with the embedded C. So does the analysis of free relatives, according to the original insight of Donati (2000). It would then appear that in some varieties of German, d-pronouns can project a <F, F> label, but not in all. Varieties for which this is possible have both relatives headed by d-pronouns and wh-copying involving d-pronouns. Otherwise, both structures are possible only with wh-pronouns.

The issue is how best to formulate the relevant parameter. Since labeling depends on Agree and Agree in turn depends on the F feature, the simplest hypothesis is that d-pronouns are associated with the F feature in some varieties but not in all, as in (47).

(47) Parameter: *d-dialects*
d-type pronouns have an F feature (yes/no)

Next, it is a guiding principle of the present discussion that wh-copying and wh-scope marking are just surface instantiations of the same underlying derivation. If so, we might expect that not just wh-pronouns, but also d-pronouns should be found in intermediate positions in wh-scope marking. According to Pankau (2013: 25) in varieties of German where d-pronouns are acceptable in wh-copying they are not tolerated in the scope of *was*, cf. (48a). Pankau in fact takes this to be evidence for the different nature of the processes of wh-scope marking and wh-copying. Nonetheless, the equivalent of (48a) is grammatical in dialects of Dutch, as in (48b). This suggests that the issue is not a fundamental one, but rather connects to language-specific conditions, i.e. once again to an externalization parameter.

- (48) a. *Was* glaubst du *wen*/**den* Hans sieht? German
 what believe you who Hans sees
 ‘Who do you think Hans sees?’ (adapted from Pankau 2013: 25)
- b. *Wat* denk je *wie*/*die* ik gezien heb Dutch
 what believe you who I seen have
 ‘Who do you think I saw?’ (Barbiers, Koeneman & Lekakou 2010: 2)

In section 4, we have accounted for wh-scope marking by assuming that identity of wh-/F features is sufficient to warrant the formation of copy pairs of the form $\langle was, whP \rangle$, provided that φ -features are non-distinct. Evidently, in Dutch (48b) similar conditions attach to the formation of Copy-pairs with d-pronouns, e.g. $\langle wat, die \rangle$. By contrast, we may surmise that the presence of d-pronouns in German requires identity with respect to phi-features, along the lines of (49).

- (49) *Parameter: d-dialects and scope marking*
 In Copy pair $\langle X, Y \rangle$, Y is a d-pronoun only under φ -features
 identity with X (yes/no)

Parameter (49) yields the desired result of blocking wh-scope marking with d-pronouns in German (48a).

Finally, we need to account for parameters involved in phrasal wh-copying, as in (50)-(51).

- (50) *Welchem Mann* glaubst du *wem* sie das Buch gab?
 which man believe you who she the book
 ‘Which man do you think she gave the book to?’

- (51) *Welche Person* glaubt John *welche* Mary getroffen hat?
 which person believes J. which M. met
 ‘Which person does John believe Mary has met?’

As briefly mentioned in section 3, only a subset of the speakers that allow pronominal wh-copying also allow phrasal wh-copying. One way to state the relevant parameter is that for the variety that only allows for pronominal copying, members of the Copy-pair must not include any lexical restriction, ruling out (50) and (51) alike. On the other hand the two examples do not have the same status, since speakers may accept (50) without accepting (51). This further parameter has in fact been discussed in section 3 where we have accounted for (51) in terms of deletion of the restriction in the lower wh-phrase.

Though details may be refined by future research, the proposed parameters indicate how the analysis is compatible with the attested variation. We are aware that the statements in (45), (47), (49) are progressively more ad hoc. However this is in keeping with the conception of parameters as post-hoc statements indicating the conditions for convergence on a given grammar.

6 Concluding remarks

In a grammar that lacks look-ahead, partial wh-movement is an expected outcome. In present terms it correspond to labeling of a constituent by a wh-phrase, which is then frozen in place. Wh-copying and wh-scope marking are ways to extend the scope of partial wh-movement, via EM of additional wh-phrases and their subsequent identification as copies of the partially moved wh-phrase via the Copy relation. The derivation via EM (rather than IM) does not need to have recourse to morphological rules or to syntactic subextraction to account for the fact that the wh-phrases in wh-copying and wh-scope marking may be only partially identical. Rather the Copy relation applies between elements whose intersection is non-null and whose feature values are non-contradictory, i.e. non-distinct. Externalization parameters account for whether languages admit wh-copying/scope marking or only long-distance wh-movement, as well as for the different morphophonological realizations of the Copy pair allowed in different languages/dialects (e.g. identical copying, partial copying, complex copying).

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