

Dependency and Directionality

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Chapter 3

Find the gap

3 Find the gap

3.1 Introduction

Filler–gap dependencies can stretch great distances, but those distances are reined in by (a) absolute islands and (b) intervention islands. Strong islands have boundaries that are quite simply impenetrable in the process of establishing a long-distance filler–gap dependency: certain structural domains are opaque (cf. Huang’s 1982 Condition on Extraction Domain). But filler–gap dependencies can also fail when there is no such opaque domain boundary in the way. Subordinate clauses that serve as Agree-goals are not intrinsically impenetrable; yet when such an embedded clause has a *wh*-expression in its left periphery, it is often difficult to establish another *wh*-filler–gap dependency across it (the ‘*wh*-island effect’). A whole range of intervention effects has been documented in the literature. We would like to arrive at an integrated account of them, one that ideally makes them fall out naturally, without *ad hoc* stipulations, from the overall theory of the building of syntactic structures and the filler–gap dependencies established within them. The theory should, as it were, deliver the ‘syntactic archipelago’ on a silver plate.

The mission of this chapter is to design a top-down theory of the construction of filler–gap dependencies from which the two types of locality restriction (absolute and intervention islands) fall out in as simple and inclusive a way as possible, as orderly subtheories of the general theory of top-down structure building developed in this book.

I will start by laying out the key ingredients of the top-down approach that will be implemented throughout the remainder of this book. This is the topic of section 3.2. I will subsequently embark on an exploration of the ‘syntactic archipelago’, starting in section 3.3 with absolute islands — the simpler case — and then moving on to *wh*-islands and the family of intervention effects inventoried in Beck’s (1996) seminal work, in section 3.4.

3.2 A broad sketch of the top–down approach to filler–gap dependencies

The top-down approach to the construction of filler–gap dependencies such as *what would you like to eat?* starts out with the *wh*-filler in the position in which it satisfies its [WH] feature: SpecCP. Nothing special needs to be said about the *wh*-constituent’s occupancy of SpecCP: this is where it is pronounced (so PF and syntax match), and this is its scope position as well (so it is also appropriate for LF purposes); there is no ‘movement to SpecCP’ on a top-down approach. But whenever the filler’s other properties (θ -role, animacy, case, ϕ) cannot be saturated in the position of first merge, there IS a need for multiple copies of the filler. In this respect, the top-down model is not fundamentally different from a bottom-up one. In the bottom-up approach it is the [WH] that was unsatisfiable in the *wh*-object’s base position and required the creation of a copy of the *wh*-expression to be placed in SpecCP. In the top-down alternative, the [WH] feature is precisely the one that gets satisfied early; the ‘L-related’ attributes of the *wh*-filler (θ , ϕ , case) now become the ‘additional properties’ that motivate the search for a position further down the tree in which these can be satisfied if the predicate head selecting these features is not located in a position near the *wh*-object such that a local selectional relation could be established directly from the *wh*-expression’s position of first merge. In English, lexical verbs (ones that select for objects) are always inside *v*-VP, the predicational core of the structure of the clause. So the *wh*-object wants to be associated not just with the C-head (so that it can satisfy its ‘*wh*-ness’) but also with a position inside *v*-VP. For every grammatical instance of *wh*-fronting of an object, the grammar needs to postulate a trace for the object filler in *v*-VP, and establish a well-formed dependency between the *wh*-filler and the trace. How does it go about this job?

3.2.1 Step 1: Uploading a copy of the filler onto a pushdown stack

When, in the process of the top-down construction of a sentence, an element is encountered in a position in which it cannot be fully interpreted, the grammar makes a copy of the filler and places that copy on hold — i.e., it puts it on a pushdown stack or memory buffer that is carried along in the ensuing structure-building process. This idea goes back at least to Wanner & Maratsos (1978), and is also mobilised in Fong’s (2005) and Chesi’s (2007) top-down syntax models.¹ This is the first element of every top-down syntactic derivation involving a displaced filler — directly in line with the way in which computational and parsing models approach filler–gap dependencies. I call it *uploading*.

3.2.2 Step 2: Downloading the pushdown stack onto the edge of the first predication structure

The next step in the process of building a filler–gap dependency is *downloading*, which involves the attachment of the material on the pushdown stack to the edge of a particular node in the syntactic structure. The key question we face in connection with downloading is the following: What are the nodes at which downloading takes place?

Displaced phrasal material is systematically either an argument of a predicate or itself a predicate (where ‘predicate’ subsumes ‘modifier’; see Den Dikken 2006).² Hence a displaced filler must always be linked to a predicate or argument position inside some predication structure (a RELATOR phrase, ‘RP’, in the sense of Den Dikken 2006). Predication structures thus become the fixed points in the structure-building process at which stacks are downloaded:

- (1) the contents of pushdown stacks are *downloaded* onto the edge of the first predication structure encountered in the process of downward structure-building

The pushdown stack is emptied onto the edge of RP on a ‘last in, first out’ (LIFO) basis. At downloading, the silent copies of the fillers are adjoined to RP, such that the filler-copy downloaded first is in a higher adjunction position than one that is downloaded later: the construction of RP proceeds in a top-down fashion.

3.2.3 Step 3: Tracing

Once the stack has been downloaded onto the edge of the first predication structure, in many cases the grammar cannot interpret the downloaded filler(s) directly in the positions in which they emerge after having been downloaded: positions adjoined to a predication structure are suitable loci for the interpretation of certain adverbial modifiers, but not for all, and not for most arguments either.

1 For Chesi (2015:75), ‘[o]ptimally, only unexpected features are put on hold’, so ‘the element on hold is not an exact copy of the one first merged’. This is no different from what happens in a bottom-up approach, if feature checking/valuation leads to the removal of the relevant feature(s) from the feature set of the moved constituent.

2 Predications (small clauses, TPs) are themselves immobile, as is well known (see Den Dikken 1987 for early discussion); and so are all functional projections that serve neither as arguments nor as predicates (the cartographic TopP and FocP, for instance, cannot be moved as constituents). In this book, I will not concern myself with head movement (if such exists in narrow syntax; Den Dikken 2006a, 2007 argues that it must, but since 1995 Chomsky has mostly sought to push it into the PF wing of the grammar), and will not speculate on how the top-down approach to filler–gap dependencies might deal with it.

Whenever a downloaded filler-copy cannot be interpreted in the position of initial downloading, the grammar starts a search to find a trace for it. This is what I call *tracing*. If a trace can be located within the current local domain, a *direct filler–gap dependency* can and will be established. When the grammar, in the process of dealing with a filler that cannot be interpreted in the position of first downloading, finds no place for a gap within the current local domain, construction of a direct filler–gap dependency will be unsuccessful.

3.2.4 Step 4 (only in ‘weak island’ contexts involving argument dependencies): Re-uploading

The distances that filler–gap dependencies can cover are reined in by (a) strong islands and (b) weak islands. These two different island effects fall out, in the top-down grammar developed in this work, from the two different circumstances under which tracing fails. The first leads irrevocably to the termination of the search for a trace. The second is a much more subtle case, giving rise to weaker, more variable judgements and involving an additional mechanism, which I call *re-uploading*:

- (2) an *argumental* filler-copy can be *re-uploaded* onto the pushdown stack of an intervening filler of the same type

With the help of re-uploading, we will be able to put our finger on the wide range of intervention effects catalogued in the literature.

3.2.5 Direct filler–gap dependencies and what obstructs them

In the top-down derivation of a sentence featuring a filler in a position in which it cannot be fully interpreted, the grammar first uploads a copy of the filler, then downloads the filler-copy onto the edge of the first predication structure encountered in the sentence (usually the matrix TP), and then tries to either interpret the filler directly in its position of first downloading or link the filler to a trace from there. When the result is grammatical, we have successfully established what I call a *direct filler–gap dependency*.

What unites all the cases under discussion in this chapter is that no direct filler–gap dependency is possible: there is always some sort of island in the way. But the nature of the opacity factor is different in the two major subtypes of islands: *absolute* (or ‘strong’) and *intervention* (or ‘weak’) islands. We will dwell first on the case of absolute islands, primarily because the empirical lie of the land is generally more straightforward than in the case of intervention islands.

3.3 Absolute islands

Strong island effects emerge when the grammar bumps into the left bracket of a constituent that is not the Agree-goal of a probe already present in the structure constructed up to that point. Key here is the definition of an opaque domain, given in (3) (repeated from chapter 2).

- (3) *opaque domain*
 in $[\alpha \dots \pi \dots [\Delta \dots \beta \dots]]$, Δ is an *opaque domain* for a relation between α and β iff:
 (a) Δ dominates β , and
 (b) $\Delta \neq$ a goal γ in an Agree-relation with an asymmetrically c-commanding probe π

An opaque domain does not allow a dependency between α and β to be established across its boundaries. This affects all syntactic relations imaginable between α and β — including both tracing and agreement.

3.3.1 Absolute islands for agreement

Let me start with agreement. From the facts in (4) and (5), from Dutch, we deduce that whereas a prenominal subject usually determines the inflectional form of the finite verb, the ‘expletive’ *het* ‘it’, despite its pronominality, does not itself control agreement with the finite verb: the closest noun phrase endowed with number features takes charge of this. But in (6) we see that this noun phrase cannot find itself within an extraposed CP.

- (4) a. [de toestand in het Midden Oosten] bepaalt de agenda (Dutch)
the situation in the Middle East determines the agenda
b. *het is* [de toestand in het Midden Oosten] die de agenda bepaalt
it is the situation in the Middle East that the agenda determines
‘it is the situation in the Middle East that determines the agenda’
- (5) a. [de problemen in het Midden Oosten] bepalen de agenda
the problems in the Middle East determine the agenda
b. *het zijn/*is* [de problemen in het Midden Oosten] die de agenda bepalen
it are/is the problems in the Middle East that the agenda determines
‘it is the problems in the Middle East that determine the agenda’
- (6) a. *het is zeker dat* [de toestand in het Midden Oosten] de agenda bepaalt
it is certain that the situation in the Middle East the agenda determines
b. *het is/*zijn zeker dat* [de problemen in het Midden Oosten] de agenda bepalen
it is/are certain that the problems in the Middle East the agenda determine
‘it is certain that the situation/problems in the M.E. determine(s) the agenda’

The CP boundary between the matrix copula and the bracketed noun phrases in (6) obstructs an Agree relation between the two. We see this perhaps most clearly in (7) (modelled on an English example given in McCloskey 1991:564), which features two conjoined finite CPs: while in (7a), where the conjoined CPs form the preverbal subject of the copular clause, the copula bears plural inflection (*zijn*), we see singular agreement (*is*) in (7b), where the conjoined clauses are in extraposed position, with *het* in the structural subject position. The fact that the CP in (6) is not an Agree-goal for the copula makes it opaque, by (3).

- (7) a. [dat de mars moet doorgaan] en [dat hij moet worden afgelast] zijn (allebei),
that the march should ahead.go and that it must become cancelled are.PL both
op verschillende momenten, betoogd door dezelfde mensen
on different moments argued by the.same people
‘that the march should proceed and that it should be cancelled have both been
argued by the same people, at different times’
- b. *het is/*zijn* door dezelfde mensen, op verschillende momenten, betoogd
it is/are by the.same people on different moments argued
[dat de mars moet doorgaan] en [dat hij moet worden afgelast]
that the march should ahead.go and that it must be cancelled
‘it has been argued by the same people, at different times, that the march should
go ahead and that it should be cancelled’

3.3.2 Absolute islands for tracing

For tracing (i.e., the search for a trace linked to a filler-copy downloaded in a position in which it cannot be directly interpreted), (3) also leads us to have straightforward expectations. When the grammar stumbles upon the left bracket of an opaque domain and no trace has yet been postulated for a filler that cannot be interpreted in its position of initial downloading, the outcome is irrevocably ungrammatical. Strong islands have boundaries that are quite simply impenetrable in the process of establishing a direct filler–gap dependency: the structural domains defined by (3) are opaque. This derives Huang’s (1982) Condition on Extraction Domain. In the discussion in this chapter and the two following it, we will see plenty of empirical indications that an approach to the CED based on (3) is descriptively highly adequate.

Let us start the discussion of absolute islands for filler–gap dependencies by considering the simple example in (10), involving a long-distance filler–gap dependency that is not frustrated by an island effect. There is a CP boundary between *what* and its trace (*ec*). Why does this CP not wreak havoc for the establishment of a filler–gap dependency between *what* and *ec*?

(10) what do you think that Mary said *ec*?

The answer emerges from the definition of local domain in (3). For absolute islands for the establishment of filler–gap dependencies, this definition of local domain translates as follows:

- (11) a. domains that serve as goals in an Agree relationship with an asymmetrically c-commanding probe are transparent for the establishment of filler–gap dependencies across their boundaries
 b. domains that do NOT serve as goals in an Agree relationship with an asymmetrically c-commanding probe are absolute islands for filler–gap dependencies

The kinds of Agree relations that I will be interested in primarily are relationships involving ϕ - and case-features. CPs across whose boundaries a direct filler–gap dependency can be established universally engage in an Agree relationship (for ϕ , case or some other probing feature) with the matrix verb. Though English (10) does not have the morphological wherewithal to demonstrate this, we had already seen in our brief discussion of Chamorro in chapter 2 that the CP in the complement of a bridge verb like *say* or *think* is that verb’s Agree-goal, and hence transparent for the construction of a filler–gap dependency across its boundaries.

Consider again the Chamorro examples in (12), repeated from chapter 2. It is the Agree relation for case seen in the Chamorro examples in (12) that opens up the subordinate clause to the establishment of a direct filler–gap dependency across its boundaries. By (11a), domains that serve as Agree-goals are transparent domains. So in (12a), the *wh*-filler *hayi*, downloaded onto the edge of the highest predication structure, can build a direct dependency with a trace in the subject position of the embedded clause without obstruction: there is no opaque domain boundary in between the filler and the trace, and there is no intervening *wh*-operator in the way either. The same is true, *mutatis mutandis*, for the English example in (10), on the assumption (plausible in light of the Chamorro facts, but not morphologically reflected in English) that the complement-CP in this example is an Agree-goal for the matrix verb.

- (12) a. hayi si Manuel hinassóso-nña chumuli’ i salappi’? (Chamorro)
 who Manuel WHOBJ.think.PROG-AGR WHNOM.take the money
 ‘who does Manuel think has taken the money?’

- b. guiya esti na boi i mu-na'mäguf gui' na un-li'i
 he this LINK boy the WHNOM-make.happy her C WHOBJ.AGR-see
 (lit.) 'this boy is the one who [that you had seen] made her happy'

In (12b), the clause containing the *wh*-trace is the subject of the matrix predicate, something that is again registered explicitly on the matrix verb in the form of a case-agreement marker. Not only is the subject clause an Agree-goal for case, it also sits in clause-final position. I assume, as is plausible, that this position is asymmetrically c-commanded by the T-head in Chamorro. So both ingredients of (11a) are in place: the subject clause is an Agree-goal, and the probe c-commands it. As a result, it is declared a transparent domain.

3.3.2.1 The Subject Condition

Chamorro (12b) is starkly different from English, which never manages to establish a filler–gap dependency across a subject clause: the literal translation of (12b), reproduced in (13), is ungrammatical.

- (13) *this boy is the one who [that you had seen] made her happy

There is always the question of whether English allows clauses (CPs) to serve as subjects in the first place (see Koster 1978, Alrenga 2005, etc.). But assuming that it does will still leave the subject clause opaque: the problem is that the occupant of the structural subject position is not asymmetrically c-commanded by the probe that entertains an Agree-relationship with it.

Recall that (11a) says that domains serving as goals in an Agree relationship with an asymmetrically c-commanding probe are transparent. The occupant of SpecTP will always be opaque, regardless of whether it agrees with the T-head or not. This is true no matter what we assume to be the probe π for the subject in SpecTP. If one takes this probe to be T by itself, π does not c-command SpecTP.³ If one follows Chomsky (2008 *et seq.*) and takes C–T to be the complex probe for the subject (with T inheriting features from C), then π does not asymmetrically c-command SpecTP: the C part of the complex probe C–T c-commands the subject, but the subject in turn c-commands the T portion. So the English direct equivalent of (12b), given in (13), is ungrammatical because the subject clause, even if it occupies an A-position (SpecTP), is an absolute island.

The opacity of nominal subjects of finite clauses in languages such as English (illustrated in (14)) also follows directly from the Agree-based approach to absolute islandhood.

- (14) a. **who* did pictures of *ec* cause a scandal?
 b. **who* did pictures of *ec* appear in the papers?

Nominal subjects of finite clauses in English clearly agree in ϕ -features with the finite verb. But once again, the probe that establishes the ϕ -Agree relationship with the subject does not asymmetrically c-command the goal. For the subject of an English finite clause that contains no exple-

3 I assume here the by now standard first node definition of c-command — crucially NOT m-command. A head may very well have an agreement relationship with its specifier, but this agreement relation is not established under c-command — the Spec–Head relation is involved here instead. See esp. Guasti & Rizzi (2002) and Franck *et al.* (2006) for discussion of the substantive differences between agreement established under c-command and agreement done via the Spec–Head relationship.

tive to plug the structural subject position, there can be no doubt that the noun phrase that controls ϕ -feature agreement with the finite verb occupies the SpecTP position. This position is not asymmetrically *c*-commanded by the probe. The subject in SpecTP may bind a gap or lower copy in a position that IS *c*-commanded by T; but a top-down grammar must try to create the dependency between, say, a *wh*-filler in SpecCP and a gap inside the preverbal subject across the boundaries of the occupant of SpecTP, which is not *c*-commanded by T. Even though the subject in SpecTP is indubitably in a ϕ -feature agreement relation with T's feature content, the fact that it is not asymmetrically *c*-commanded by the probe at the point at which the construction of a filler-gap dependency is attempted across the boundaries of the preverbal subject dooms the attempt to failure.

For subjects that find themselves in positions lower in the tree, in constructions in which the structural subject position is occupied by something other than the notional subject, the top-down Agree-based approach to absolute islands makes precise predictions as well. When the subject is in the *c*-command domain of T and shows agreement with T for ϕ -features and nominative case, it is expected to be transparent. From the discussion of the 'chain government' relation with reference to Dutch and German (see Broekhuis 1992 and references to the earlier literature cited there), we know that *wat voor/was für*-split allows the bare *wh*-operator *wat/was* to bind a trace within the subject of a finite clause provided that this subject does occupies not the structural subject position but a lower position in the tree, fully *c*-commanded by the C–T probe:

- (15) a. *wat zijn Jan [ec voor dingen] opgevallen?* (Dutch)
 what are Jan for things up.fallen
 'what kinds of things struck Jan?'
 b. **wat zijn [ec voor dingen] Jan opgevallen?*
 what are for things Jan up.fallen

For English the role of asymmetric *c*-command by the C–T probe in the licensing of filler-gap dependencies reaching into the subject argument of the clause is also verified with precision. To see this, we have to look at *there*-expletive constructions with a finite form of *be*, which for many speakers can either ϕ -agree with the postverbal subject or bear default third-singular inflection (see Schütze 1999, Sobin 1997):⁴

- (16) there {are/'s} many fans of the artist in the courtroom now to show their support

But when the subject argument contains a trace bound by a *wh*-element outside the subject, only the form of *be* that ϕ -agrees with the subject is licit. We see this in the contrast between (17a,b), on the one hand, and (17c), on the other:

- (17) a. this is the reason why/that/ \emptyset there {are/'s} many fans of the artist in the courtroom now *ec*
 b. this is the moment when/that/ \emptyset there {are/'s} many fans of the artist in the courtroom *ec* to show their support
 c. this is the artist who/that/ \emptyset there {are/*'s} [many fans of *ec*] in the courtroom now to show their support

4 The default third-singular form is generally deemed better with contraction ('s) than without it, though Schütze shows that this is not a strict requirement (thus, there are speakers who get this also for past-tense *was*).

When a filler–gap dependency is attempted between an element outside the associate of *there* and a gap inside it, T must show agreement with the associate. Although [*many fans of ec*] in (17c) is asymmetrically c-commanded by the C–T probe in the relative clause (thanks to the fact that it is not in the structural subject position, SpecTP), the subject does not thereby become transparent for extraction: the subject must, in order not to be opaque, also be in an Agree relation with T, which it is only when *are* is selected in (17c).

The opacity of the subject in SpecTP (whether it agrees in features with those in T or not) and the transparency of an agreeing subject in T’s c-command domain both fall out directly from the top-down Agree-based approach to absolute islandhood pursued in this work. The bottom-up alternative, by contrast, allows neither to be derived from Chomsky’s (2008, 2013, 2015) most recent outlook on the subject and its probe, couched in terms of feature inheritance. If T can only probe the subject after C has been merged and C’s features have been transferred to T under feature inheritance, then when the subject is probed for the first time, C has already been merged.⁵ The fact that the first time the subject can be probed presents itself after C has been merged entails that the first available opportunity for *wh*-subextraction from the subject should present itself when the subject is still in its *vP*-internal position, c-commanded by T. Subextraction from the subject should be legitimate at this point, and subsequent movement of the remnant subject to SpecTP should be unproblematic: nothing (not even the cycle) could prevent such movement (to satisfy the EPP) after subextracting *wh*-movement from the subject has taken place. This theory thus delivers outputs such as (14a,b) as a matter of course. Since such outputs are sharply ungrammatical, this is a bad result.⁶

3.3.2.2 The Complex Noun Phrase Constraint

While subjects are generally absolute islands, objects would be expected to be transparent. Indeed, it is often easy to establish a filler–gap dependency across the boundaries of an object noun phrase, as in (18). But there are two salient conditions under which extraction from an object noun phrase becomes ungrammatical. In the next subsection, we will talk about the role played by specificity or presuppositionality. First, I will home in on cases in which the gap is located inside a clause that is dominated by the object noun phrase — cases illustrating Ross’s (1967) Complex NP Constraint.

(18) who did you see a picture of *ec*?

5 A possible advantage of this approach is that *wh*-movement of the subject will proceed straight from the subject’s *vP*-internal position to SpecCP: SpecTP is not projected at all because the subject can satisfy the C–T probe’s EPP property in SpecCP, rendering feature inheritance redundant in the case of *wh*-fronting of the subject. This may help derive the *that*-trace effect and the absence of *do*-support in highest-subject root *wh*-questions (cf. also Pesetsky & Torrego 2001). But see chapter X for discussion of the fact that this type of approach to *that*-trace effects and *do*-support is inferior to an alternative analysis that is presented by a top-down model.

6 It is sometimes claimed (for instance in Chomsky 2008:153–4) that subextraction from the structural subject of a finite clause IS in fact grammatical in English. But such claims are invariably based not on cases like (14) but instead on sentences involving a partitive PP in the position of the filler (e.g., *the car of which the brakes have failed*). There is no doubt that such sentences are grammatical; but there can also be little doubt that their derivation does not involve the establishment of a dependency between the *wh*-PP and a gap inside the subject: such PP-fronting examples are grammatical only for constructions that allow the non-*wh* counterpart of the PP to be extraposed (*the brakes have failed of this car*). So-called ‘extraposition from DP’ does not involve a gap (see Culicover & Rochemont 1990).

The Complex NP Constraint (CNPC, for short) blocks filler–gap dependencies across two types of noun-phrase internal clauses: relative clauses (19a) and noun-complement clauses (19b).

- (19) a. * who_i did you dispute [_{DP} the claim [_{CP} Op_k that Bill had made ec_k to ec_i]]?
 b. ?* who_i did you dispute [_{DP} the claim [_{CP} that Bill had talked to ec_i]]?

Both sentences in (19) are bad; but (19a) is appreciably worse than (19b) — due to two additional factors that are involved in (19a) but not in (19b): (a) the fact that the CP in (19a) is a non-argument (in the standard head-external analysis it is an adjunct; in the so-called raising analysis, pioneered in Vergnaud 1974 and resuscitated in Kayne 1994, it is the complement of D, which is not a θ -role assigner), and (b) the fact that CP is introduced by an operator (Op), which induces an intervention effect. But both (19a) and (19b) have in common the fact that the CP that contains the gap (ec_i) that the matrix filler (who_i) seeks to bind is dominated by a DP.

In the *Barriers* theory of Chomsky (1986), the ill-formedness of (19a) fell out straightforwardly: the relative CP is not an argument, hence it is not L-marked, and thereby a so-called ‘blocking category’ and inherent barrier for the gap ec_i ; and because DP immediately dominates CP, and CP is a blocking category for ec_i , DP acquires barrierhood for ec_i under ‘inheritance’ from CP. There are, therefore, two barriers between the gap ec_i and its antecedent, who_i — enough to make the sentence profoundly unacceptable.

But for (9b), the *Barriers* theory does not fare quite so well. The problem is that, on standard assumptions (but see Stowell 1981, Grimshaw 1990), the noun-complement clause is the internal argument of the head noun. If the noun, which is a lexical category, assigns CP in (19b) a θ -role, this CP is L-marked, and therefore not a blocking category for ec_i . If the only way in which a constituent α can be an inherent barrier for an element β that it dominates is for it to be a blocking category for β , then CP ought not to be an inherent barrier for β in (19b). And since barrierhood can only be inherited from a blocking category, the fact that CP is L-marked also prevents DP from acquiring barrierhood for ec_i under inheritance. Chomsky’s (1986) algorithm for the computation of barriers thus delivers zero barriers between the matrix VP and the gap ec_i . Since (9b) is most certainly not perfect, Chomsky stipulates that the CP in the complement of a noun is a barrier — though not a blocking category (since it is L-marked). With this stipulation in place, (9b) harbours a mild subjacency violation: one barrier (CP) finds itself on the movement path of who_i . Chomsky accepts this as an empirically acceptable outcome (even though (19b) is quite a bit worse than other ‘mild subjacency violations’ in the *Barriers* system), and defends the stipulation that the CP in the complement of a noun is an inherent barrier with reference to Stowell’s (1981) ECP account of the fact that complementiser omission is generally rather poor in the complement of a noun (*the claim *(that) Bill had talked to the president*). But plainly, the stipulativeness of the account of the noun-complement clause subcase of the CNPC in Chomsky (1986) leaves room for improvement.

In this work, I have adopted an algorithmic approach to the computation of absolute islands that follows in Chomsky’s (1986) footsteps but makes no use of the notions of ‘L-marking’ and ‘ θ -government’ in the definition of an absolute barrier. Rather, the active ingredient in determining whether a particular domain Δ is an absolute island or not is its participation in an Agree relation with a c-commanding probe π : whenever Δ is an Agree-goal to a c-commanding probe, it is not an absolute island; whenever it does not Agree with a c-commanding probe, it is. This immediately helps us understand the CNPC, integrally: neither relative clauses nor noun-complement clauses are Agree-goals for the head noun of the DP that contains them. In relativised noun phrase, the relative pronoun may show concord with the head noun; but the CP

is not in an Agree relation with that noun. And in no language that I am familiar with does a CP that serves as the complement of a noun show any kind of formal agreement with the noun. Agreement between a verb and its CP complement is clearly attested: we saw it in Chamorro (12). But the CP in the complement of a noun shows no agreement with the head noun. In general, the noun phrase's ϕ -feature and definiteness specifications do not covary with those of its complement — because they are determined by the head itself. A noun phrase never has, say, a plural or definite specification as a function of the number or definiteness of its complement. Nouns do not engage in Agree relations with their complement. So like relative clauses, noun-complement clauses are declared absolute islands on account of the fact that they are not Agree-goals. The CNPC is thus derived.

But it has been pointed out on numerous occasions that both relative clauses and noun-complement clauses are sometimes quite transparent to the establishment of (nominal) argumental filler-gap dependencies across their borders. For relative clauses, George (1980) was the first, to my knowledge, to point out that sentences of the type in (20a) are generally quite good (see also Chung & McCloskey 1983, Chomsky 1986). And for noun-complement clauses, Ross (1967) noted that things like (20b) are not too bad — much better, certainly, than (19b).

- (20) a. this is a paper that we need to find someone who understands
 b. ?who did you make the claim that Bill had talked to?

I will have occasion to talk about sentences of the type in (20a) in chapter 5 (see section 5.3.17). I need to postpone discussion of this case because we first need to understand a few more things about the ways fillers can be related to gaps of different kinds, and about the special properties of short subject dependencies. But I can take (20b) by the horns right away.

Two things play a role in the contrast between (19b) and (20b). One is the special relation between *make* and *claim* in (20b): *make the claim* is semantically equivalent to the verb *claim*. Because of this, *make the claim* is customarily characterised as a 'light verb construction' — a verb plus noun phrase collocation whose lexical meaning is that of the noun phrase. Such collocations always have the adicity of the noun. Lexical *give* is capable of occurring with as many as three arguments (*someone gave someone something*), but when used as a 'light verb' its argument-licensing potential is a function of the head of the noun phrase that it forms a collocation with: in *she gave him a kiss/bashing* we see *give* licensing the agent and patient of *kiss/bashing*, while in *she gave (*someone) a sigh* there is no room for an indirect object because the argument structure of *sigh* harbours just a single argument. Analogously, while lexical *make* supports three arguments (*make someone something*), in *make the claim that S* there can never be an indirect object because *claim* has only two arguments. 'Light verbs' are thematic chameleons: the nature and number of the θ -roles that they can assign varies depending on the thematic environment they find themselves in.⁷

7 It is as if the noun in these kinds of constructions is the real head, and the verb is a mere support morpheme — not exactly like the dummy *do* (because unlike *do*, 'light verbs' cannot raise to T and on to C), but similar enough to think that there is a parallel to be captured. For *do*-support constructions, we would not want the VP to be declared an absolute barrier just because T happens not to agree in ϕ -features with the lexical verb. That would introduce far more cases of opacity than we would like: after all, *who did he kiss?* is just as good as *the girl who he kissed* or *I don't know who he kissed*. We will want the syntax to allow filler-gap dependencies across VP in *do*-support constructions. We can ensure this by assuming that the dummy auxiliary *do* itself engages in an Agree relation with the verbal head of the clause for which it serves as a 'helper'. The Agree relation targets the feature [+V]: the dummy *do* is a specifically *verbal* 'helper' that must be locally construed with a *verb*. Thanks to this Agree relation, the VP in *do*-support constructions is not identified as an absolute barrier to the establishment of filler-gap dependencies.

We can cast this chameleon-like behaviour in Agree terms: the ‘light verb’ Agrees in [θ]-content with the [θ]-content of the noun. Let us call this ‘ θ -Agree’. The ‘ θ -Agree’ relation between the ‘light verb’ and the noun in its complement will make it possible for the noun’s complement to become an Agree-goal for the ‘light verb’. Though the head that is local to the CP in (20b) does not Agree with CP, the Agree relation between N and the ‘light verb’ (which, in a top-down model, is established *before* CP is introduced) makes a θ -Agree relation between the ‘light verb’ and this CP possible.⁸ With the CP becoming an Agree-goal to the ‘light verb’, it is prevented from turning into an absolute barrier to filler–gap dependencies.⁹

A second factor plays a major role in the account of the contrast between (19b) and (20b). While in (19b) the referent of the noun phrase headed by *claim* carries a presupposition of existence, the one in (20b) does not: the claim in question is being made by the referent of the subject; it does not exist independently. This leads us to an investigation of the role played by presuppositionality in connection with long-distance filler–gap dependencies.

3.3.2.3 The Specificity Condition

In the example in (20b), the filler–gap dependency from *who* down into the noun-complement clause does not just traverse a CP boundary: it also goes through a definite DP (*the claim*). Extraction from definite object noun phrases is often quite difficult. We saw this in (19b), and we also see it in the much simpler (non-CNPC) examples in (22), which contrast with (21).

- (21) a. *who* did you see [pictures of *ec*]?
 b. *who* did you see [a picture of *ec*]?
 c. *who* did you see [some pictures of *ec*]?
 d. *who* did you see [many pictures of *ec*]?
 e. *who* did you see [several pictures of *ec*]?
 (22) a. ??*who* did you see [a certain picture of *ec*]?
 b. ??*who* did you see [the picture of *ec*]?
 c. *?*who* did you see [each/every picture of *ec*]?
 d. *?*who* did you see [most pictures of *ec*]?
 e. **who* did you see [John’s picture of *ec*]?

But it would be a tremendous simplification to say that ‘definite objects are islands’: even indefinite objects are sometimes quite opaque (see (22a)); and conversely, it is not the case that subextraction from a definite noun phrase introduced by *the* consistently yields a bad result — outside ‘light verb constructions’, other grammatical \bar{A} -dependencies across *the* can easily be found. Here recall once again the grammaticality of (20b) (in contrast to (19b)); but also highly relevant is Huang’s (1982) observation (quoted in Chomsky 1986:80) of the contrast in (23), with extraction from a definite noun phrase succeeding perfectly well in the b-example but not in the a-example (which is on a par with (22b)).

8 This transitivity relation is essentially the successor, in this model, to Baker’s (1988) Government Transparency Corollary, which says that a something that has an item incorporated into it governs everything the incorporated item governed in its original structural position. The Government Transparency Corollary (conceived before the shift from classic principles-and-parameters theory to minimalism) never fit well into the strictly bottom-up model underlying the minimalist approach. The top-down approach advocated here allows us to ‘reinstate’ it.

9 The fact that sentences of the type in (20b) remain somewhat marginal can perhaps be blamed on the costliness of the establishment of the transitive Agree relation that they depend on.

- (23) a. **which city* did you meet [the man from *ec*]?
 b. *which city* did you witness [the destruction of *ec*]?

What we are looking at in (21)–(23) is a picture that Fiengo & Higginbotham (1981) were the first to start to uncover. They posited a constraint called the Specificity Condition, which reins in the establishment of filler–gap dependencies across noun–phrase boundaries by penalising extraction across a [+specific] noun phrase. In this section, I will show that the requirement that a domain across which the establishment of a filler–gap dependency is attempted must be an Agree–goal asymmetrically c-commanded by the probe (recall (3)) provides a simple account of the Specificity Condition. But since the effects of the Specificity Condition are often mis- or underrepresented, it will be useful first of all to properly lay out the empirical picture, with Diesing (1992) for the most part as our guide — though I have enhanced her picture slightly.

Though with a verb like *see*, the pattern we find for extraction from the direct object is as in (21)–(22), it turns out that the choice of matrix verb majorly affects the success of a filler–gap dependency across a noun–phrase boundary. Thus, with a verb such as *destroy*, even a plain indefinite object noun phrase resists subextraction (Diesing 1992):¹⁰

- (24) **who* did you destroy [a picture of *ec*]?

Conversely, as we have already seen in (20b) and (23), not all objects introduced by *the* are opaque. It would appear to be a daunting task to try to make sense of the picture painted by (21)–(24). No foolproof generalisation in terms of the nature of the material at the left periphery of the object noun phrase is possible: objects introduced by the indefinite article *a* often allow subextraction, but not always (see (12a) and (14)); objects introduced by *the* are often opaque, but again not always (see (13b)). It may be that the nature and position of the element at the left edge of the noun phrase plays some role in our understanding of the pattern: a phrasal possessor (such as *John's* in (12e)) may make subextraction particularly hard. But it seems unlikely that we will procure a comprehensive explanation for the pattern in (11)–(14) if we concentrate exclusively on the object's left periphery. I will set this factor aside entirely in what follows.

Descriptively, what holds the key to the solution of the puzzle presented by the Specificity Condition is the informational status of the noun phrase from which extraction takes place. An object noun phrase that is presuppositional, part of the common ground, quite systematically fails to sanction the formation of a filler–gap dependency reaching into it. We see this particularly strikingly in the contrasts between (21b) and (24), and between (23a) and (23b). Let us start with the former. Diesing (1992) points out that with verbs of destruction (incl., besides *destroy*, also *break*, *burn*, *tear up* etc.) the object necessarily bears a presupposition of existence: an object must exist in order for it to be subject to destruction; so a conversation about the destruction of something must feature this particular something as part of the interlocutors' common ground. The contrast between (21b) and (24) thus strongly affirms the role played by presuppositionality.

In (23a), *the man from ec* is also presuppositional, as is generally the case with definite and strongly quantified noun phrases. This sheds immediate light on the deviance of most of the examples in (22). That (22a) is also bad, even though it involves a formally indefinite object, fits in as well: *a certain picture* is presuppositional, in contradistinction to *a picture*. And even the contrasts between (19b) and (20b) and between (23a) and (23b) fall into place from the perspective of the central role played by presuppositionality. Thus, in (23b) the destruction of the

10 At least for many speakers. Why this does not seem to be uniformly true is unclear to me at this time.

city in question is in progress when it is being witnessed; it has not culminated yet, hence its result cannot be presupposed. The use of *witness* as the verb selecting the object is instrumental here: *destruction* in principle supports both event and result interpretations, but with *witness* only the non-presuppositional event reading makes sense. Unsurprisingly, from the point of view of the role of presuppositionality in the extractability from object noun phrases, a sentence such as (25) contrasts markedly with (23b): an official confirmation of the destruction of a city will typically be given after the destruction has culminated; *destruction* now heads a result nominal, whose referent, in (25), is likely to be part of the common ground (those to whom the destruction of the city is confirmed probably had a strong suspicion about it well before the confirmation was issued).

(25) ??*which city* did they officially confirm [the destruction of *ec*]?

Let us take this to confirm that presuppositionality is indeed the key player in the extraction pattern seen in (21)–(25). The question that now arises is whether this necessarily leads to a non-syntactic account of the Specificity Condition, or whether the syntax can take charge of it. It is at this point that we are led back to the discussion in section 2.3.1.2, above. There, I identified two object positions in the structure of the VP, as shown in (26).¹¹

(26) [_{VP} SUBJECT [_v v [_{VP} <OBJECT> [_V V <OBJECT>]]]]

The object position in the complement of V is for non-presuppositional material (incl. complement clauses to bridge verbs); the one in SpecVP is for presupposed objects, objects that are part of the common ground. The probe for the object is the *v*–V complex — on a par with Chomsky’s (2008 *et seq.*) assumption that the probe for the subject in SpecTP is the C–T complex. Now note that the *v*–V complex asymmetrically c-commands only the lower of the two object positions: the higher one is c-commanded by the *v* portion of the *v*–V complex but not by V. Though the [+specific] object is certainly an Agree-goal for *v*–V, and can check its case and phi-features against *v*–V, the fact that it is not asymmetrically c-commanded by *v*–V causes it to be an opaque domain, by (3)/(11). So whenever the object occupies the SpecVP position, and (by Diesing’s 1992 mapping hypothesis) is given a presuppositional interpretation, the object is opaque and will hence resist the formation of a filler–gap dependency that crosses its boundaries.

In the examples in (21) the object can readily be placed in the complement-of-V position. Of course nothing prevents a *specific* indefinite reading for *a picture of x* when it serves as the object of *see*; but when *see a picture of x* is given a specific interpretation, it does not occupy the complement-of-V position: instead, it must then be mapped into SpecVP. This is so because the complement-of-V position is occupied in that case, by an abstract secondary predicate, which I represent in (27) as ‘THERE’ (the bare existential predicate, also seen in so-called *there*-expletive constructions; see Moro 1997, Hoekstra & Mulder 1990). For the examples in (22), where the object is consistently presupposed to exist, this treatment also presents itself.

(27) [_{VP} SUBJECT [_v v [_{VP} OBJECT_[Presup] [_V V [_{Pred} THERE]]]]]]

11 In section 2.3.1.5, I argued that the V-head is placed to the right of its complement in the structure of the *v*–VP system. Since linearity will not play a role in the present discussion, I abstract away from this here, and will place V to the left of its complement for presentational purposes: doing so makes the specifier/complement distinction more directly visible in the structures, thanks to the specifier and the complement of V occurring on opposite sides of the head.

Resultative constructions also support a structure in which the complement-of-V position is occupied by a secondary predicate (recall section 2.3.1.5; see Hoekstra 1988, 2008 for arguments to the effect that resultatives always, though often abstractly, involve secondary predication). For *destroy* in (24), this secondary predicate could be represented as DE-, named after the Latinate prefix, which amalgamates with the bound root -STROY/-STRUC.

(28) $[_{vP} \text{SUBJECT } [_{v'} v [_{VP} \text{OBJECT}_{[\text{Presup}]} [_{V'} \text{STROY/STRUC } [_{\text{Pred}} \text{DE-}]]]]]]]$

The presence of the particle DE- in the complement-of-V position ‘condemns’ the object to the SpecVP position, where it receives a presuppositional interpretation and where it cannot be asymmetrically c-commanded by the v -V probe, causing it to be opaque.

With presuppositionality for objects translated structurally as occupancy of SpecVP, and with occupancy of SpecVP standing in the way of asymmetric c-command by the object’s probe (v -V), we can thus derive the full extent of the data covered by the Specificity Condition from a syntactic account of absolute island effects.

3.3.2.4 Factive islands

From the Specificity Condition, it is but a very small step to the factive island — the fact that the clause serving as the object of a factive verb shows a strong tendency to be opaque (see Kiparsky & Kiparsky 1970 and a lot of work in the wake of this classic paper).¹²

In fact, all the ingredients for an account of factive islands are effectively in place. In section 2.3.1, I argued that in factive verb constructions, the structure of the VP always branches, and that the complement-of-V position can be filled in such constructions by a secondary predicate headed by ‘FACT’, as in (26a) in section 2.3.1.3, repeated below as (29).

(29) $[_{vP} \text{SUBJECT } [_{v'} v [_{VP} [_{CP} \dots] [_{V'} V [_{\text{Pred}} \text{FACT}]]]]]]]$

Since the complement-of-V position is taken, the object clause must, if it is itself to serve as an argument, be placed in the SpecVP position. In this position, it receives a presuppositional interpretation (the hallmark of ‘factivity’) and it is declared opaque due to the fact that it is not asymmetrically c-commanded by the v -V probe.

While factive complement clauses do indeed tend to resist filler–gap dependencies across their borders, it is usually thought to be the case that a nominal argument can bind a gap inside a factive clause with relative ease. There is no agreement on the exact status of questions such as *what did they deny/regret that they had purchased?*; but they do not seem to be quite on a par with the Specificity Condition effect found in their paraphrases with a possessed nominal in place of the *that*-clause: **what did they deny/regret their purchase of?* It is likely, therefore, that an alternative syntactic strategy is available for factive object clauses, one to which presupposed nominal objects are not privy.

12 In this section I will follow in Kiparsky & Kiparsky’s (1970) footsteps in employing an abstract noun FACT. There are several other types of approach to factive islands, incl. ones exploiting a null operator in the periphery of complement clause (Melvold 1986; cf. also Laka 1990, Progovac 1994), a size difference between factive and non-factive complement clauses (de Cuba & Ürögdi 2009), or incorporation of a relativised head (Arsenijević 2009). This is not the place to go into the (de)merits of the various alternative approaches to factive islands. The goal of this short section is a very modest one: to show that an approach to factive islands emerges naturally from the discussion in section 3.3.2.3.

We have already had some occasion to talk about one such alternative strategy in section 2.3.1.3, where I drew attention to the fact that factive verbs often allow the use of proleptic *it* in combination with an object clause in extraposition. The syntax of such extraposition constructions remains undecided (an ‘appositional’ approach seems plausible, but does not directly shed light on the extraction facts); but it is a fact that extraposed subject clauses serving as the associate of proleptic *it* are sometimes perfectly transparent to argumental filler–gap dependencies across their boundaries (as in *who is it likely/certain that John will support ec?*, which is much better than **how is it likely/certain that the letter was worded?*, the latter involving an adjunct that must be construed with the embedded predication but fails to be so construed).

The precise details of the alternative to (29) for factive verb constructions must be left for a future occasion — as must the question of how such an alternative will continue to guarantee that adjunct extraction from the factive object clause always fails. Because of the fact that factive object clauses give rise, in some people’s judgement, to an extraction pattern that sets adjuncts apart from arguments, factive islands are often classified as weak islands rather than strong or absolute ones. From the perspective on weak islands to be unfolded in section 3.4, this would translate into the postulation of some operator on the left edge of the factive object clause (Melvold 1986; cf. also Laka 1990, Progovac 1994). This strategy is open to us. But it will not render (29) redundant: we need (29) to account for the presuppositional interpretation of factive object clauses, and for other aspects of their syntax (incl. the difficulty, for some people, of argument extraction) as well.

3.3.2.5 The Adjunct Condition

At the end of this discussion of absolute (‘strong’) island effects, I turn to the adjunct island, for which the account of opacity developed here delivers particularly precise results.¹³

Central in the analysis of absolute islands in this work is the idea that constituents that do not serve as goals in an Agree relationship with a c-commanding probe higher up the tree constitute opaque domains (recall (3)). Verbs typically do not show agreement with adjuncts to their projections. Concomitantly, they cannot ‘open up’ these adjuncts to the establishment of filler–gap dependencies across their boundaries. In the general case, therefore, an adjunct will be an absolute island.

But we know that it is not in fact the case that filler–gap dependencies across adjuncts are systematically impossible: in the discussion of Chesi’s (2007) work in section 2.4.2.2, we already came across the contrast in (30), which, as Truswell’s (2011) discussion shows clearly, is representative of a considerable amount of ‘leakage’ in the Adjunct Condition.

- (30) a. *what did John drive Mary crazy [before reading *ec*]?
 b. what did John drive Mary crazy [whistling *ec*]?

We need to understand this better — and it is my contention that a top-down approach to opaque domains couched in Agree relations, along the lines of (1), gives us a much better understanding of the Adjunct Condition than any alternative approach does.

13 In a recent experimental study, Sprouse *et al.* (2016) tested the adjunct condition, and found that in English there is a clear adjunct island effect in *wh*-questions but not under relativisation. Their stimuli involve conditional clauses introduced by *if*, which turn up a complication: it has been possible in English for centuries to construct a filler–gap dependency across (esp. clause-initial) *if*-clauses in relatives (see Van der Wurff 1988:126, 138 and references there, incl. one to Felix’s 1985 work on Bavarian). Why extraction from *if*-clauses is apparently so easy in relatives is unclear; but one clearly should not extrapolate from this to extraction from adjuncts in general.

3.3.2.5.1 Agree for aspect

Truswell (2011) accounts for the kinds of contrasts illustrated in (30) with an appeal to his Single Event Grouping Condition, which says that ‘an instance of *wh*-movement is legitimate only if the minimal constituent containing the head and the foot of the chain can be construed as describing a single *event grouping*’ (Truswell 2011:157; original italics). The logic of the Agree-based approach to absolute islands taken in the present work will want to syntacticise this Event Grouping Condition with an appeal to an Agree relation between *v* and a transparent adjunct: whenever there is ‘event grouping’ in Truswell’s sense, there is such an Agree relation, and concomitantly, if the adjunct is low enough in the structure, it will be transparent.

In the case of (30b), it is likely that the Agree relation between *v* and the adjunct that lifts the opacity of the latter involves an event-structural/aspectual feature, probably located on *v*. This is certainly what Truswell’s event-based account suggests as a plausible candidate.¹⁴

Chomsky (1986:32) points out, attributing the observation to Adriana Belletti, that (31b) is ‘a less severe violation’ than (31a) (a contrast that for some speakers, according to Chomsky, is clearer in these relative clause constructions than in the corresponding *wh*-questions — doubtless because of the fact that PP pied-piping is broadly dispreferred in questions in the first place).

- (31) a. *he is the person to whom they left before speaking
 b. he is the person who they left before speaking to
 c. ??he is the person who they left town before speaking to

Chomsky’s minimal pair in (31a,b) is a bit of red herring: *left* here is intended to be read as an intransitive verb, but of course it has a transitive use as well, which is perfectly sensible in the case of (31b). With *left* construed as a transitive verb, (31b) becomes a parasitic gap construction, with gaps following *left* and *to*, each linked to *who*. Since parasitic gaps are perfectly fine in temporal adjunct clauses, and since the parasitic gap reading of (31b) is semantically very close to the intended reading in which *left* is intransitive, the grammaticality of (31b) is not tremendously informative. In order to rule out the parasitic gap construction, I added (31c) — which, it turns out, is not very natural at all; and as a consequence, the contrast between (31a) and (31c) is much less pronounced.

But this does not wipe out the significance of the DP/PP distinction under extraction from adjunct-PPs. It should not surprise us that (31c) is poor: leaving town *before* speaking to someone is not a particularly natural course of events construable as a ‘single event’ in the sense of Truswell (2011). A much more plausible sequence of events is leaving town *after* speaking to someone. So let us revise the paradigm in (31) by substituting *after* for *before*, as in (31’):

- (31’) a. *he is the person to whom they left after speaking
 b. he is the person who they left after speaking to
 c. he is the person who they left town after speaking to

Because of the availability of a ‘single event’ reading for (31c’), this sentence is essentially perfect: technically put, the matrix verb is in an Agree relation with the temporal adjunct clause, which renders the latter transparent. But importantly, (31a’) remains entirely impossible.

14 If the feature for which the Agree relation with the transparent adjunct is established is borne uniquely by *v* (and not shared with *V*), so that *v* by itself is the probe for the Agree relation, the adjunct can be adjoined to VP. If the probe for the feature is the *v*-*V* complex, the highest insertion point for the adjunct will be a position adjoined to the first projection of *V* (on the assumption that *V* c-commands all material contained in its first projection).

So regardless of whether we are dealing with a single event or not, the PP filler apparently fails categorically to link to a gap inside the adjunct-PP. Why is this? What the grammar sees when *to whom* comes in is a PP filler that needs to be linked to something further downstream (because it cannot be interpreted *in situ*) — but it does not know what to construe the PP with. The PP in (31a,a') is supposed to serve as an argument of the verb *speak* in the adjunct clause. But genuine 'argument PPs' arguably do not exist (see also Helmantel 200x): the internal argument of *speak* is not a *to*-PP. PPs are quintessentially relational categories, linking two arguments; one of those (P's complement) is usually a DP, but its subject can be either nominal or something else (for instance, a projection of the verb, in the case of adverbially construed PPs). In *speak to x*, the subject of the *to*-PP could be the VP (in which case the PP is adverbial) or the projection of a silent noun forming a collocation with *speak* (cf. the light-verb construction *give a speech*; Den Dikken 199x). For our purposes here, it really does not matter what exactly serves as the subject of the *to*-PP. The important thing is that this PP (like any other PP) is not an argument, hence does not have a θ -role that could direct the grammar in finding out what the *to*-PP in the left periphery of (31a,a') should be linked to. All that the grammar knows upon encountering the PP is that it must serve as a predicate of something; it does not know what it should be predicated of.

Upon the emergence of the matrix predicate, headed by *left*, the top-down grammar finds the first possible opportunity to download the *to*-PP, as a constituent of the matrix clause. There are two logically possible matrix construals for the PP: as a dependent of *leave* (as in *he left to Mary the bulk of his estate*), or as a modifier of the projection of *leave* (as in *he left to everyone's surprise*). To be sure, the animacy of the *wh*-word inside the *to*-PP filler makes certain construals a lot more plausible than others. But it is clear that an association between *to whom* and *left* or a projection thereof can be forged. I assume that the grammar is as eager as the parser to dispose of a filler, so the grammar postulates a trace for the *to*-PP in the *v*/VP of *left*. Since *speaking*, the gerund inside the temporal adjunct clause, does not demand a PP (*they left before/after speaking* is perfectly fine as it is), the grammar is never forced to reconsider its decision to construe the *to*-PP with *left*. So the representation assigned to the a-examples leaves us with a link between *to whom* and *left* — not an Adjunct Condition violation, obviously; but because of the animacy of *whom*, a sensible interpretation to the finished product is very difficult to arrive at, because *he left to Mary* is not well-formed unless it is followed by a sum of money or valuable object (as in *he left to Mary the bulk of his estate*). Local construal of *to whom* with *left* is not semantically sensible — but it is *syntactically* well-formed, and for that reason, construal of the PP with something inside the *before/after* adjunct is never attempted.¹⁵

15 The expectation now arises that whenever the matrix predicate is such that association of a PP-filler to it is syntactically impossible, we should be able to link the PP to the adjunct provided that the adjunct is an Agree-target, hence transparent. One might think that the ungrammaticality of (ia,b) fails to confirm this prediction:

- (i) a. *he is the person about whom they left after speaking
 b. *he is the person to whom they left for France after speaking

But though in (ia,b) it is indeed impossible to interpret the PP-filler as an associate of the matrix predicate, the syntax is still not prevented by this from linking the PP to this predicate. The syntax acts on the basis of general syntactic well-formedness constraints and morphological properties of the elements involved, including *c*-selectional restrictions; but it is not sensitive to *s*-selection: *s*-selectional restrictions are imposed on the output of the syntactic derivation at LF, by way of a semantic interpretability filter. Since PPs are so flexible in their syntactic construal, it is likely that no situation will ever arise in which the syntax will be forced *not* to associate a PP-filler with the predicate it encounters first, in its top-down structure-building process.

For nominal fillers like *who*, the situation is of course very different. The *wh*-word *who* is particularly restricted in its distribution: it can only serve as an argument; it must necessarily bear a θ -role, which the grammar registers and must heed in the process of finding a gap to which to link the filler. In (31b,b'), association of *who* with the matrix verb *left*, as its internal argument, is entirely possible — and in fact leads to a grammatical structure for these sentences: the structure of a parasitic gap construction. But in (31c,c'), the fact that both of the argument slots of *leave* are already taken (by *they* and *town*) rules out association of *who* with the matrix predicate. The grammar is thus forced to find a different spot for the trace associated with *who*. It finds one inside the transparent temporal adjunct in (31c'); but in (31c), an aspectual Agree relation between the matrix verb and the *before*-PP, needed for the construction of a filler-gap dependency across the adjunct, would lead to a rather hard-to-get 'single event' interpretation. Thus, (31c) is ultimately rejected as infelicitous in the semantic/pragmatic component — and should more properly be marked with '#', for infelicity, rather than '??': if we manage to find a context in which leaving town before speaking to someone is plausible on a single-event reading, (31c) should be just as good as (31c') in that context.

In this subsection, we have seen that when an adjunct and the verbal constituent modified by it can be grouped into a 'single event', the adjunct is transparent for the establishment of nominal filler-gap dependencies across its boundaries. I tentatively syntacticised Truwell's (2011) Single Event Grouping Condition in terms of an aspectual Agree relation between *v* and the adjunct, and provided a simple rationale, from the top-down perspective, for the fact that, even when a single event grouping (or an aspectual Agree relation) involving the adjunct is created, a PP-filler still cannot link up to a gap inside the adjunct.

3.3.2.5.2 Agree for case

In the previous subsection, the active feature which 'opened up' the adjunct for a filler-gap dependency transgressing its borders was an aspectual one, not directly discernible in morphological terms. But the feature for which an Agree relation with a transparent adjunct is established could in principle also be a formal feature familiar from Agree relations between *v* and a nominal argument: the set of ϕ -features and/or structural case. We should look for this possibility in the realm of 'bare nominal' adverbials, such as English *this morning* in *I ate cereal this morning*. Such adjuncts do not tend to control ϕ -feature agreement with *v*: 'object agreement' is quite generally confined to argumental noun phrases within the VP. Likewise, adjuncts do not usually engage in a structural case relationship with the verb: again, argumental noun phrases are normally the privileged targets for this. But upon closer inspection, it turns out that it is by no means impossible for constituents that show the syntactic and semantic properties of an adjunct to be equipped with a case feature for which no valuer other than *v* would seem to be available.

We see this in a wide variety of languages. Csirmaz (2006) identifies several different types of accusative adverbials in Hungarian, illustrated in (32) (taken from Csirmaz 2006:170):¹⁶

16 For Hungarian multiplicatives such as *egyed* in (32c), it is probably not advisable to treat them as adjuncts. Piñón (2001) treats them as the direct object of the verb, which will explain the fact that they cannot co-occur with another direct object (see (ia) vs (ib)) or with an ergative verb (where once again the multiplicative competes with another argument: *Juli* originates as the internal argument of the verb in (iia,b)).

- (i) a. *János könyvet olvasott *egyed* (Hungarian)
 János book.ACC read one.ACC
 b. János olvasott *egyed*
 János read one.ACC

- (32) a. János futott *fél órát* (Hungarian)
 János ran half hour.ACC
 ‘János ran for half an hour’
- b. János futott *száz métert*
 János ran hundred metre.ACC
 ‘János ran a hundred metres’
- c. János *nagyot* futott
 János large.ACC ran
 ‘János ran hard’
- d. János futott *egyét*
 János ran one.ACC
 ‘János ran’

Csirmaz (2006:169) argues at length that the italicised accusatives in the Hungarian examples are structurally case-marked. She points out that ‘[s]tructurally case marked adjuncts can appear in a variety of typologically unrelated languages, including Korean, Chinese, Russian, Polish and Greek. These adjuncts all (a) measure the duration of the event, (b) measure a distance covered during the event, or (c) count occurrences of the event.’

To undergird the assertion that accusative ‘bare nominal’ adverbials are structurally case-marked, let me present some data from various languages that conspire to make this point particularly clearly. For Icelandic accusative case-marked path adverbials, the idea that they check structural case against the verb is suggested by the fact (noted in Zaenen, Maling & Thráinsson 1985:474–5) that the accusative adjunct in (33) ‘behaves in some respects like an object, namely, it passivizes when it is the sole postverbal NP’.¹⁷ We see this in (34a). They add, however, that ‘when two postverbal NPs are present, as in [(33b)], only the first NP passivizes’: see (34b,b’).¹⁸

- (ii) a. *János szenvedett *egyét*
 János suffered one.ACC
- b. *János érkezett *egyét*
 János arrived one.ACC

Csirmaz (2006:182) disagrees with Piñón’s analysis of multiplicatives on the grounds that ‘a semelfactive unaccusative predicate can occur with multiplicatives’. But it seems to me unlikely that the verbs in her (iii) are actually unaccusative. Their translation equivalents in Dutch all select *hebben* ‘have’ as their auxiliary in the perfect, which suggests that they are unergative. I will adopt Piñón’s (2001) treatment of multiplicatives as direct objects here, and will not use (32d) in what follows.

- (iii) a. a labda pattant *egyét*
 the ball bounced one.ACC
 ‘the ball bounced’
- b. a kő csobbant *egyét*
 the stone splashed one.ACC
 ‘the stone made a splash’
- c. a zár kattant *egyét*
 the lock clicked one.ACC
 ‘the lock clicked’

17 Maling (1993) notes that in Finnish, accusative-marked *temporal* adverbials can do this, too.

18 Relatedly, Sigurðsson (2006) notes that ‘path accusatives may also be retained in impersonal passives, that is, the Acc passive ^(?)*Það er/var gengið þessa sömu leið til baka daginn eftir* ‘it is/was walked this same route.ACC back the day after’ is fairly acceptable, whereas, e.g., **Það er/var teiknað þessa sömu leið* ‘it is/was drawn this same

- (33) a. hann keyrði þessa leið (Icelandic)
 he drove this route.ACC
 b. hann keyrði bilinn þessa leið
 he drove the.car.ACC this route.ACC
- (34) a. þessi leið hefur aldrei verið keyrð (Icelandic)
 this route.NOM has never been driven
 b. billinn var keyrður þessa leið
 the.car.NOM was driven this route.ACC
 b'. *þessi leið var keyrð bilinn
 this route.NOM was driven the.car.ACC

This latter restriction does not undermine the structural nature of the accusative of *þessa leið* ‘this route’, which is strongly confirmed by the grammaticality of (34a). What (34b,b’) tells us is two things: (a) that the adjunct is not the closest goal for T, and (b) that passivisation does not eradicate the verb’s (or *v*’s) ability to check structural accusative case (i.e., ‘case absorption’ is not the right approach to the passive).¹⁹ These things are both good to know; but they are not central to the point that I am interested in here, viz., that ‘bare nominal’ path adverbials in Icelandic check structural case.

For time-frame adverbials in Russian, Szucsich (2001) argues likewise that they get structural accusative case, this time on the basis of the fact that they ‘exhibit Genitive of negation [as we see in (35b), the negative counterpart to (35a)] under virtually the same conditions as direct objects [(36)] (cf. also Borovikoff, 1997)’.

- (35) a. Maša rabotala celyj čas (Russian)
 Maša worked whole hour.ACC
 ‘Maša was working for one hour’
 b. Maša ne rabotala i čas/časa
 Maša NEG worked even hour.ACC/GEN
 ‘Maša didn’t work even for an hour’
 c. *Maša rabotala i časa
 Maša worked even hour.GEN
 ‘Maša was working even for one hour’

route.ACC’ is impossible’ (in the standard dialect; in varieties accepting the ‘new passive’ (Maling & Sigurjónsdóttir 2002), the second example is grammatical).

19 In line with this, Csirmaz (2006:188) points out that (unlike multiplicatives; see fn. 9, above), accusative adjectives of the type seen in Hungarian (32c) can modify atelic unaccusatives with a degree argument: see (i). Since the accusative case of the italicised adjective is structural, there must be a structural accusative case assigner (*v*) present in the structure of unaccusatives. That structural accusative is available in principle in unaccusatives has also been argued for French-style impersonals of the type in (ii) (see Pollock 1981).

- (i) a. a város *nagyot* változott (Hungarian)
 the city large.acc changed
 ‘the city changed a lot’
 b. az árfolyam *nagyot* esett
 the exchange.rate large.acc fell
 ‘the exchange rate fell considerably’
- (ii) il est venu trois hommes (French)
 it is come three men
 ‘there came three men’

- (36) a. Pëtr čital ètu knigu (Russian)
 Pëtr read this book.ACC
 ‘Pëtr read this book’
 b. Pëtr ne čital ètu knigu/ètoj knigi
 Pëtr NEG read this book.ACC/GEN
 ‘Pëtr didn’t read this book’
 c. *Pëtr čital ètoj knigi
 Pëtr read this book.GEN
 ‘Pëtr read this book’

Szucsich (following Pereltsvaig 2000, among others) takes accusative case in Slavic to be a feature of Asp. He points to aspectual effects of the type in (37) to support this link. He concludes that ‘in Slavic bare Accusative case is restricted to temporal adverbials modifying aspectual information (event time), thus adjoining to AspP’.²⁰

- (37) a. Maša napisala pis’ma {za čas/*celyj čas} (Russian)
 Maša wrote.PF letters.ACC in hour/whole hour.ACC
 ‘Maša wrote the letters {in an hour/*for an hour}’
 b. Maša pisala pis’ma {*za čas/celyj čas}
 Maša wrote.IMP letters.ACC in hour/whole hour.ACC
 ‘Maša was writing letters {*in an hour/for an hour}’

The link with aspect is also seen in Hungarian and Finnish. Csirmaz (2006:169) argues that ‘non-theta marked accusative constituents in Hungarian are situation delimiters’, and therefore do not occur with events that are themselves delimited (because there would be nothing for the adverbial accusative to delimit in that case). In Finnish (38), quoted in Szucsich (2001), we see the same picture: in Finnish, a partitive object is not an event delimiter whereas an accusative direct object is; the fact that the accusative time-frame adverbial *yhden tunnin* ‘one hour’ cannot be used in (38a) tells us that such adverbials cannot combine with events that are already being delimited by the direct object.²¹

- (38) a. Mari kirjoitti kirjeet {yhdessä tunnissa/*yhden tunnin} (Finnish)
 Mari wrote letters.ACC one hour.INESS/one hour.ACC
 ‘Mari wrote the letters {in an hour/*for an hour}’

20 Szucsich does not take the accusative on the adverbial to result from a direct Agree relation between Asp and the adverbial: rather, he takes it to involve a kind of concord relation — he talks in terms of ‘transmission’ of accusative: ‘in cases of agreement, P(r) does not license the case marking of its complement by itself, but allows for licensing “from outside” transmitting case features of the syntactic target’ (p. 13).

21 From Finnish (38) one might get the impression that accusative adverbials are incompatible with accusative objects because of a case problem: structural accusative cannot be assigned twice. But the ungrammaticality of (38a) with *yhden tunnin* ‘one hour.ACC’ has aspectual roots and is not the consequence of a general ban on multiple structural accusative assignment. That there is no such general ban is well known from the existence of multiple accusative constructions in several unrelated languages (e.g. Korean, Kinyarwanda-style applicatives), and also, closer to the topic under discussion, from the Icelandic and Russian facts reviewed above. Individual languages may disallow multiple occurrences of accusative case morphology in particular (local) environments (cf. the Japanese ‘double -o constraint’). But Universal Grammar allows the structural accusative case feature of $v-V$ to engage in more than one checking relationship.

- b. Mari kirjoitti kirjeitä *yhdessä tunnissa/yhden tunnin}
 Mari wrote letters.PART one hour.INESS/one hour.ACC
 ‘Mari was writing letters {*in an hour/for an hour}’

The close ties between accusative adverbials and *Aktionsart* aspect seen in Russian, Hungarian and Finnish suggest that the accusative adverbial is fairly low in the structure: *Aktionsart* aspect is encoded on a small portion of the verbal domain, perhaps as small as the VP predicate. That accusative adverbials are part of the verbal predicate is also argued, on different grounds, by Kim & Sells (2006), basing themselves in part on data reported in Wechsler & Lee (1996) and Maling, Jun & Kim (2001), and in part on novel observations. Kim & Sells show that the choice of nominative or accusative is to a significant extent a function of the animacy of the subject of the clause (see (39a) vs (39b)), and end up advocating an approach to the distribution of nominative and accusative adverbials in Korean along the lines of (40): accusatives are ‘part of the predicate’.

- (39) a. John-i han.sikan tongan-*i/ul talli-ess-ta (Korean)
 John-NOM one.hour for-NOM/ACC run-PAST-DECL
 ‘John ran for an hour’
 b. i pang-un nac tongan-i/*ul etwup-ta
 this room-TOP day time for-NOM/ACC dark-DECL
 ‘this room is dark during the day time’
- (40) a. ACCUSATIVE: is predicated of an individual in the eventuality (or, ‘is part of the predicate’)
 b. NOMINATIVE: is predicated over the whole eventuality, but does not partition up participants in the eventuality

Viewed this way, the Korean facts make the same point as the aspectual effects seen in Russian, Hungarian and Finnish: structurally case-marked accusative adverbials are within the predicate, c-commanded by the accusative case-checking head *v* (probably the locus of *Aktionsart* aspect).

Having hereby cemented the relationship between accusative adverbials and the structural accusative case-checker, we can now return to the central topic of this section: the Adjunct Condition and apparent violations of it. What we are looking for is cases in which extraction takes place from an adverbial that is the goal of a structural case-checking relationship with *v* — and what we would like to know is whether such an adverbial, unlike ones that are not structural case-checking goals, is transparent for the establishment of a filler–gap dependency across its boundaries. Verifying this is surprisingly difficult, due to the fact that in many languages the kinds of adverbials that engage in a structural case-checking relation with *v* are temporal/aspectual in nature — things like (*for*) *an hour* do not easily accommodate a noun that could take a complement that could then be extracted.²² But the accusative adjectives of Hungarian, illustrated previously in (32c) (repeated below as (41a), along with similar examples taken from Csirmaz 2006:186) provide an excellent test case.

22 In (i), the aspectual adverbial contains a relational head noun with a complement; but creating a meaningful question or relative clause in which this complement is extracted is difficult because of the non-contrastiveness of the complement (i.e., one cannot think of a plausible candidate for ‘___’ in *humans are asleep half of their LIVES, not their ___*). Contrast is easy for *John was asleep [an hour before the show]*, but here we are dealing with a purely temporal adverbial, not an aspectual event-measurer; it is too high in the structure to be an Agree-goal for *v*.

(i) humans are asleep [half of their lives]

- (41) a. János *nagyot* futott (= (32c)) (Hungarian)
 János large.ACC ran
 ‘János ran hard’
 b. Juli *jót* futott
 Juli good.ACC ran
 ‘Juli had a good run’
 c. Juli *nagyot/hatalmasat/óriásit* tüszszentett
 Juli large.ACC/enormous.ACC/gigantic.ACC sneezed
 ‘Juli gave a large/enormous/gigantic sneeze’
 d. Juli *kicsit* ütött
 Juli small.ACC hit
 ‘Juli hit someone slightly’

Before we go and check what happens when we try to extract from accusative adjectives in Hungarian, let us first make sure that we are indeed dealing in the examples in (41) with adjuncts, not complements. This may not be immediately obvious. In fact, É. Kiss (2004) suggests that (42a) derives from the same underlier as (42c), via elision of *egy*, as shown in (42b).

- (42) a. János *nagyot* futott (Hungarian)
 b. János [~~egy~~ *nagyot*] futott
 c. János *egy nagyot* futott
 ‘János ran hard/a long distance’

Csirmaz (2006:190) rejects this, as well as an analysis in which the accusative adjective is the relic of a cognate object, on the basis of the following two arguments. In (43a) we see an example of an unaccusative verb combining with a ‘cognate object’ (representable on present assumptions as a low adjunct in an Agree relation with *v*; on *v* and case in unaccusatives, see fn. 17, above). But this object cannot be reduced to just the modifying adjective hosting the accusative case: (43b) is ungrammatical.

- (43) a. János *szörnyű* halált halt (Hungarian)
 János horrible death.ACC died
 ‘János died a horrible death’
 b. *János *szörnyűt* halt
 János horrible.ACC died

Conversely, (44) demonstrates that accusative adjectives are sometimes grammatical in combination with predicates that do not themselves support objects (cognate or otherwise).²³

23 To Csirmaz’s own arguments against the treatment of the accusative adjective as (part of) the verb’s object, I could add a third: the fact that (ib) (with the accusative adjective *többet* ‘more.ACC’ alongside the accusative object *újságot* ‘newspaper’) is grammatical, while (ia) is not. Csirmaz (2006:187) rejects (ii), but this probably has more to do with linear order than with the incompatibility of the accusative adjective and an accusative object. (iii) is an attested example of the type in (ib), culled from the internet. Note that the accusative adjective in (ib) passes the transparency test applied in (47), below: (iv) is grammatical, albeit somewhat marked. (Thanks to Éva Dékány for her help with these examples.)

- (i) a. *János *újságot* olvas *Népszabadságot* (Hungarian)
 János newspaper.ACC reads *Népszabadság*.ACC

- (44) a. *János nagy ugrást ugrott (Hungarian)
 János large jump.ACC jumped
 b. János nagyot ugrott
 János large.ACC jumped
 ‘János jumped high/far’

With these things in mind, we are confident to arrive, with Csirmaz (2006), at a treatment of Hungarian accusative adjectives as adjuncts. Csirmaz places them low in the structure, merged inside vP (as supported by the fact that they can be elided by vP ellipsis, as Csirmaz 2006:189 demonstrates). Concretely, for the example in (32c)/(41a) I assume that the accusative modifier *nagyot* ‘large.ACC’ is adjoined to VP , as in (45):

- (45) $[_{vP} v [_{VP} [nagyot] [_{VP} futott]]]$

In this structure, the modifier *nagyot* is c-commanded by the accusative case probe (even if the accusative case probe is the v - V complex rather than v alone, on the assumption (see fn. 14) that a head (here $V=futott$) c-commands all material contained in its first projection). Thus, the low modifier can serve as a goal for the checker of structural accusative case.

Now we are finally ready to go check whether such case-Agreeing adverbial modifiers are transparent for extraction. We need to construct examples in which the accusative-marked adverbial modifier is itself complex and includes material that could in principle be extracted from it. The sentences in (46) meet this description.

- (46) a. János dohányzik többet nálam (Hungarian)
 János smokes more.ACC to.1SG
 ‘János smoked more than me’
 b. János alszik jobbat nálam
 János sleeps better.ACC to.1SG
 ‘János is sleeping better than me’

The expectation that arises, on the hypothesis that the accusative-marked adverbial modifier is in an Agree relation with v and that this Agree relation makes the projection of the adverbial modifier transparent, is that extraction from these accusative-marked adverbial modifiers should be grammatical. The grammaticality of (47a,b) is consistent with this.²⁴

- b. János többet olvas újságot mint én
 János more.ACC reads newspaper.ACC than I
 ‘János reads the newspaper more than me’
 (ii) *János nagyot könyvet olvasott (Hungarian)
 János large.ACC book.ACC read
 (iii) ha valaki többet olvas újságot, mint amennyit tévéznek, ...
 if someone more.ACC reads newspaper.ACC than as.much.ACC watches.tv
 [<http://olvasas.opkm.hu/index.php?menuId=442&action=article&id=401>]
 (iv) kinél olvasol többet újságot?
 who.to read.2SG more.ACC newspaper.ACC

24 Thanks to Anikó Lipták and Éva Dékány for their help with these examples.

- (47) a. kinél dohányzik többet? (Hungarian)
 who.to smokes more.ACC
 ‘he smokes more than who?’
 b. kinél alszik jobbat?
 who.to sleeps better.ACC
 ‘he is sleeping better than who?’

These Hungarian data provide support for the idea that an Agree relation between v and an adjunct lifts the Adjunct Condition. For English we cannot construct the same argument as conclusively as for Hungarian: English verbs never engage in a morphologically reflected Agree relation with an adjunct. But it is certainly relevant that in colloquial English (which treats the *than* of comparatives as a preposition), a filler–gap dependency across the same kinds of adjuncts which in Hungarian evince a case-Agree relation with the verb is also possible:

- (48) a. I can sing better than him
 b. who can you sing better than?

This suggests that the Hungarian data do not stand on their own. If the conclusion that these data confirm the island removing effect of Agree is correct, it corroborates the general idea that Agree relations deliver transparent — rather than opaque — domains.

The general picture for adjuncts and their islandhood is clear: an adjunct is an absolute island if and only if no probe that c -commands it establishes an Agree relation with it. This is what (3) leads us to expect.

3.4 Intervention islands

From this point on, we will largely set (3) aside, turning to a very different way in which filler–gap dependencies can be obstructed: by *intervention* islands (a.k.a. ‘weak islands’).

Intervention islands are delineated by ‘interveners’ — elements that, in the sense of Relativised Minimality, are of the same type as the filler. In the original approach to relative islandhood (Rizzi 1990), the spectrum of types of fillers was rather coarse-grained: phrases in A-positions, phrases in A'-positions, and heads. In more recent work in relativised minimality, the typology of interveners has become considerably richer, defined in terms of feature content (Starke 2001, Rizzi 2004). This has led to advances in empirical adequacy, unearthing a detailed typology of intervention effects. In this work, I will concentrate on *wh*-operators, negation, and ‘harmful quantifiers’ as interveners in the establishment of *wh*-dependencies, and analyse these from the perspective of the syntax model advocated in this work. This gives us a sizable chunk of material to work with — certainly enough to ascertain that the top-down approach generally does well in the realm of intervention islands. Since the perspective that I am taking on intervention islands is broadly in line with the Starke/Rizzi line,²⁵ it is to be expected that it should be able to deliver the same results throughout the full spectrum of intervention islands.

What all intervention effects have in common is that they involve the blocking of a relationship between a filler of type α and its trace exerted by an element in between α and the trace that is of the same type as α :

25 Except for its directional orientation: Starke and Rizzi work with a bottom-up model whereas mine is a top-down grammar. For discussion of the fit between (feature-)relativised minimality and the direction of structure building, see the next paragraph of the main text.

(49) $[_{XP} \alpha_i [_{YP} \alpha \dots t_i \dots]]$

In a bottom-up derivational approach, there is no obvious reason why the element of type α inside YP should prevent movement of the other element of type α to a position outside YP. In a bottom-up derivation, the ‘trace’ left behind by movement of α_i , which is actually a full copy of α_i in the syntax, is identified by the complete feature content of α_i from the outset. There could generally be no confusion, therefore, as to its antecedent.²⁶ Only something that exactly matches the complete feature content of the copy in the trace position could serve as the antecedent for the trace. The presence in between the trace and its antecedent of an element that is of the same type as α_i should be of no concern unless it happens to be a total match for α_i — it is only in such rare occasions (e.g., in (50), where the two *wh*-fillers have exactly the same feature set) that a bottom-up derivation would be confronted with indeterminacy. The vast majority of intervention effects are not of this nature: the intervening α typically has only certain features in common with α_i , as in (51) and (52), where the *wh*-constituent in the matrix clause and the one opening the embedded clause only share the [WH] feature.

- (50) *who did you know who *ec* said *ec* talked to Mary?
 (51) a. ?what did you know who *ec* said *ec*?
 b. *who did you know what *ec* said *ec*?
 (52) a. *where did you know who *ec* was born *ec*?
 b. *when did you know who *ec* was born *ec*?
 c. *how did you know who *ec* was born *ec*?

The outputs in (51b) and (52) produce the same degree of unacceptability as does (50), even though the *wh*'s involved are not strictly identical. On a bottom-up approach, this is unexpected. So let us examine how the top-down approach featuring *uploading*, *downloading*, *tracing*, and *re-uploading* presented at the beginning of this chapter fares in the realm of *wh*-islands.

3.4.1 Wh-islands

In the top-down approach advocated in this book, fillers that occupy a position in which one or more of their properties cannot be satisfied are placed on hold, on a pushdown stack. Material on a pushdown stack is downloaded onto the left edge of the first predication structure encountered.²⁷ In most cases the grammar cannot interpret the downloaded filler directly in the download position. Whenever a downloaded filler cannot be interpreted in the position of initial downloading, the grammar starts a search to find a trace for it. The search for a trace is interrupted by an intervening element of the same type as the filler. The grammar does not necessarily abandon the attempt to find a trace for the matrix filler to bind, however. For when the intervener is itself subject to uploading, a form of parasitism can transpire: certain types of previously downloaded fillers can be given a second chance at finding and binding a trace by ‘piggy-backing’ on the intervener and getting uploaded onto the latter’s stack. I called this process *re-uploading*.

26 Approaching the problem from the perspective of the probe for α_i does not improve matters: the intervening α could only be a ‘defective’ intervener (because, having valued all its features, it is no longer active as a possible goal by the time the probe is merged). For a pointed critique of ‘defective intervention’, see Bruening (2014b).

27 Recall that displaced phrasal material is systematically either an argument of a predicate or itself a predicate (where ‘predicate’ subsumes ‘modifier’), hence must be linked to a predicate or argument position inside some predication structure.

3.4.1.1 Re-uploading and the argument/non-argument asymmetry

An important ingredient in the analysis of intervention islands is hypothesis that re-uploading is not an opportunity awarded freely to just any previously downloaded filler. Re-uploading is an operation — one that, for the filler in question, follows a previous uploading-*cum*-downloading cycle. As an operation, it comes at a cost. This has two implications. One is that the output of a derivation in which re-uploading is performed will typically be felt to be less than perfect (whence the ‘?’ in (51a)). The other implication is that economy considerations will dictate that in the absence of a compelling need, re-uploading is forbidden. So re-uploading will be had recourse to very sparingly: only when there is a compelling need for it.

For non-argumental filler-copies, in the general case, no such compelling need to be re-uploaded to the stack of an intervener. Non-argumental fillers as a rule have no property that could force them to associate with a trace inside a lower domain. The *wh*-operators in the matrix clause in (52) could in principle be associated with the matrix predication, as a spatial, temporal or manner modifier of it: nothing goes direly wrong in the grammar when *where*, *when* or *how* is construed with the matrix clause. Association of such modifiers with the subordinate clause is possible whenever (a) the embedded clause is transparent (i.e., an Agree-goal to an asymmetrically c-commanding probe) and (b) no harmful intervener presents itself: the search from the filler’s download position on the edge of the matrix TP can proceed unobstructed in that case all the way into the lower clause. But in (52) the presence of the *wh*-filler on the edge of the embedded clause stops the search — terminally, in the case of these non-argumental fillers, because nothing could force their downloaded copies to be re-uploaded onto the stack of *who*. The fact that failure to re-upload the filler-copy deprives the embedded clause of an informative predicate for *who* (by itself, *was born* is not an informative predicate for a [+human] subject: after all, *all humans are born*) is not a licence for re-uploading: in the top-down approach to the building of syntactic structures, the internal composition of embedded predication is unknown at the point in the derivation at which the decision to re-upload has to be taken. The *wh*-constituents in the matrix clause in (52) do not carry in their baggage a need to be part of the predicate for *who*: *where*, *when* and *how* are predicates; but what they are predicated of is determined by the configuration that they or their copies find themselves in at LF.

Arguments, on the other hand, have a θ -role as part of their baggage — and that θ -role is a property that makes re-uploading onto the stack of the intervener strictly necessary if by the time the intervener is encountered no suitable θ -position for a trace linked to an argumental filler has been reached. The θ -role of an argument links it to a particular type of predicate, so when no thematic relation can be established between the argumental filler and the predicate of the matrix clause, the copy of the matrix filler **MUST** be re-uploaded onto the stack of the intervener in order for its θ -role to be traceable to the predicate head in the lower domain that assigns it. Re-uploading gives the argumental filler in the matrix clause a second chance to find and bind a trace in the embedded clause, downstream from the intervener.

The fact that, in the general case, only argumental fillers are given the opportunity to be re-uploaded onto the stack of an intervener explains the fact that, again in the general case, it is only argumental filler-gap dependencies that manage to ‘survive’ intervention effects. I say ‘in the general case’ because an absolute dichotomy between arguments and non-arguments would be descriptively inadequate. At the non-argumental side of the spectrum, measure phrases such as *x many pounds*, used in combination with the verb *weigh*, form an interesting special case:

(53) he weighed two hundred pounds

Such phrases do not serve the associated verb as an argument: though (53) can certainly be construed such that *two hundred pounds* is the thematic object of *weigh* ('he placed two hundred pounds worth of stuff on the scale'), the more salient reading for the sentence is one in which it is not 'the item weighed'. It is usually impossible to get measure phrases interpreted in the matrix clause in a *wh*-island configuration: *how many pounds* cannot sensibly modify the projection of a verb such as *know* or *wonder*. Measure phrases are very picky with respect to their choice associate. If we register this formally with the aid of a property that measure phrases carry in their baggage, this property will legitimate re-uploading. The theory then predicts that a filler-gap dependency across a harmful intervener should in principle be able to survive in the case of degree modifiers. The fact of the matter is complex but may confirm this. Abrusán (2011) notes that degree questions with inquisitive predicates such as *wonder* are markedly better than with responsive predicates, and presents contrasts such as the one between (54) and (55) as representative. She points out that adding a universal modal or attitude verb, or providing contextually specified choices (as in multiple-choice tests such as (56); Kroch 1989) also lessens island effects with measure phrases. What (54)–(56) tell us is that syntax should make a long-distance dependency involving a measure phrase across a *wh*-island possible in principle (i.e., re-uploading is permitted), but that the precise circumstances under which a well-formed result emerges are beyond the control of syntax (see Abrusán 2011 and references there for a semantic treatment).

- (54) *how many pounds do you know whether they lost last year?
 (55) ?how many pounds do you {wonder/need to know} whether they lost last year?
 (56) ?how many pounds do they know whether they need to lose next year: 5 or 7 lbs?

On the argumental side of the equation, there is also reason to state the effect of re-uploading on the status of a filler-gap dependency transgressing a *wh*-island boundary with caution. We had already seen that it is not the case that re-uploading gives arguments a general amnesty for violating the *wh*-island constraint: while (51a) is grammatical, (51b) and (50) are not. Let us investigate in more detail why there is this contrast, starting with the examples in (50).

3.4.1.2 Long subject dependencies and the subject/object asymmetry

In (50), repeated below as (57), the *wh*-filler in the highest clause has exactly the same morphological feature content and θ -role as the *wh*-filler introducing the first embedded clause: both *who*'s are nominative subjects, one of the middle clause and the other of the most deeply embedded clause. It does not matter which *who* is the subject of which clause: either way, we end up with an ungrammatical result.

- (57) *who did you know who *ec* said *ec* talked to Mary? (= (50))

This is directly parallel to the situation we find in multiple *wh*-questions in which no *wh*-island effect presents itself: both (58a) and (58b) are ungrammatical, regardless of whether *that* is included or not (see Chomsky 1981:236 on the ungrammaticality of (58a) and similar such examples). (58b) can be blamed on a superiority violation (analogous to **what did who eat?*), though this in itself begs the question of what superiority effects result from (a question that I will return to). The ungrammaticality of (58a) is a much bigger surprise, in light of the fact that in single questions, overt *wh*-extraction of the subject of a finite clause across a silent C is possible: (59) is not only grammatical, it even supports a pair-list reading. So what could be behind the ungrammaticality of (58a,b)?

- (58) a. *it is unclear *who* thinks (that) *who* saw us
 b. *it is unclear *who who* thinks (that) *ec* saw us
 (59) it is unclear *who* everyone thinks saw us is

Since the examples in (58) are multiple *wh*-questions involving *wh-in-situ*, let us ask first how, in the top-down grammar that I am advocating, the generation of pair-list readings in multiple *wh*-questions is most naturally dealt with. The optimal way is by forming a cluster of *wh*-fillers in (narrow, top-down) syntax: the *in-situ* material is already in its scope position before the product of the syntactic derivation is handed over to the phonological and semantic components. On such an approach, the difference between *wh-in-situ* and overt fronting of material into the left periphery is a function of the choice of copy that is given a phonological matrix at PF: in cases of overt *wh*-movement, it is the copy in the scope position that undergoes phonological realisation; under *wh-in-situ*, the upper copy remains silent and a lower copy is singled out for pronunciation. This has been called ‘the phonological approach to LF-movement’ (see Brody 1995, Cecchetto 2004, and references cited there). It fits in most naturally with the ‘single-cycle syntax’ theory of current minimalism that a top-down approach to syntax will want to subscribe to: syntax performs all of its operations in a single cycle, from the top of the tree down to the bottom, and does not return to earlier cycles at LF.

On the top-down single-cycle approach to *wh-in-situ*, (60) is roughly what underlies both examples in (58a,b) — and it must be ruled out for both outputs.

- (60) *_[CP1] *who*₁ *who*₂ ... [_{TP} ...]
 STACK:
 [*who*₂ [*who*₁]]

The problem with (60) is that it involves the uploading onto a single *wh*-stack of two *wh*-fillers that have exactly the same morphological and thematic properties. I assume that such ‘echo stacks’ cannot be formed: no *wh*-stack is allowed to have two members that have the same formal feature content and θ -role. This constraint rules out both (58a) and (58b), and it also takes care of the ill-formedness of (57): in the course of the derivation of (57), we would need to re-upload the *who* in the highest clause onto the *wh*-stack created by the *who* introducing the middle clause; this re-uploading operation delivers a complex *wh*-stack that is identical with the one in (60). The grammar thus rules out (57) and (58) on identical grounds.

Unlike in (57) and (58), the interacting *wh*-constituents in (51a,b) (repeated below as (61)) do not have identical sets of morphological features or θ -roles.

- (61) a. [?]what did you know *who ec* said *ec*? (= (51))
 b. *who did you know what *ec* said *ec*?

The various stages in the top-down process of constructing the structures of the examples in (61) are kept track of in (62).²⁸

28 Here, as in the structures that follow later in the book, silent copies in download positions adjoined to a predication phrase will be printed in grey. The physical fillers are printed in italics.

- (62) a. [CP₁ *filler*₁ ...
 STACK:
 [*filler*₁]
 → downloading the stack onto the first predication structure (here TP)
- b. [CP₁ *filler*₁ ... [TP *filler*₁ [TP ...
 → *filler*₂ encountered; CP projected in the complement of V, with *filler*₂ in SpecCP
- c. [CP₁ *filler*₁ ... [TP *filler*₁ [TP ... [CP₂ *filler*₂
 STACK:
 [*filler*₂]
 → *filler*₁ added to the stack, in a pushdown manner
- d. [CP₁ *filler*₁ ... [TP *filler*₁ [TP ... [CP₂ *filler*₂
 STACK:
 [*filler*₁ [*filler*₂]]
 → downloading stack onto TP, ‘last in, first out’; starting a search for traces
- e. [CP₁ *filler*₁ ... [TP *filler*₁ [TP ... [CP₂ *filler*₂ ... [TP *filler*₁ [TP *filler*₂ [TP ...]]]]]]]]]]

In the process of the top-down construction of the matrix clauses in (61), the first element encountered (i.e., the initial *wh*-phrase, *who* or *what*) cannot be interpreted *in situ*, and is hence placed on a stack (see (62a)). The first predication structure encountered in the process of constructing the matrix clause of the examples in (61) is the matrix TP, containing the matrix subject and its predicate. The simple *wh*-stack built up in the matrix clause is downloaded onto the matrix TP, as in (62b). Now the grammar tries to link *who/what* to a gap inside the matrix predicate, headed by *know*. Although *who/what don't you know?* is grammatical, postulating a trace for the *wh*-filler in the object position of *know* quickly turns out not to be the right strategy for (61): the next incoming element happens to be another *wh*-constituent, which can only be mapped into the specifier position of a subordinate CP. So the grammar proceeds with the construction of an embedded CP, and places the *wh*-element sitting in its SpecCP on hold immediately (see (62c)). In the next step in the process of constructing the complex sentences in (61), the *wh*-filler in the initial position of the matrix clause, which has not been successfully associated to a gap yet, needs to be carried over into the subordinate clause. Since this filler is of the same type as the *wh*-element introducing the embedded clause, the latter prevents the establishment of a filler-gap dependency for the matrix filler across it: this is the quintessence of an ‘intervention effect’. The derivation is not terminated here, however: because the fillers have θ -roles, the grammar can proceed by re-uploading the matrix *wh* to the *wh*-stack of the subordinate clause. The matrix *wh*, transferred from the matrix clause, is added last, giving us the stack shown in (62d). The now complex pushdown stack gets downloaded onto the TP in the subordinate clause, with the matrix *wh*'s copy leaving the stack first. The resulting adjunction structure is given in (62e). With the fillers downloaded onto the structure, the grammar can attempt to link them up with their predicates.

For the example in (61a), *filler*₁ (*what*) corresponds to the object of the subordinate clause, and *filler*₂ (*who*) to its subject. Downloading *what* and *who* in that order, according to (62e), gives us (63).

- (63) [CP₁ *what*₁ ... [TP *what*₁ [TP ... [CP₂ *who*₂ ... [TP *what*₁ [TP *who*₂ [TP T ... *t*₂ ...]]]]]]]]]]

Let us look at *who*₂ first. In its (second) download position, on the edge of the embedded TP, *who*₂ has the good fortune of being able to be directly linked to its predicate by T, which can serve as the RELATOR of subject and predicate. The download position of *who*₂ is such that no variable needs to be postulated for it because it is already in the right place to be able to serve as the subject of predication.²⁹ For *what*₁, a trace does need to be postulated. But since *what*₁ is the only filler that needs to link up to a trace, there could be no interference from *who*₂ in the process: *who*₂ does not instigate a search for a trace but is interpreted in its position of first download; even though it is a *wh*-element of the same type as *what*₂, it is not an intervener because the download positions of the two *wh*-fillers in (63) are on the edge of the same TP ('equidistant'). The only thing that weighs down on (61a) is the fact that *what*₁ could not be linked to a trace from its first download position (on the edge of the matrix TP), and had to be added to the *wh*-stack in the embedded clause. In English, the penalty associated with re-uploading is generally mild. The fact that *what*₁ needs to be re-uploaded onto a *wh*-stack is what causes the slight deviance of (61a). Besides this, the sentence does not trespass.

Things are quite different in (61b), where *who*₁ is in the matrix clause, and gets uploaded onto the embedded *wh*-stack last, hence downloaded onto the edge of the embedded TP before *what*₂ is. Now *who*₁, the subject of the embedded clause, cannot be associated with its predicate directly in its download position: since *what*₂ is downloaded onto the edge of TP below *who*₁, no RELATOR can be introduced immediately below *who*₁ that can link it *qua* subject to the predicate of the embedded clause: predication fails in (64). In order for *who*₁ to be linked locally to its predicate, a trace would need to be postulated in TP, with T linking the trace directly to the predicate, as in (65). But this representation is ungrammatical as well. The problem with (65) is that with *who*₁ being downloaded onto the outer edge of TP *and* binding a trace in SpecTP, *who*₁ is on the edge of TP twice. Economy of representation forbids an element from being on the edge of the same phrase more than once.³⁰

29 Note that the absence of a trace in SpecTP in (63) directly derives the insight of what is usually referred to in the literature as the Vacuous Movement Hypothesis (George 1980, Chomsky 1986). What this hypothesis seeks to express is that a *wh*-element that serves as the highest subject of a grammatical *wh*-question (or *wh*-relative) does not have to move from SpecTP to SpecCP — or, phrased representationally, that a highest-subject *wh*-expression does not bind a variable in the local structural subject position. In the standard bottom-up approach, which takes movement to be triggered by the obligation to satisfy the needs of functional heads, this result is difficult to secure. Assume, for concreteness, that when English C is equipped with the [WH] feature, it has the 'EPP property', which demands that its specifier position be filled. If so, SpecCP ought to be filled in all *wh*-constructions, regardless of where the bearer of the matching [WH] feature originates; so local movement from SpecTP to the local SpecCP is hard to avoid. The top-down approach, by contrast, can have the *wh*-element sitting in the left periphery throughout and still straightforwardly derive the desired distinction between highest-subject *wh*-questions/relatives, on the one hand, and other *wh*-questions and relative clauses, on the other. The key property of grammatical highest-subject *wh*-questions/relatives from this perspective is that the *wh*-filler in their SpecCP position can be associated with its predicate directly in its download position, requiring no trace to be postulated. I will return to the transparency of highest-subject questions and relatives against this background in chapter 5 (section 5.3.17).

30 The 'anti-locality constraint' of Grohmann (2003), Abels (2003), Bošković (2005) also rules out the internal structure of the subordinate TP in (65), because the link between the downloaded copy of *who*₁ and the trace *t*₁ is too short. But anti-locality also rules out other kinds of dependencies (e.g., between the specifier of a phrase XP and its trace in the complement position of X), ones that are not ruled out by the representational economy constraint formulated in the main text. I do not consider 'anti-locality' empirically adequate: it seems to me clear that the grammar must countenance configurations in which the specifier of XP binds a trace in the complement position of X (e.g., on a 'reprojection' approach to 'phase-extending head movement' in Predicate Inversion constructions; see Den Dikken 2014). I will not couch the discussion in terms of 'anti-locality' therefore, and instead adopt the more narrow representational economy constraint stated in the text.

- (64) *_{[CP1 who₁ ... [TP who₁ [TP ... [CP2 what₂ ... [TP who₁ [TP what₂ [TP T ... t₂ ...]]]]]]]]}
- (65) *_{[CP1 who₁ ... [TP who₁ [TP ... [CP2 what₂ ... [TP who₁ [TP what₂ [TP t₁ T ... t₂ ...]]]]]]]]}

If we were to forgo postulating a trace for *who*₁, as in (64), no predication relation between *who*₁ and the predicate of the lower clause could be established. Such a predication failure is fatal. But if we do postulate a trace, as in (65), the representational economy constraint prohibiting an element from being on the edge of the same phrase more than once is violated.³¹ This, too, is fatal. So (61) just cannot win.

3.4.1.3 On the severity of *wh*-island violations involving arguments

Now that the contrast in (61) has been explained, let me say a few words about the variable status of *wh*-island violations involving arguments. English speakers generally do not find sentences of the type in (61a) particularly bad — though there is quite some individual variation. The cost of re-uploading an argumental *wh*-filler onto the pushdown stack of a *wh*-element in a lower clause is apparently not very high. But speakers of Dutch and German, for instance, generally show much more severe reactions to ‘mere subjacency violations’ (as the common nomenclature has it). Is this because the price to pay for re-uploading a *wh*-filler is higher in these languages than it is in English? Or is the cost of re-uploading universally low, and is the stronger effect of *wh*-island violations involving arguments in some languages the consequence of something additional, specific to those languages?

Here I would like to explore the latter possibility, with particular reference to Dutch and German. It is well known that these languages differ from English in liberally ‘scrambling’ non-subject material, sometimes even to positions above the subject, and are generally more ‘discourse configurational’ than ‘theta-configurational’: arguments are typically strung along in accordance with their role in the information structure of the utterance. It is also common knowledge that in Dutch and German it is very difficult for a non-specific indefinite subject to be placed in the structural subject position, SpecTP. In English, non-specific indefinites can be placed in SpecTP: *firemen are available* supports a stage-level interpretation equivalent to that of *there are firemen available* (Diesing 1992). In Dutch and German, on the other hand, indefinites in SpecTP invariably obtain a specific or generic reading. Both of these things arguably play a role in procuring a ‘strong subjacency effect’ in *wh*-island constructions.

Consider again the derivation of (61a), given in (63), repeated below. I argued above that for English, (63) delivers a structure in which *who*₂ can be interpreted directly in its download position, with T as the RELATOR of the predication relationship between *who*₂ and the verbal predicate of the lower clause. The *wh*-word *who* is a non-specific indefinite (as we know, for instance, from the fact that the object *wh*-word *kit* ‘who.ACC’ controls indefinite agreement with the verb in Hungarian; see chapter 4 for illustration and discussion). Bearing this and the fact that Dutch and German do not accept non-specific indefinites in SpecTP in mind, we arrive at the conclusion that it is in fact impossible to interpret the equivalent of *who* in a download position on the edge of TP in the Dutch or German counterpart to (63).

- (63) _{[CP1 what₁ ... [TP what₁ [TP ... [CP2 who₂ ... [TP what₁ [TP who₂ [TP T ... t₂ ...]]]]]]]]}

31 In addition, the reader may have noticed that if we were to take the trace *t*₁ to be legitimate in (65), we would get two *wh*-paths that cross or intersect, in violation of the Nested Dependencies Constraint of Fodor (1978) (see also Pesetsky’s 1982 Path Containment Condition). For more on paths, see section 3.4.2, below.

A second, and even more important, factor play a role in determining the status of the equivalent of (61a) in Dutch or German is the fact that the re-uploaded *what*₁ is anaphoric to the *what*₁ in the matrix clause, hence topical.³² Topics are typically scrambled in these languages. Assume that the status of *what*₁ in CP2 is that of a ‘continuing topic’. It is standard to assume that there is a position for topics in the left periphery outside TP, and that a topic is the subject of a predication relation, with the ‘comment’ as the predicate. The TopP in (66) is then the highest predication structure onto which the two *wh*-elements on the pushdown stack of *who*₂ can be downloaded — with *what*₂ downloaded first, hence attached higher than *who*₂:

(66) *... [_{CP2} *who*₂ ... [_{TopP} *what*₁ [_{TopP} *who*₂ [_{TopP} Top [_{COMMENT} ...

The problem with (66) is that *what*₁ is downloaded in a position in which it cannot serve as the subject of the topic–comment relation: *who*₂ is the only thing that Top could relate to the comment; focal *who*₂ is not an appropriate topic/subject for the comment, and it prevents *what*₁ from being related locally to the comment. Thus, (66) as it stands delivers a predication failure of the same kind as the one seen in (64); and just as in (65), trying to fix this predication failure by postulating a trace for *what*₁ local to the predicate is illegitimate because of the ensuing violation of the constraint barring one and the same element from being on the edge of the same phrase twice.

Their ‘discourse configurationality’ and the fact that SpecTP is not a possible locus for non-specific indefinites in Dutch and German conspire to make it *wh*-island violations of this type robustly ungrammatical in these languages. The account based on (66) carries over to other *wh*-island cases involving arguments, on the assumption that every matrix argumental *wh*-phrase, once re-uploaded onto the pushdown stack of an intervening *wh*-filler in the embedded clause, counts as a topic once downloaded onto the first predication structure of the embedded clause. I offer this here as a (still rather tentative) perspective on why *wh*-island effects are so much more severe in Dutch and German than in English, inviting future research on this proposal.

3.4.2 Paths and the pathology of intervention islands

In discussions of the island constraints on syntactic filler–gap dependencies, the ‘*wh*-island’ is often mentioned in the same breath as the constraints that Ross (1967) identified, from which the impression may easily emerge that Ross himself had included the *wh*-island in his catalogue. Rizzi (1982:49), for instance, opens chapter 2 of his important book with the statement: ‘Ross (1967) noticed that a clause introduced by a *wh* pronoun is an island.’

As a matter of fact, however, Ross explicitly does NOT declare embedded *wh*-questions islands for extraction. Ross (1967:Chapter 2) presents empirical data to demonstrate that a general ban on *wh*-dependencies across embedded questions would be much too blunt a tool: not only are embedded yes/no-questions introduced by *whether* often quite permeable, even constituent questions often pose no problem for the establishment of a *wh*-dependency across them. This is true particularly for constituent questions introduced by *why*, which are often entirely transparent, even more so than *whether*-questions. Ross presents the following triple as an illustration:

32 The fact that Dutch and German dialects have *wh*-copying (i.e., the equivalent of *who do you think who Mary kissed?*, which is ungrammatical in adult English, though children acquiring English do produce such things; Thornton 1990) is probably also highly relevant in this connection.

- (67) a. he told me about a book *which* I can't figure out why he read *ec*
 b. ?he told me about a book *which* I can't figure out whether he read *ec*
 c. ??he told me about a book *which* I can't figure out when he read *ec*

All three examples involve an argumental *wh*-dependency between the filler *which*, the *wh*-operator of the relative clause headed by *book*, and a gap in the object position of the question embedded inside the relative clause. The acceptability of the result turns out to depend heavily on the particular *wh*-element introducing the embedded question: in Ross's judgement, (67a), with *why*, is fine; (67b), with *whether*, is marginal; and (67c), with *when*, is worse still. No simple generalisation about this paradigm in terms of the argument/non-argument distinction is available: none of the italicised *wh*-elements in (67) is an argument.

We can simplify the examples a bit and round out the picture painted by Ross's (1967) examples in (67) by including *how* and *who* in the mix as well. When we do, we get the cline in (68): as before, the *why* and *whether* cases are slightly marginal but clearly within the realm of grammaticality, (68c) is noticeably worse than (68a,b), and (68d,e) are quite strongly degraded.

- (68) a. ?what can't you figure out why she read to him?
 b. ?what can't you figure out whether she read to him?
 c. ??what can't you figure out when she read to him?
 d. ?*what can't you figure out how she read to him?
 e. *what can't you figure out who she read to?

Recall that once a *wh*-expression has been downloaded onto the edge of the matrix TP,³³ it cannot build a path to a trace inside an embedded *wh*-question when there is an intervening *wh*-element on the edge of the subordinate clause. But for argumental *wh*'s (and *only* for those), there is the option of re-uploading the *wh*-expression onto the *wh*-stack of the intervener, and proceeding into the subordinate clause. Carrying a previously downloaded filler onto the stack of an intervener always comes at some cost, which is responsible for the fact that none of the sentences in (68) is perfect. But why is there a cline of acceptability of this type, with (68a,b) giving rise to barely a raised eyebrow while (68c) is appreciably worse and (68d,e) are pretty much impossible?

This is a puzzle that has preoccupied generative syntacticians for decades. 'Subjacency effects', it is customary to say, are 'weaker' than 'ECP effects'. It has never become clear, however, why this should be the case; nor does subjacency by itself cast any light on the cline in (68). In the discussion in this section, I would like to dwell on this empirical picture at some length. I will argue here for a path-based solution to the puzzle (largely following in the footsteps of Fodor 1978 and Pesetsky 1982) — a solution for which it is important to ask ourselves how the various interveners in (68) build their own *wh*-dependencies.

3.4.2.1 Multiple fillers, multiple paths

Let me begin with by looking at (68c–e) in detail, going through their derivations from the top. The argumental *wh*-expression *what* is placed on the *wh*-stack right away. When it is downloaded onto the edge of the matrix TP, the grammar tries to link it to a local gap. But upon the encounter of the *wh*-element *when*, *how* or *who* at the left edge of the lower clause, the grammar abandons all hope for a direct filler–gap dependency. It re-uploads *what*, onto the stack of *when/how/who*.

33 For simplicity, I am ignoring the negation in (68). An additional step of downloading followed by re-uploading will take place in the derivation to get around the 'inner island' effect set up by the negation (see section 3.4.3, below), but this is immaterial for the purposes of the present discussion.

Now an important question arises: what will be the relative placement of the two *wh*'s on the new stack? The thing to bear in mind here is that the grammar reaches its conclusion that no direct filler–gap dependency between *what* and its trace is possible only after encountering the *wh*-element introducing the embedded clause. The incoming *wh*-element is immediately and automatically placed on a *wh*-stack. This is done *before* the matrix *wh*-filler is re-uploaded. Since the *wh*-stack is a pushdown stack, this means that *what* ends up on top of the *wh*-element introducing the lower clause (*wh*₂): after re-uploading of *what* has taken effect, our *wh*-stack looks as in (69a). When we reach the TP of the lower clause, we download the *wh*-stack, in the familiar ‘last in, first out’ (LIFO) way, attaching the downloaded *wh*'s as adjuncts to the TP. With *what* popping off the stack first, it ends up attached to TP above *wh*₂, as shown in (69b). The internal structure of the TP is subsequently completed to include traces for the *wh*'s, and paths can be constructed from the TP-adjoined *wh*-copies to their traces inside TP, as shown in (69c), for the particular example in (68e), featuring *who* as *wh*₂.

- (69) a. *what*₁ ... [CP *wh*₂
 STACK:
 [*what*₁ [*wh*₂]]
- b. *what*₁ ... [CP *wh*₂ [TP *what*₁ [TP *wh*₂
- c. **what*₁ ... [CP *who*₂ [TP *what*₁ [TP *who*₂ [TP ... [VP *t*₁ ... [PP *t*₂ ...]]]]]]]]
-

The representation in (69c) makes it immediately clear that in the syntax of (68e), the paths leading from the fillers in their final download positions down to their traces cross. This is why (68e) is ungrammatical: multiple paths should be nested rather than intersecting. I will talk about this more in the next subsection.

3.4.2.2 Path containment

Whenever there are multiple fillers downloaded onto the edge of a single predication structure (the RELATOR phrase, RP, of Den Dikken 2006a), the grammar tries to build multiple paths between the RP-adjoined material from the push-down stack and local gaps inside the RP. In such cases, questions of path containment arise: if the paths overlap and the fillers are of the same type (see fn. 35, below), should the paths be *nested* or *intersecting*? Throughout its history, the generative literature has agreed that in the case of multiple \bar{A} -dependencies, multiple paths must be nested — Fodor (1978) already argued this in the 'seventies, and postulated (70a); Pesetsky (1982) reaffirmed it in the form of his Path Containment Condition, reproduced in (70b). Within the context of the approach to filler–gap dependencies taken in this book, these constraints say that the element in the *lowest* RP-adjoined position must be linked to its trace *first*, followed by the next one up, etc.); intersection of paths of the same type causes the derivation to be terminated.³⁴

34 This is the opposite of what Richards' (1997) 'tucking in' mechanism requires. For Richards, in multiple *wh*-fronting constructions, the *wh* that is moved second 'tucks in' below the *wh* that has already been moved; since the one that is moved first is the highest *wh* below the attracting functional head, these 'tucking in' derivations deliver crossing paths rather than nested ones. (See also Chomsky's (1995:Chapter 3) insistence on crossing rather than nested paths in multiple A-movement dependencies.) Richards' theory does, however, derive the same empirical results as mine.

- (70) a. *Nested Dependency Constraint* (Fodor 1978)
 if there are two or more filler–gap dependencies in the same sentence, their scopes may not intersect if either disjoint or nested dependencies are compatible with the well-formedness conditions of the language
- b. *Path Containment Condition* (Pesetsky 1982)
 if two paths overlap, one must contain the other

Note that this derives, from a top-down grammar with pushdown stacks plus locality and the nested dependencies requirement, that the relative order of multiple moved elements anchored in a particular RP must be preserved under displacement: outside RP, filler₁ precedes filler₂, and inside RP, the traces of these fillers (*t*₁ and *t*₂) are in the same precedence relation — though the RP-adjoined ‘copies’ of the fillers are ordered in exactly the opposite way. Downloading the stacked fillers onto the edge of RP inverts the order in which these fillers were first encountered: on the edge of RP, filler₂ is higher, hence further to the left, than filler₁; but the requirement that within RP the paths leading from the offloaded fillers to their associated gaps be nested rather than intersecting ensures that the gaps are lined up the same way the fillers are lined up in their spell-out positions.

This translates directly into real-life cases of multiple filler–gap dependencies within a single clause. In particular, it derives the ordering restrictions on multiple *wh*-fronting constructions in languages (such as Bulgarian) in which all *wh*-constituents are spelled out in the same CP, in a ‘multiple specifier’ structure (Rudin 1988, Richards 1997, Bošković 1997 *et seq.*).³⁵

35 From the text discussion, the impression might easily emerge that whenever there are multiple *wh*-fronted constituents, they must always be lined up as in Bulgarian. This is not adequate. The theory needs to provide for languages like Serbo-Croatian (see Bošković 1997 and much subsequent work) or Hungarian, where we find multiple *wh*-fronting constructions with ‘freedom’ of ordering in the left periphery. The Hungarian example in (i) illustrates this.

- (73) a. kit kinek mutatott be? (Hungarian)
 who.ACC who.DAT introduced
- b. kinek kit mutatott be?
 who.DAT who.ACC introduced
- both: ‘who did (s)he introduced to whom?’

To take care of this, we should take into account the fact that not all positions in the tree are created equal, and that the creation of push-down stacks is sensitive to the nature of the positions that fillers occupy. From the literature on multiple filler–gap dependencies, it has become clear that the nature of the positions occupied by the various fillers matters a great deal. So what we need to design is a theory in which sometimes multiple fillers are placed on the same push-down stack and at other times each filler is placed on a stack of its own — with the choice between the two options being based on the nature of the positions occupied by the fillers.

In particular, what we are seeking is a theory in which a single multi-member stack is created for multiple fillers whose positions are of the same type, and separate stacks are created for each filler whenever the positions they occupy are of different types. By ‘type’ I mean something very much like what Rizzi (1990) meant in his relativised minimality approach to the locality of syntactic dependencies. É. Kiss (1993) presents for an extended argument to the effect that in Hungarian the last *wh*-element in a string of multiple *wh*’s in the left periphery functions as a focus, and all *wh*-elements to its left semantically behave just like a universal quantifier. So for (ia), a paraphrase of its semantics would be ‘for every person *x*, tell me which person (s)he introduced *x* to’, whereas for (ib) the proper paraphrase would be ‘for every person *y*, tell me which person (s)he introduced to *y*’. So for Hungarian (i) we know that the immediately preverbal *wh*-element is of a type different from that of the *wh* that precedes it. In Hungarian (i), therefore, we have *two* push-down stacks, one for universals and one for foci, and each happens to have a single member, because of the simplicity of the example. The downloading of the two stacks onto the edge of the first RP in the structure is unordered: though *within* a single push-down stack, the items on the stack

- (71) a. kogo na kogo e pokazal? (Bulgarian)
 whom to whom is pointed.out
 ‘whom did (s)he point out to whom?’
 b. *na kogo kogo e pokazal?
 to whom whom is pointed.out

The derivations below illustrate how the ordering restriction on multiple *wh*-fronting in Bulgarian-type languages falls out from the top-down approach using pushdown stacks and path containment:

- (72) a. [CP kogo₁ [CP na kogo₂ ... [TP
 STACK: STACK:
 [kogo₁] [na kogo₂ [kogo₁]]
 b. [CP kogo₁ [CP na kogo₂ ... [TP na kogo₂ [TP kogo₁ [TP
 c. [CP kogo₁ [CP na kogo₂ ... [TP na kogo₂ [TP kogo₁ [TP T t₁ t₂]]]]]]
 d. *[CP na kogo₁ [CP kogo₂ ... [TP kogo₂ [TP na kogo₁ [TP T t₂ t₁]]]]]]

are offloaded in a strict LIFO order, multiple push-down stacks are unordered *vis-à-vis* one another. Since the two separate push-down stacks for (i) each have exactly one member, and since the offloading of the individual stacks is unordered, problems of path containment cannot arise in languages whose multiple *wh*-fronting constructions target discrete positions in the left periphery.

Some more needs to be said. For when we make the Hungarian example a bit more complex such that it contains more than one pre-focal *wh*-element, we find that the *wh*-elements preceding the focus, while all preceding the focus as a block, can freely change places amongst each other. We see this in (ii), where the curly brackets indicate that the relative ordering of the elements enclosed within them is free in principle. In this regard, they behave exactly like topics, which are unordered *vis-à-vis* one another. This is illustrated in (iii), the answers to (ii). If all topics end up in the same, single push-down stack, we will not manage to allow for this ordering freedom: the LIFO nature of push-down stacks is such that these will always allow for just one outcome.

- (ii) a. {ki kinek} MIT vett? (Hungarian)
 who who-DAT what-ACC bought
 b. {kinek mit} KI vett?
 who-DAT what-ACC who bought
 both: ‘who bought what for whom?’
 (iii) a. {János Marinak} CSAK EGY KÖNYVET vett (Hungarian)
 János Mari-DAT only a/one book-ACC bought
 ‘János bought Mari only a/one book’
 b. {Marinak egy könyvet} CSAK JÁNOS vett
 Mari-DAT a book-ACC only János bought
 ‘only János bought Mari a book’

This problem, however, is to a large extent unique to the topic function. We know that topics are particularly prone to a filler–gap construal that is different from the one resorted to in garden-variety movement dependencies: whereas moved elements routinely bind a trace, topics have a semantic property (*viz.*, specificity) that makes them eminently eligible for binding a resumptive pronoun, which may itself be silent. We will, at some point, need to come to terms with the way pronominals link up with their antecedents; but this relationship is certainly very different from movement-type filler–gap dependencies, and in all likelihood cannot be treated in terms of push-down automata. I will set pronominal binding dependencies aside in this work. On the assumption that topic–gap dependencies can in principle be treated in terms of silent resumption, the fact that there is freedom in the placement of *wh*-elements preceding the focal *wh* in languages like Hungarian will not be on our agenda.


With this in mind, we can now return to (68e), whose derivation was schematised in (69c), above. The paths leading from the downloaded fillers to their traces are clearly not in a relationship of nesting/containment. Since (70) is violated by this derivation, the corresponding example, (68e), is ruled ungrammatical. For (68d), the same applies, if the trace of *how* is lower in the structure than the trace of *what*. I assume that in English object-*what* binds a trace on the edge of vP (the ‘object shift’ position), and that the trace of *how* (a low manner adverb) is inside the complement of *v*.³⁶ The examples in (68d,e) are empirically closely aligned; the fact that the top-down grammar of filler–gap dependencies makes them fall out in parallel ways is a good thing.

The fact that the account of (68d,e) is entirely path-theoretic raises certain expectations about what will happen when we flip the *wh*’s around, so that the paths in the embedded clause will be properly nested. For (68d), no improvement is expected; in fact, it should turn into an ‘ECP violation’: with *how* in the matrix clause, re-uploading is impossible (recall that non-argumental *wh*’s cannot be re-uploaded), hence we can never ‘lower’ *how* into the subordinate clause. The expectation that (68d) should degrade further with the two *wh*’s flipped is confirmed: (73) does not allow *how* to bind a trace in the embedded clause.³⁷

- (73) **how* did you figure out [what she read to him *ec*]?

For (68e), on the other hand, we expect to see an improvement with *what* and *who* changing places. The judgement goes in the expected direction. The pair in (74) (taken from Pesetsky 1982, Richards 1997) illustrates that path containment is indeed active in ‘Subjacency’ contexts: (74a) corresponds to (68e), and is predictably bad; (74b) switches the two *wh*’s to comply with the nested dependencies constraint (see (75)), and produces a vastly improved result.

- (74) a. *which sonata did you ask which violin to play on?
 b. ?which violin did you ask which sonata to play on?

- (75) a. *which violin*₁ ... [_{CP} *which sonata*₂
 STACK:
 [*which violin*₁ [*which sonata*₂]]
 b. *which violin*₁ ... [_{CP} *which sonata*₂ [_{TP} *which violin*₁ [_{TP} *which sonata*₂
 c. *which violin*₁ ... [_{CP} *which sonata*₂ [_{TP} *which violin*₁ [_{TP} *which sonata*₂ [_{TP} ... *t*₂ *t*₁]
- 

With this analysis of the contrast in (74) in place, we of course also have an immediate account of the classic Chomsky (1977) contrast in *tough*-movement constructions:

- (76) a. *which sonata is this violin easy to play on?
 b. which violin is this sonata easy to play on?

36 The conclusion that the trace of *what* is higher than the trace of *how* also follows, without the need to assume object shift, if we follow a Phillips (1997, 2003) style top-down approach, in which merger in the bottom right-hand corner of the tree is optimal. If the appeal to object shift made in the text should turn out to be problematic, a Phillips-style approach will serve as an alternative.

37 I replaced *can*’t in (68d) with *did* in (73) because in the presence of a matrix sentential negation, fronting of *how* would have incurred an ‘inner island’ effect entirely independently of anything else: recall (50).

The account is the same as the one just presented for the contrast in (74), with one small difference: the second *wh*-operator is a null operator in the *tough*-movement construction.

Returning to the paradigm in (68), let us move on to ask why (68c) is relatively better than the examples in (68d,e). In (68c), the paths from *what*'s re-download position down to t_1 and from *when*'s download position down to t_2 do not strictly speaking cross but they are not properly nested either. I assume that *when* binds a trace on the edge of vP .³⁸ Since *what* likewise binds a trace on the edge of vP (recall the discussion of (68d)), the two *wh*-paths in (68c) lead down to the same node in the tree (vP), which makes it impossible for the paths to be in a properly nested dependency. The fact that there is no proper nesting in (68c) is responsible for the degradation of these sentences — though the absence of *crossing* paths, unlike in the case of (68d,e), makes (68c) appreciably less bad.

3.4.2.3 Why *why* and *whether* are different

At this point, it is high time to turn to the examples in (68a,b) and to ask why these are so much less bad than the other examples in (68): in fact, these sentences are almost perfect. The important thing about (68a,b) is that the *wh*-elements introducing the embedded questions in these examples are *why* and *whether*.

I will argue here that *why* and *whether* are precisely the two non-argumental *wh*'s that establish their syntactic and semantic connection with the constituents they modify directly by the good fortune of being downloaded onto the edge of just the right predication structure. Once *why* and *whether* have been downloaded onto the embedded TP, they are 'done': they have found their syntactic and semantic mate right upon being downloaded, and no path to a gap further downstream needs to be built. So in (68a,b), only *what* needs to build a path to its trace inside TP, and since this is the only path being constructed, we vacuously satisfy path containment. Simply put, we can't go wrong in (68a,b). (77) shows this succinctly.

- (77) a. $what_1 \dots [_{CP} \text{why/whether}_2$
 STACK:
 $[what_1 [why/whether_2]]$
 b. $what_1 \dots [_{CP} \text{why/whether}_2$ $[_{TP} \text{what}_1 [_{TP} \text{why/whether}_2$
 c. $what_1 \dots [_{CP} \text{why/whether}_2$ $[_{TP} \text{what}_1 [_{TP} \text{why/whether}_2 [_{TP} \dots t_1 \dots]]]]$

This is not to say that nothing could *ever* go wrong when an argumental *wh*-expression is trying to establish a filler-gap dependency across a *wh*-clause introduced by *why* or *whether*. For objects, we get the result just discussed; but subjects do not manage to build filler-gap dependencies across *why* and *whether* at all — and here *why* and *whether* behave no differently from other *wh*-elements introducing embedded questions: the result is systematically bad.

38 Note that temporal adverbials can be pied-piped by 'VP topicalisation' (which, in the v/VP model, involves fronting of vP), as in (ia). The alternative in (ib) is good only with comma intonation separating the 'stranded' temporal modifier from what precedes it. From this I conclude that temporal adverbials are not attached outside vP .

- (i) a. John said that he would read the article yesterday, and [read the article yesterday] he did
 b. John said that he would read the article yesterday, and [read the article] he did, yesterday

- (78) a. *who can't you figure out why read this poem to him?
 b. *who can't you figure out whether read this poem to him?
 c. *who can't you figure out when read this poem to him?
 d. *who can't you figure out what read to him?
 e. *who can't you figure out who read this poem to?

The unmitigated woefulness of all the sentences in (78) is a classic ‘ECP effect’: the trace of the subject in the lower clause cannot be ‘properly governed’ because of the fact that the *wh*-element in the SpecCP of the embedded clause is a closer potential antecedent for the trace than is its actual antecedent. In chapter 5, in my discussion of the syntax of subject dependencies, I will provide an account for the pattern in (78), from the perspective of the top-down approach to filler–gap dependencies advocated here.

In the two subsections that follow, I will provide important support for the key hypothesis on which the account of (68a,b) rests: that *why* and *whether* establish their relationship with what they are associated to from their position of first downloading, and do not bind a trace. Readers who are pressed for time and/or are happy to take my word for it that this hypothesis is correct are welcome to skip straight ahead to the conclusion of this chapter.

3.4.2.3.1 The why and wherefore

Within the realm of non-argumental *wh*-fillers, we will want to make an important distinction between rationale modifiers and other modifiers (incl. manner, spatial and temporal modifiers) — between *why*, on the one hand, and *when*, *where* and *how*, on the other. Rationale adverbials associate directly with the proposition as a whole. We see this, for instance, in the fact that, while VP topicalisation with inclusion of a manner, spatial or temporal adverbial is unproblematic (recall also fn. 38), pied-piping a rationale adverbial is much more difficult. I illustrate this in (79), for Dutch.³⁹

- (79) a. [het huis *zo/aldus* gebouwd] heeft hij inderdaad/niet (Dutch)
 the house so/thus built has he indeed/not
 b. [het huis *daar* gebouwd] heeft hij inderdaad/niet
 the house there built has he indeed/not
 c. [het huis *toen/destijds* gebouwd] heeft hij inderdaad/niet
 the house then/at.that.time built has he indeed/not
 d. ??[het huis *daarom/derhalve* gebouwd] heeft hij inderdaad/niet
 the house therefore/therefore built has he indeed/not

The fact that bare⁴⁰ rationale adverbials cannot be taken along with the rest of the VP by VP topicalisation suggests that their attachment is to the entire proposition. This has an interesting consequence in the context of filler-gap dependencies.

39 I use Dutch examples rather than English ones here because VP topicalisation is generally much more natural in Dutch than it is in English.

40 It is probably important to include this restriction: phrasal rationale adverbials like *om die reden* ‘for that reason’ seem more liberal than ‘bare’ *daarom/derhalve* ‘therefore’, when it comes to both pied-piping under VP topicalisation and long-distance filler–gap dependencies.

The fact that rationale adverbials are directly associated with the proposition entails that once they have been downloaded from the pushdown stack at the edge of TP, they are immediately ready for interpretation and do not need to be linked to a trace within TP. The process of downloading a rationale adverbial onto the edge of TP takes care of its semantic association with the proposition. This derives the oft-noted fact that *why* appears to be ‘base-generated in the left periphery’ (Bromberger 1992, Rizzi 1990, 2001, Ko 2005; cf. Collins 1991, Lasnik & Saito 1992, Stepanov & Tsai 2008, Shlonsky & Soare 2011, etc.). In a top-down approach to filler-gap dependencies, of course, *wh*-fillers are always generated right where they are pronounced, so in that respect *why* is no different from *when* or *where* or *how*. But while *when*, *where* and *how* all need to be linked to a trace inside TP once they have been downloaded onto the edge of TP, *why* does not: it is ready for interpretation right away.⁴¹

In an affirmative monoclausal sentence, such as (80a), *why* will be downloaded onto the edge of TP and interpreted right there. But suppose that we add sentential negation into the mix, as in (80b), and suppose that the negation in question is the one in (62b) (repeated below as (81)).

- (80) a. why do you like syntax?
 b. why don't you like syntax?
 = ‘what is the reason such that [*for that reason* [you don't like syntax]]?’
 ≠ ‘what is the reason such that [it is *not* the case that [you like syntax *for that reason*]]?’
- (81) $[_{CP} C [_{NegP} \neg [_{TP} \langle \text{SUBJECT} \rangle T [_{VP} \langle \text{SUBJECT} \rangle \dots]]]]$

NegP is a predication structure. And NegP in (81) is structurally higher than TP, hence a closer target for the downloading of the pushdown stack that has *why* in it. Since every predication structure along the way is a check point for the pushdown stack, *why* will be downloaded onto NegP in (81). It turns out that it can be perfectly felicitously interpreted there: in association with NegP, *why* provides a rationale for the negation. And it also turns out that this is the *only* allowable associate for *why*: interpreting it as a modifier of the basic verbal predication is impossible in (80b) — Ross's (1984) ‘inner island’ effect. It seems, then, that once the closest predication structure has been localised and *why* has been downloaded onto it from the pushdown stack, this completes the process of finding a host for *why*.

The inner island effect is not restricted to *why*. But for other non-argumental *wh*-expressions the effect manifests itself rather differently from the way it does in the case of *why*. While the *why*-question in (80b) is grammatical and supports a reading in which *why* associates with the negation, (82b) is simply ungrammatical (see Shlonsky & Soare 2011:656); the same is true for (83b), featuring *when*.

41 This may also account for the fact that it is extremely difficult, in many (though apparently not all) languages, to form *wh*-questions in which *why* is *in situ*.

- (i) a. who ate what?
 b. who ate where?
 c. who ate when?
 d. ??who ate why? (cf. *who ate and why?* and *who ate for what reason?*)

The form of ‘why’ seems to matter (see also the previous footnote): in some languages, ‘why’ is clearly a PP of the ‘for what’ type (Romance, Germanic other than English); in others, it may be more similar to ‘for what/which reason’, in which case it may have an easier time occurring *in situ* because it has a lexical nominal component and can even be specific.

- (82) a. how did she solve the problem?
 b. *how didn't she solve the problem?
- (83) a. when did she solve the problem?
 b. *when didn't she solve the problem?

This is intimately related to the fact that ‘*why*-stripping’ (see Yoshida *et al.* 2015) does not have a counterpart with *how* or *when*: while the non-negative examples in (84) are all fine with sluicing, we find a sharp difference between (85a), featuring ‘*why*-stripping’, and the examples in (85b,c).

- | | | | | | |
|------|----|----|------------------------------|----|------------|
| (84) | a. | A: | she likes syntax | B: | why? |
| | b. | A: | she solved the problem | B: | how? |
| | c. | A: | she solved the problem | B: | when? |
| (85) | a. | A: | she doesn't like syntax | B: | why not? |
| | b. | A: | she didn't solve the problem | B: | *how not? |
| | c. | A: | she didn't solve the problem | B: | *when not? |

The contrast in (85) at once confirms that *why* can associate directly with negation and shows us that this is a property that is quite unique to *why*. With this in mind, we can return to the contrast between (80) and (82)/(83). While in the *why*-question in (80b), an inner island effect is straightforwardly avoided by associating *why* directly with the negation, just as in the ‘*why*-stripping’ construction in (85a), the *wh*-adverbials in (82b) and (83b), after having been downloaded onto the edge of NegP, find it impossible to link up with their traces in the complement of Neg because the negation operator in SpecNegP sets up an intervention effect for the association of non-argument *wh*-elements to their traces.

- | | | |
|------|----|---|
| (86) | a. | [_{CP} <i>why</i> ... [_{NegP} <i>why</i> [_{NegP} \neg [_{Neg} [_{TP} ...]]]]]] |
| | b. | *[_{CP} <i>how</i> ... [_{NegP} <i>how</i> [_{NegP} \neg [_{Neg} [_{TP} ... <i>t</i> ...]]]]]] |
| | c. | *[_{CP} <i>when</i> ... [_{NegP} <i>when</i> [_{NegP} \neg [_{Neg} [_{TP} ... <i>t</i> ...]]]]]] |

The fact that *why*, once having been downloaded onto the edge of NegP, does not need to bind a trace inside the complement of Neg but can associate directly to NegP gives *why* a simple way to escape the inner island effect set up by negation. The fact, on the other hand, that *how* and *when* cannot associate directly with NegP (as seen in the non-existence of ‘*how*-stripping’ and ‘*when*-stripping’) forces them to reach into the complement of Neg, which is impossible because \neg sets up an intervention effect.⁴²

In our discussion of intervention effects in section 3.3.2, we had seen that inner island effects constrain not just clausemate filler-gap dependencies but long-distance filler-gap dependencies as well:

42 We get inner island effects also when the negative material is not a sentential negation but instead a negative quantifier on the subject, as in (i). This is expected on the ‘interventionist’ approach to inner island effects.

- (i) a. why did few/no people solve the problem?
 b. *how did few/no people solve the problem?
 c. *when did few/no people solve the problem?

- (87) a. how do(*n't) you think one should behave?
 b. how do (*few/*no) people think one should behave?

Here *how* fails to associate not just with the *think*-VP but also with the *behave*-VP. We have already seen that *how* can link up to a trace across an intervening negation operator \neg neither directly (because of an intervention effect) nor via re-uploading (because non-argumental fillers cannot be re-uploaded). In the case of *why*, which does not associate with its host via a trace but directly, by being downloaded onto the edge of the proposition that it modifies, this would seem to make long-distance association very difficult. This is a good thing for sentences like (88), which indeed make it impossible for *why* to associate with the embedded clause: the sentences are grammatical but must have *why* associated with negation or negative operator in the matrix clause.

- (88) a. why don't you think she likes syntax?
 b. why do few/no people think she likes syntax?

But this seems to get us into trouble with multiclausal structures in which a *why* in the matrix clause can semantically associate with the subordinate clause. A sentence such as (89) is perfectly ambiguous between a matrix reading for *why* and one in which it is associated with *she likes syntax*. How do we get this latter reading at all, if, once *why* has been downloaded onto the first predication structure (scanning in from the top/left), it semantically links up with the proposition denoted by this predication structure?

- (89) why do you think that she likes syntax?

This question leads us to consider the way in which *why* associates with long-distance targets. Bromberger (1992) notes that association to focus, rather than 'movement', is a favourite strategy for *why*.⁴³ Thanks to this, *why* can associate with targets that are embedded in constituents that are otherwise quite strongly resistant to the establishment of filler-gap dependencies involving non-arguments, such as relativised noun phrases, as in (90a) (taken from Yoshida *et al.* 2015):

- (90) a. why does John love [the girl who is learning FRENCH (but not Italian)]?
 b. because French is a beautiful language in his view

The association between *why* and the focus *FRENCH* inside the relative clause in (90) is very similar to the association between the focus particle *only* and the focus inside the relative clause in (91) (see Krifka 2006:108):

- (91) John only introduced [the man that JILL admires most] to Sue

So it seems that, if association to focus can help us out in clear non-movement cases like (90a), it should also be able to serve us well in simpler cases such as (89).

43 Bromberger (1992) also shows that association to focus is not a strategy available for *when*.

Yoshida *et al.* (2015) argue, however, that there is also a non-focus-associated *why*. They do so on the basis of questions of the type in (92). One possible answer to this question is the focus-associated one: (92a). But another possible answer is (92b), where *why* does not associate specifically with the narrow focus *an apple*. This answer is not tremendously felicitous out of context but becomes more natural once properly contextualised (see Yoshida *et al.*'s paper for discussion).

- (92) why did Bill eat AN APPLE?
- a. because there were only two options for dessert, a chocolate peanut muffin and an apple, and he is allergic to peanuts
- b. because he was still hungry after eating the other food

Yoshida *et al.* conclude that '*why* usually associates with the focalized item, that is to say, with a specific component of the event, but under certain limited contexts, it does not have to'. One can argue, however, that the availability of the answer in (92b) is a function of the possibility of what is often called 'focus projection': the focus in the *why*-question in (92) is on the most deeply embedded right branch, whence focus can project up to larger constituents, including the VP of *eat*. With the focus projecting up to the VP, the question can be understood as asking for the rationale for Bill's being engaged in apple-eating, without *an apple* itself being the narrow focus of the question. And with *why* associating with the projected focus, even the answer in (92b) can pass as a case of association to focus.

That this is interpretation of the facts is likely to be on the right track is suggested by the fact that when the focus is on a *left* branch, hence does not project to the VP, we do not get anything other than the narrow-focus associated reading. The question in (93) is very hard to answer with (93b) (see Yoshida *et al.* 2015: fn. 38).

- (93) why did Bill take AN APPLE from the dessert tray?
- a. because there were only two options for dessert, a chocolate peanut muffin and an apple, and he is allergic to peanuts
- b. #because he was still hungry after eating the other food

So it seems entirely feasible to defend the idea that *why* never builds long-distance dependencies of the filler-gap type at all, and that whenever it is apparently engaged in a long-distance relation, we are dealing with association to focus. For an example such as (89), what this means is that *why* associates with the embedded proposition *she likes syntax* as a result of the projection of the information focus from the embedded object *syntax* (the most deeply embedded right branch) up to TP.

The idea that long-distance dependencies involving *why* are always focus-association dependencies rather than filler-gap dependencies receives further support from *why*-sluicing. *Prima facie* surprisingly, in light of the facts that we have encountered up to this point, *why*-sluicing is unlike other instances of sluicing in showing strict locality effects. Whereas sluicing with other *wh*-remnants is well known to be able to ignore subjacency islands of various sorts, *why*-sluicing cannot. Thus, Merchant (2001:129) points out that *why*-sluicing does not ameliorate a relative clause island (see (94a)). And even more strikingly, *why*-sluicing cannot even permeate an otherwise transparent finite clause, as (94b) demonstrates.

- (94) a. he wants to interview someone who works at the soup kitchen for a certain reason, but he won't reveal yet why
 → does not support a reading in which *why* associates with *work at the soup kitchen*
- b. Mary said John left for a certain reason, but I don't know why
 → does not support a reading in which *why* associates with *leave*

The unavailability of 'downstairs' readings for *why* in these examples is easy to understand from an association-to-focus approach to long-distance *why*-dependencies. After all, ellipsis is characterised by the fact that a large chunk of syntactic structure remains silent, hence cannot be marked for focus. Since in (94) the TPs following *why* are not spelled out, there is nothing inside these silent TPs that can be focus-marked at PF and serve as the long-distance associate of *why*. The only thing that *why* can associate with in these examples is the entire elliptical TP, via regular offloading of the *wh*-element onto the first available RP. This delivers the 'upstairs' readings for the examples in (94). The association-to-focus approach to *why* predicts correctly that 'downstairs' readings are underivable when ellipsis takes place. The fact that there is simply no way to get the 'downstairs' interpretations for the examples in (94) tells us quite clearly that 'ordinary' filler-gap strategies are not exploited in the case of *why*-questions: whenever *why* is semantically associated with something other than the first available RP, this is the result of association to focus.⁴⁴

Can this association-to-focus approach still take care of the inner island effects seen in (80b) and (88)? The reader might have doubts about this in light of the fact that the focus particles *only* and *even* can readily associate to a focus across a negation, as in (95). Let us concentrate on (95a), which has readings paraphrasable as 'the only things I didn't wash were the dishes' (with narrow focus on the object) or as 'the only thing I didn't do was wash the dishes' (with focus projecting up to the VP of *wash*). We see this association to focus across negation also in the long-distance examples in (96).

- (95) a. I only didn't wash the dishes
 b. I even didn't wash the dishes
- (96) a. I only didn't agree that I should wash the dishes
 b. I even didn't agree that I should wash the dishes

In fact, in (97) and (98) as well, *why* can be associated to the focus across negation:

- (97) why didn't you wash the dishes?
 (98) why didn't you agree to wash the dishes?

So association to focus is certainly possible across a negation, for well-established focus particles such as *only* and *even* as well as for *why*. But note that *why* continues to be interpreted *outside* the negation: (97) is paraphrasable as in (99a) but not as in (99b).

44 Unaccounted for here and potentially problematic is Rizzi's (2001) argument to the effect there is a difference between clausemate *why* and non-clausemate *why* with respect to its syntactic position and the way it comes to occupy its position. For Rizzi, clausemate *why* is base-generated in SpecIntP, in the high left periphery, whereas non-clausemate *why* is moved into the matrix SpecFocP. Rizzi shows for Italian that non-clausemate *perché* 'why', like other *wh*-elements but crucially unlike clausemate *perché*, triggers subject-verb inversion and is incompatible with a fronted focus.

- (99) a. what is the reason such that [for that reason [you didn't wash the dishes]]?
 b. #what is the reason such that [it is not the case that [you didn't wash the dishes for that reason]]?

So it seems that even when *why* associates with a focus below a negation, it continues to have scope over the negation. The inner island effect thus holds, irrespective of association to focus.

There is one last question to be addressed about *why*, concerning the placement of *why* in the cluster of *wh*-elements in multiple *wh*-fronting languages such as Bulgarian. In the contrast between the a- and b-sentences in (100) and (101) we see that *kak* 'how' and *koga* 'when' are both rigidly ordered *vis-à-vis* the object-*wh*, something which our top-down approach to filler-gap dependencies, with its pushdown LIFO stacks and its nested paths condition, can account for: *wh*-adverbials like *how* and *when* must bind a trace inside the predication structure onto which they are downloaded; in the derivations for the b-sentences, the paths running from the downloaded copies of *how* and *when* to their traces are not (properly) nested within the path from the downloaded object-*wh* to its trace.

- (100) a. kogo kak e tselunal Ivan? (Bulgarian)
 whom how is kissed Ivan
 'how did Ivan kiss whom?'
 b. *kak kogo e tselunal Ivan?
 how whom is kissed Ivan
- (101) a. koj koga ste si hodi v Bulgaria? (Bulgarian)
 who when will REFL go in Bulgaria
 'who will go to Bulgaria when?'
 b. *koga koj ste si hodi v Bulgaria?
 when who will REFL go in Bulgaria

In light of my discussion of *why*-questions in English, we are now led to wonder how *why* behaves in Bulgarian-style multiple *wh*-fronting constructions. Though multiple *wh*-fronting constructions with *why*-type *wh*'s are not discussed very often in the extensive literature on Bulgarian, Stepanov & Tsai (2008) provide the following example, for which they indicate explicitly that the ordering is strict.

- (102) a. koj zašto kupil kniga? (Bulgarian)
 who why bought book
 b. *zašto koj kupil kniga?
 why who bought book

For Romanian, Shlonsky & Soare (2011:268) are eminently explicit about the placement of *de ce* 'why' in the clause-initial *wh*-cluster: *de ce* 'may cooccur with another fronted *wh*-constituent and when this happens, it obligatorily follows it'. Here, the first 'it' refers to *de ce* and the second to 'another fronted *wh*-constituent', as the facts in (103)–(106) demonstrate.⁴⁵

45 Conspicuously absent from this set of examples is the combination of *de ce* 'why' and *cum* 'how'. Shlonsky & Soare (2011:268, fn. 13) point out that these two *wh*-expressions cannot co-occur together, regardless of relative order.

- (103) a. cine de ce a plecat? (Romanian)
 who why has left
 b. *de ce cine a plecat?
 why who has left
- (104) a. pe cine de ce ai întrebat despre accident?(Romanian)
 ACC who why you.have asked about accident
 b. *de ce pe cine ai întrebat despre accident?
 why ACC who you.have asked about accident
- (105) a. ?când de ce l-ai văzut? (Romanian)
 when why him-you.have seen
 b. *de ce când l-ai văzut?
 why when him-you.have seen
- (106) a. ?unde de ce ai reparat mașina? (Romanian)
 where why you.have repaired car.the
 b. *de ce unde ai reparat mașina?
 why where you.have repaired car.the

So we see, for both Bulgarian and Romanian, that when it comes to relative ordering in multiple *wh*-clusters in these languages, *why* is systematically last, no matter what the nature of the other member of the cluster.

Shlonsky & Soare (2011) have a dedicated functional projection for *why* (which they call ‘ReasonP’), below the position of fronted *wh*’s in Romanian, which is SpecCP (or SpecIntP, on Rizzi’s 2001 more fine-grained approach to the left periphery). Romanian *de ce* ‘why’ (and probably also its Bulgarian counterpart) stays *in situ* in SpecReasonP in *wh*-questions in which some other *wh*-element raises to SpecCP (or SpecIntP). This will certainly take care of the ordering facts, albeit largely by stipulation.

As an alternative, I would like to explore the possibility that the finality of *why* in the multiple *wh*-cluster is motivated by the grammar’s desire to download *why* in as high a position as possible, hence before any other *wh*-fillers get downloaded. By downloading *why* first, the grammar ensures that *why*, as a focus particle, it will have a maximally wide range of possible associates. This seems a particularly plausible suggestion for cases in which *why* is in fact associated to the other *wh*-element in the cluster — which, whenever the other *wh* is focused, is likely to be by far the most salient construal of *why*. (103a) then corresponds to English (107a), (104a) to (107b), (105a) to (107c), and (106a) to (107c).

- (107) a. why has JOHN left?
 b. why did you ask JOHN about the accident?
 c. why did you see him THEN?
 d. why did you fix the car THERE?

In order to facilitate association to focus, *why*, once downloaded onto the edge of TP, will have to c-command the focused element with which it wants to associate.⁴⁶ Whenever the other *wh* is *why*’s focus associate, *why* must be downloaded from the stack first, in order to gain c-command over the other *wh*. Since *why* can only be ‘first out’ if it was ‘last in’ on the stack, it follows that *why* must be the final element in the string of clustered *wh*-constituents. This derives the facts.

46 Note that in *JOHN only speaks English* is impossible for *only* to associate with *JOHN* because it does not c-command this focus.

One last thing worth mentioning is that *why*'s association to focus also explains the fact that *why* cannot be linked to the TP of an embedded constituent question across the *wh*-operator introducing the embedded question, which is itself a focus. The only thing that *why* could be associated with in (108) is *what*: the embedded TP, to which fronted *what* cannot project focus, is not within reach.

(108) why do you wonder what she did?

We thus predict there to be two possible readings for (108): one in which *why* associates with the local TP (the 'upstairs' reading), and one in which *why* is focus-associated to *what*. The latter reading is not usually discussed in the literature, but it is clearly available, especially in contrastive contexts: *why do you wonder WHAT she did and not HOW she did it?* What is impossible, however, is for *why* to forge an association with the embedded TP.

This derives one of the effects traditionally taken care of by the Empty Category Principle (ECP) of early principles-and-parameters theory (Chomsky 1981). 'ECP effects' involving non-arguments other than *why* have already been derived from the fact that non-argument fillers must manage to link up with their traces from the position of first downloading: non-arguments cannot be re-uploaded. This leaves one more set of 'ECP effects' to be addressed — the ones found in subject dependencies. I will turn to these in chapter 5, which is entirely dedicated to the subject. With the outcome of that discussion still pending at this point in the book, what we can say for now is that the top-down approach to filler-gap dependencies has fully covered the 'ECP' in the realm of non-arguments.

3.4.2.3.2 Whither whether?

Recall from (68), repeated below as (109), that besides *why*, *whether* is the only other *wh*-element introducing subordinate questions that seems to allow argumental filler-gap dependencies across it with relative ease. With the account of *why* in place, I would like to insert a short discussion about *whether* here.

- (109) a. [?]what can't you figure out why she read to him? (= (68))
 b. [?]what can't you figure out whether she read to him?
 c. ^{??}what can't you figure out when she read to him?
 d. ^{2*}what can't you figure out how she read to him?
 e. ^{*}what can't you figure out who she read to?

For *whether*, it is entirely standard in the generative literature to assume that (a) it occupies SpecCP and (b) it is 'base-generated' there (i.e., does not bind a trace lower down the tree). The hypothesis in (a), that *whether* is in SpecCP rather than in C, is supported by the fact that *whether* behaves differently from *if* (which can often replace it) in one important respect: while *whether* can introduce an infinitival question with a silent (PRO) subject, *if* cannot.

- (110) a. he was wondering *whether* he should go or not
 b. he was wondering *if* he should go or not
 (111) a. he was wondering *whether* PRO to go or not
 b. ^{*}he was wondering *if* PRO to go or not

Kayne (1991) presents a simple explanation for the contrast between (110) and (111). While in the former the subject of the lower clause is overt and perfectly happy to be governed from C, the subject of the infinitival clause in (111) is PRO, which resists being in a governed position, by the ‘PRO Theorem’ of early principles-and-parameters theory. With *if* spelling out the C-head, and overt C-heads qualifying as governors, the PRO-subject of the infinitival question in (111b) violates the PRO Theorem. The grammaticality of (111a) now indicates, by this logic, that the PRO-subject of the infinitival clause here is not governed. If *whether* lexicalised the C-head just as *if* does, this would be very difficult to ensure. On the other hand, the assumption that *whether* is in SpecCP, with C being empty, straightforwardly guarantees the legitimacy of PRO in the subject position of the infinitival question in (111a) (on the assumption, made frequently in the literature, that empty Cs are not governors). Though the theoretical account would need to be updated (because ‘government’ and, concomitantly, the PRO Theorem are not in the minimalist toolkit),⁴⁷ the contrast in (111) plausibly suggests that assumption (a), viz., that *whether* occupies SpecCP, is correct. The fact that it is morphologically a *wh*-word (*whether* is the [+WH] counterpart of *either*) is of course perfectly in line with this as well: *wh*-constituents in English are generally found in SpecCP, not in C.

The assumption in (b), that *whether* is ‘base-generated’ in SpecCP, is also standard, and makes *whether* look a lot like *why*. *Whether* is very much like *why* in being quite tolerant of *wh*-dependencies across it (recall again (109a,b)). It is also like *why* in being associated to focus, and in attaching to a full predication. That *whether* is associated to focus is clear from Den Dikken’s (2006c) discussion of ‘*either*-float’ — *either* being the [–WH] counterpart of *whether*. *Either* can attach to the entire predication and associate with a focus further downstream, as in (112a,b). The pattern in (112) is reproducible for *whether*, as shown in (113).

- (112) a. either [_{TP} John ate [_{FOCUS} steak]] or [_{TP} he ate [_{FOCUS} pizza]]
 b. either [_{TP} John [_{FOCUS} ate steak] or [_{TP} he [_{FOCUS} drank pálinka]]
 c. either [_{FOCUS} [_{TP} John ate steak] or [_{FOCUS} [_{TP} Mary drank pálinka]]
- (113) a. whether [_{TP} John ate [_{FOCUS} steak]] or [_{TP} he ate [_{FOCUS} pizza]] is unclear
 b. whether [_{TP} John [_{FOCUS} ate steak] or [_{TP} he [_{FOCUS} drank pálinka]] is unclear
 c. whether [_{FOCUS} [_{TP} John ate steak] or [_{FOCUS} [_{TP} Mary drank pálinka]] is unclear

In light of Den Dikken’s (2006c) demonstration of the focus association of *either* and the morphological, semantic, and distributional properties of *whether*, there can be no doubt that *whether* is a focus-associated *wh*-element, very much like *why*.

The standard hypothesis that *whether* is base-generated in SpecCP, i.e., does not bind a trace, fails to capture the link between *whether* and *either* directly: the base-generation sites of the two elements are different. The advantage of the approach presented here is that it preserves the ‘tracelessness’ of *whether*-constructions while at the same time capturing the link between *whether* and *either*. The former is ensured in the same way that we translated the ‘base-generation’ approach to *why* in our top-down model: both *why* and *whether* are downloaded onto the first predication structure and are interpreted right there, without binding a trace somewhere lower down. And the parallel between *whether* and *either* is captured thanks to the fact that *whether* is treated as a *wh*-filler that is placed on the *wh*-stack and downloaded onto the edge of

47 In chapter 5, I revisit PRO and the ‘PRO Theorem’. But the account presented there does not directly accommodate the contrast between (110) and (111). Though I have no new analysis of this contrast to offer at this time, I will take the conclusion that Kayne (1991) drew from this contrast regarding the placement of *if* and *whether* to be correct.

the first predication structure. It is there, on the edge of the RP, that it finds itself in the very same position that *either* is in in the examples in (112). So indeed, *whether* does not ‘move’ to SpecCP: it is inserted there and, crucially, does not bind a trace inside the predication structure onto which it is downloaded; but thanks to being treated as a *wh*-filler that must be downloaded onto the edge of the highest predication structure, *whether* can ‘meet up’ with *either*, its [-WH] counterpart. The fact that it delivers this desirable *rapprochement* between *whether* and *either* is a welcome feature of the top-down approach to *wh*-dependencies taken in this book.

This concludes my discussion of intervention islands involving *wh*-operators as interveners (so-called *wh*-island effects). The next section will bring the discussion of intervention islands to a close by investigating in detail the landscape and etiology of ‘Beck effects’ — intervention effects induced by scope-taking elements other than *wh*-operators.

3.4.3 *Beck-style intervention effects and ‘inner islands’*

Beck’s (1996) seminal work on what she called ‘intervention effects’ (picked up on since by a wide variety of semanticists and syntacticians) brings together a range of blocking effects exerted by negation and quantifiers.

In the first two subsections below, I will illustrate the spectrum of intervention effects in two parts. In section 3.4.3.2, I will show the range of elements that exert an ‘interventionist’ influence on the establishment of what are standardly considered to be LF dependencies. First, however, section 3.4.3.1 will lay out what I believe is the full array of construction types evincing intervention effects.⁴⁸

After the presentation of the empirical landscape of ‘Beck effects’, sections 3.4.3.3 and following will subsequently launch into an analysis of these effects from the perspective of the top-down approach to filler–gap dependencies espoused in this book. We will discover that this model is very well equipped to account for ‘Beck effects’.

3.4.3.1 *Construction types exhibiting Beck-style intervention effects*

The palette of construction types evincing intervention effects is presented in (114), with all examples drawn from German (and based almost entirely on Beck 1996). It is important to emphasise that all the negation-containing examples in (114) give rise to a result that is impossible to interpret — as Beck (1996:3, fn. 3) herself puts it: ‘The “??” means that the data are incomprehensible (uninterpretable) rather than simply ungrammatical. I would accordingly ask native speakers to try and interpret the sentences, not simply judge whether they “sound bad.”’

48 I also include here the so-called *was für*-split construction (see (114e)), which, as De Swart (1992) was the first to show (for Dutch; see also Honcoop 1998), gives rise to intervention effects very similar to the ones discussed in the main text. (See also Obenauer 1984 on ‘quantification at a distance’ in French *combien*-split constructions.) Beck (1996) does not include the *was für*-split into her inventory because in this construction ‘there is no obvious necessity for the in situ part to move at LF at all, because it is semantically independent from the interrogative part of the construction. An analysis of intervention effects in the *was für*-construction thus can’t be parallel to that of the other constructions’ (p. 52). Since my analysis of intervention effects does not depend on the *in-situ* part moving up to the operator at LF (I argue below, in agreement with Pesetsky 2000 but on different grounds, that Beck is mistaken to adopt such an account), no theoretical concerns stand in the way of inclusion of the *was für*-split construction. Empirically, the parallel with the constructions Beck discusses is so close that it encourages inclusion as well.

- (114) CONSTRUCTION TYPES
- a. *wh-scope marking constructions*
was glaubt {Hans/?niemand}, wen Karl gesehen hat?
what believes Hans/nobody whom Karl seen has
 - b. *multiple wh-questions with wh-in-situ*
wen hat {Hans/?niemand} wo gesehen?
whom has Hans/nobody where seen
 - c. *quantifier float*
wen hat {Hans/?niemand} alles gesehen?
whom has Hans/nobody all seen
 - d. *partitive split*
wen hat {Hans/?niemand} von den Musikern getroffen?
whom has Hans/nobody of the musicians met
 - e. *‘was für’-split*
was hat {Hans/?niemand} für Bücher gelesen?
what has Hans/nobody for books read
 - f. *specificational split*
was hat {Hans/?niemand} an Aufgaben gelöst?
what has Hans/nobody of problems solved
 - g. *exceptive split*
wen hat {Hans/?niemand} außer Fritz getroffen?
whom has Hans/nobody except Fritz met
 - h. *nominalised adjective split*
was hat {Hans/?niemand} heute Schönes gemacht?
what has Hans/nobody today nice(NOMINAL) done
 - i. *‘for example’ split*
wen hat {Hans/?niemand} zum Beispiel getroffen?
whom has Hans/nobody for example met
 - j. *‘exactly/approximately’ split*
wen hat {Hans/?niemand} genau/ungefähr eingeladen?
whom has Hans/nobody exactly/approximately invited

3.4.3.2 Harmful and harmless interveners

In the examples in (114), I consistently juxtaposed *Hans*, a proper name, with *niemand* ‘nobody’, a negative quantifier serving as the subject and intervening between C and some *wh*-element further down the tree. Intervention effects show up only when *niemand* is chosen. The ordinary sentential negation particle *nicht* ‘not’ also gives rise to all of these intervention effects (see (115a)), as does the German equivalent of *neither/nor* (see (115b)). Even a constituent negation associated with a contrastive focus can trigger an intervention effect — when the *sondern*-phrase that presents the element to which the negated constituent is contrasted finds itself in extraposed position, but not when it is placed right next to the negated constituent; see (115c) vs (116a). Another interesting contrast presents itself between *nur* ‘only’, which (as (115d) shows) is a harmful intervener, and *nicht nur* ‘not only’, which is not (see (116b)). To round out the picture, we see that monotone decreasing quantifiers (closely affiliated to negation: they, like negation, license negative polarity items) are like negation in being harmful interveners: see (115e). The universal quantifier never patterns like negation with respect to polarity-item licensing; yet it, too,

can trigger intervention effects — though only when given a non-distributive interpretation (which for *fast jeder* ‘almost everyone’ in (115g) is the only possible interpretation; see Pafel 1991 for original discussion): the contrast between (115f) and (116d) shows this. Finally, while *die meiste* ‘most’ does not give rise to a strong intervention effect (see (116e)), the adverbial quantifier *meistens* ‘mostly’ (like *oft*) does (see (115h)). Beck (1996:32) plausibly attributes the unexpectedly unobstructive behaviour of *die meisten Studenten* in (116e) to the ability on the part of ‘most’ phrases to support a purely referential interpretation — as is supported by the fact that *die meisten Studenten* can undergo d-word left dislocation (*die meisten Studenten, denen vertraue ich* ‘most students, I trust them’), whereas genuine quantifiers cannot.⁴⁹

- (115) HARMFUL INTERVENERS
- a. *sentential negation*
^{??}was glaubt Hans nicht, wer da war?
 what believes Hans not who there was
 - b. *‘neither/nor’*
^{??}wen haben weder Karl noch Luise alles eingeladen?
 whom have neither Karl nor Luise all invited
 - c. *contrastive-focus associated negation — if the contrast is in extraposed position*
^{??}wen hat nicht HANS wo getroffen, sondern Luise?
 whom has not Hans where met but Luise
 - d. *‘only’*
^{??}wen hat nur Karl wo getroffen?
 whom has only Karl where met
 - e. *monotone decreasing quantifiers*
^{??}wen haben wenige wo getroffen?
 whom have few where met
 - f. *‘every’ — if it has a non-distributive interpretation*
 (ich will nicht von jedem wissen, wen er alles gesehen hat, sondern ich will wissen)
 I want not of everyone know whom he all seen has but I want know
^{??}wen jeder alles gesehen hat
 whom everyone all seen has
 - g. *‘almost everyone’*
^{??}wen hat fast jeder alles getroffen?
 whom has almost everyone all met
 - h. *‘mostly’/‘often’/‘twice’*
^{??}wen hat Hans {meistens/oft/zweimal} alles getroffen?
 whom has Hans mostly/often/twice all met
- (116) HARMLESS INTERVENERS
- a. *contrastive-focus associated negation — if the contrast is in non-extraposed position*
 wen hat nicht HANS, sondern Luise wo getroffen?
 whom has not Hans but Luise where met

49 I will not include indefinites in the picture in (115)–(116), because, as Beck (1996:sect. 4.1.2) shows in some detail (while leaving the matter mostly unresolved), these present a complicated picture that will need to be clarified first before anything conclusive can be distilled from their behaviour as (non-)interveners.

- b. ‘not only’
was glaubt nicht nur Hans, wen Luise getroffen hat?
what believes not only Hans whom Luise met has
- c. ‘also’
wen hat auch Hans von den Musikern getroffen?
whom has also Hans of the musicians met
- d. ‘every’ — *if it has a distributive interpretation*
(für jeden von euch individuell will ich wissen wen ihr alles gesehen hat — also:)
for each of you individually want I know whom you all seen have so
wen had jeder alles gesehen?
whom has everyone all seen
- e. ‘most’
?wen haben die meisten Studenten alles getroffen?
whom have most students all met

3.4.3.3 The signature and locus of Beck-style intervention effects

Beck (1996) proposes that (although she focuses on only a subset of them) all the intervention effects in (114) and (115), and the absence of such effects in (116), can be made to fall out from a theory that takes intervention to be an LF phenomenon. She posits (117a) as the cover-all generalisation, and assumes that sentence negation is also covered by a generalisation phrased with reference to quantifiers, because ‘in some sense it forms a natural class with quantifiers’ (Beck 1996:39). She adds that she does not ‘have any suggestions to contribute as to why this should be the case, but the assumption is clearly needed not only for my own generalization, but in various other contexts as well’. Pesetsky (2000) agrees with Beck’s proposal in its essence, but states the generalisation as in (117b), in terms of scope-bearing elements, thereby covering both quantifiers and negation straightforwardly.

- (117) a. quantifiers block LF movement (Beck 1996:38)
b. a semantic restriction on a quantifier (including *wh*) may not be separated from that quantifier by a scope-bearing element (Pesetsky 2000:67)

The LF approach to intervention effects is the standard one in the literature; the particular approach pursued by Pesetsky (2000) has become quite influential.

However, there are indications that (117b) as stated does not cast its net wide enough. É. Kiss (1993) points out that a sentence such as (118) supports a distributive reading but not one in which *how* scopes over *every*.⁵⁰ This is an intervention effect very much like the one seen in (115f)/(116d). But importantly, it is incurred by full category movement — not ‘splitting’ (or ‘separation’ of the quantifier from its restriction): *how* moves as a single unit.

- (118) how did every boy behave?
a. *every* > *how*
‘for every boy, how did he behave?’
b. **how* > *every*
*‘what was the common element in the boys’ non-uniform behaviour?’

50 The paraphrases in (118) are taken from Szabolcsi & Den Dikken (2003). (118) also supports an interpretation in which *how* denotes a constant: ‘taking for granted that every boy behaved the same way, what was it like?’. I will not be concerned with this reading.

Doetjes (1997) notes that intervention effects on adverbial *how*-dependencies also manifest themselves for *a lot* and *twice*, on a par with what we saw in (115h):

- (119) a. *how did you [behave *t* a lot]?
 b. *how did you [behave *t* twice]?

And from Ross (1984), we have long been familiar with the fact that adjunct extraction is sensitive to an intervening negation: the ‘inner island’ effect, illustrated in (120):

- (120) how strongly do(*n’t) you think the letter was worded?

There can be no question that in (120) the entire *wh*-phrase is fronted as a single unit: we are not dealing here with a case of ‘splitting’. If Pesetsky’s (2000) proposal is to apply to the examples in (118)–(120), these *wh*-dependencies will have to be represented as splits at LF. This is certainly not impossible — not even implausible: Chomsky’s (1995) preference principle even makes it a general rule that the restriction of a *wh*-operator should be represented in the position of the lowest copy of the *wh*-phrase at LF. But this preference principle applies to all *wh*-dependencies, not just non-argumental ones (such as the ones involving *how* and *how strongly* above) but argumental ones as well. And it is well known that argumental *wh*-dependencies do not give rise to intervention effects. This conclusion not only leads us to reject (117b) as the generalisation covering intervention effects but also points us in the right direction:

- (121) intervention effects arise only in the case of NON-ARGUMENTAL *wh*-dependencies

In the next section, I will derive this generalisation from the theory.

3.4.3.4 A top-down syntactic analysis of Beck-style intervention effects and ‘inner islands’

In section 3.4.1.2, I argued that for the analysis of phenomena usually joined under the rubric of ‘LF movement’, a top-down model of syntactic derivation is best served by a ‘single-cycle syntax’ theory: all syntactic operations are performed in a single cycle; no new filler–gap dependencies are established at LF. ‘Single-cycle syntax’ calls for an analysis of quantifier raising and *wh-in-situ* in which the *in-situ* quantificational material is already in its scope position before the product of the syntactic derivation is handed over to the interpretive components. The difference between QR and *wh-in-situ*, on the one hand, and overt fronting of material into the left periphery is a function of the choice of copy that is given a phonological matrix at PF: in the case of familiar overt-syntactic \bar{A} -movement, it is the copy in the scope position that undergoes phonological realisation; in the case of QR and *wh-in-situ*, the upper copy remains silent and a lower copy is singled out for pronunciation. In this model, overt syntax is necessarily the stage on which intervention effects play themselves out. How, then, does single-cycle syntax deal with intervention effects — and in particular, how does it manage to differentiate between dependencies that harmful interveners block and dependencies that they turn a blind eye to?

I already pointed out in (121) that what is key is that in all the bad cases, the dependency that is established across the harmful intervener is a non-argument dependency. The *wh*-element at the head of the chain is an adverbial (as in (118)–(120)) or a non-argumental subpart of a complex noun phrase (in the ‘splitting’ cases in (114c–j)) or a bare *wh*-operator linked to either a *wh*-clause (as in the *wh*-scope marking construction in (114a)) or an *in-situ wh*-element. I will dwell on each of these various cases in more detail in the next subsection.

3.4.3.4.1 *The patient: Non-argument bare wh-operators*

For the examples in (118)–(120), the statement that the *wh*-dependency is a non-argumental one is of course entirely transparent: we are dealing here with adjuncts that serve a modifier function, not with arguments. For the various cases of ‘splitting’ listed in (114d–j), the non-argument status of the *wh*-operator is also not difficult to appreciate. Take *wen ... von den Musikern* in (114d), for instance: the argument of the verb is the entire phrase [*wen von den Musikern*] ‘who of the musicians’. When it fronts as a unit, as in (122), no intervention effect manifests itself.

- (122) *wen von den Musikern hat {Hans/niemand} getroffen?*
 whom of the musicians has Hans/nobody met

For all the examples in (114d–j) it holds that wherever it is possible to undo the split and front the entire phrase integrally, there is no effect of an intervening negation or quantifier on the *wh*-dependency. So when a *wh*-dependency is formed involving a complete argumental *wh*-expression, binding a trace in a θ -position, no intervention effects emerge. But when just the operator of the argumental expression undergoes movement, stranding the restriction, we see the harmful effect of intervening negation and quantifiers. The operator itself is not an argument. The argument/non-argument distinction is apparently an important one in the context of intervention effects.

Can this distinction take care of the entire spectrum of construction types sensitive to intervention? For quantifier float (114c), a popular analysis (due to Sportiche 1988) assimilates it to the ‘splitting’ constructions in (114d–j): the *wh*-element and the quantifier start out as a constituent, and the quantifier is stranded in the process. The Sportiche line is arguably wrong for floating quantifiers whose ‘non-floated’ counterparts would precede the restriction (French *tous les enfants* ‘all the children’ versus *les enfants ... tous* ‘the children ... all’; the same is true for their English counterparts) or for adverbial floating quantifiers that cannot ordinarily be sub-constituents of a noun phrase (Dutch **de kinderen allemaal* ‘the children all.ADV’ versus *de kinderen ... allemaal* ‘the children ... all.ADV’). But it may well be the right approach to quantifier float cases of the type in (114c): *alles* can front together with *wen* as a constituent (see (123)), and when this happens, *alles* follows *wen*. If indeed the *wh*-element in (114c) is just a subpart of the argumental expression, it is not itself an argument, just as in the ‘splitting’ cases in (114d–j).

- (123) *wen alles hat {Hans/niemand} gesehen?*
 whom all has Hans/nobody seen

For multiple *wh*-questions with a pair-list reading (such as (114b)), what LF needs is a representation in which all the *wh*-operators are absorbed into a single unit in the left periphery of the structure. The *wh*-expression that finds itself *in situ* in the phonological output in (114b) must have its *wh*-operator up in SpecCP. The standard approach would take care of this at LF, after the output of the overt-syntactic derivation has been handed over to PF. But single-cycle syntax will want to have the operator in SpecCP it before spell-out. What I propose (in an echo of work by Watanabe 1992 in early minimalism) is that the syntax only places the operator portion of the *wh*-phrase in the SpecCP position, and puts the restriction of the *in-situ wh*-element right where it is pronounced. So the syntactic representation for *in-situ wh*-expressions is a split one. Consider, for concreteness, the example in (124):

(124) who read which book?

LF wants a representation for this sentence in which the two *wh*-operators (*who* and the *which* of *which book*) form a pair in the high left periphery of the structure. This is a representation that ‘single-cycle syntax’ should deliver. It can do so as in (125), where *which book* is split, with the *wh*-quantifier in CP and the restriction in the object position. In languages that do not allow overtly split constituents of this sort, such as English, the PF component ‘fixes’ this split by pronouncing the *wh*-operator together with the restriction, in the only syntactic position in which this combination *can* be pronounced: the position of the latter. After all, languages such as English do not allow C to have multiple specifiers at PF. The syntactic representation for a sentence such as (124), given in (125), is thus spelled out as in (126). By sending the lower token of *which* off to be pronounced, we end up with the desired PF output. But it is the higher token of *which* which is interpreted at LF, with the lower one converted into a variable, so that we arrive at the appropriate logico-semantic representation.

(125) [CP which who [TP ~~who~~ read ~~which~~ book]] (syntax)

(126) [CP ~~which~~ who [TP ~~who~~ read which book]] (PF)

Since the *wh*-operator portion of a *wh*-expression never serves an argument function, not even when the *wh*-expression itself is argumental, the fronted of the *wh*-operator once again involves a non-argument dependency.

Having made our way up to the top of (114), a final word is due about the *wh*-scope marking construction in (114a). Rizzi (1990) appears to have been the first to note that *wh*-scope marking constructions resist the presence of a sentential negation in the upstairs clause (see also Höhle 1996, Reis 2000:378), in contradistinction to their long *wh*-fronting counterparts.

- (127) a. *was glaubst du nicht, mit wem Hans sich dort treffen wird? (German)
 what believe you not with whom Hans REFL there meet will
 b. mit wem glaubst du nicht, dass Hans sich dort treffen wird?
 with whom believe you not that Hans REFL there meet will
 ‘who don’t you think that Hans will meet there?’

German does not stand alone in this respect. In Hungarian, the inner island effect also manifests itself clearly in the *wh*-scope marking construction: (128) is systematically rejected (Horvath 1997). But Horvath (1997:536) draws attention to the fact that in (129a), the *wh*-scope marking construction is apparently immune to the presence of the matrix negation — while long A’-fronting of the meaningful *wh*-constituent across the negation leads to an ill-formed result, as shown in (129b).

(128) mit (*nem) gondolsz, hogy ki fog elmenni? (Hungarian)
 what-ACC not think-2SG.INDEF that who(NOM) will PV-go

- (129) a. mit nem ismert be János hogy hányszor hamisította az aláírásodat? (Hungarian)
 what not admitted János that how.many.times forged the signature-2SG-ACC
 b. *hányszor nem ismerte be János hogy hamisította az aláírásodat?
 ‘how many times didn’t János admit that he had forged your signature?’

The ungrammaticality of (129b) is an ‘inner island’ effect induced by overt-syntactic fronting of a non-argumental *wh*-expression, familiar from Ross (1984). The intervention effect seen in

(128) and also in German (127) and (114a) can be assimilated to (129b) and to the other examples in (114) if the *wh*-scope marker (German *was*, Hungarian *mit*) is treated as a non-argumental *wh*-operator in these cases. But by this logic, *mit* in (129a) should be an argumental *wh*-expression: otherwise its immunity to *nem*-intervention would be very difficult to account for. The difference between the intervention-sensitive examples of the *wh*-scope marking construction and the sentence in (129a) lies in the nature of the matrix verb (non-factive *glauben*, *gondol* ‘think’ versus factive *beismer* ‘admit, confess’) — and, concomitantly, in the (non-)presuppositional nature of the complement clause. This turns out to be systematic: whenever a matrix verb is used whose CP complement is presuppositional (or D-linked, in Horvath’s terms), no intervention effect manifests itself in the *wh*-scope marking construction. Can we make a case that this difference translates into a difference in argumental status of the *wh*-scope marker?

In light of the discussion in section 2.3.1, the answer to this question is clearly affirmative. I argued there that the complement position of a factive verb is always taken by an abstract secondary predicate ‘FACT’, and that the SpecVP position is occupied by the argument of that secondary predicate — the subordinate clause itself, or a proleptic object (in which case the clause is merged as a satellite). I illustrate this again in (130).

- (130) a. $[_{vP} \text{SUBJECT } [_{v'} v [_{VP} [_{CP} \dots] [_{V'} V [_{PRED} \text{FACT}]]]]]$
 b. $[_{vP} \text{SUBJECT } [_{v'} v [_{VP} \text{PROFORM}_i [_{V'} V [_{PRED} \text{FACT}]]]]] [_{CP} \dots]_i$

An argumental expression in the SpecVP position receives a presuppositional interpretation. Thus (130a) directly accounts for the presuppositional status of the factive object clause. And (130b) does so indirectly, by interpreting the proform as presuppositional/D-linked, and having the clause associated to it via a relationship of apposition. For the purposes of our current discussion it is (130b) that interests us particularly: for it is (130b) that, by realising the proform as the *wh*-element *mit*, gives rise to the *wh*-scope marking construction in (129a). The thing to note is that *mit* here is an argumental *wh*-expression.

Now consider the syntax of bridge-verb constructions with a place-holder for the complement clause. For these, section 2.3.1 proposed the structure in (131), with the proform (just as in (130b)) in SpecVP and the CP this time in the complement-of-V position. Here it is CP that serves as the verb’s argument. The proform in SpecVP does not play the role of an argument. We could think of the proform as an expletive here — or, better (as I suggested in section 2.3.1), as a predicate of the CP, in a reverse predication structure (*à la* Den Dikken 2006a), with V as the RELATOR. Thinking of the proform as a predicate of the clause draws a parallel between bridge-verb constructions with an object proform and sentences of the type *it’s that he smokes too much*, for which Moro (1997) argues that *it* is the predicate of the *that*-clause.

- (131) $[_{vP} \text{SUBJECT } [_{v'} v [_{VP} \text{PROFORM}_i [_{V'} V [_{CP} \dots]_i]]]]]$

One thing is particularly important about (131) for present purposes: the hypothesis that the proform in the SpecVP position of bridge-verb constructions is NOT an argumental expression. This accounts for the non-presuppositional interpretation of the complement clause in bridge-verb constructions, and it also helps us understand the intervention effect seen in German (114a), (127a) and Hungarian (128a) along the same lines as the other intervention-sensitive constructions illustrated in (114): systematically, the dependencies that show intervention effects are non-argumental bare *wh*-operator dependencies. That (129a) gives rise to no intervention effect now fits in straightforwardly, in light of my treatment of the proform in (130b) as an argument.

Having reviewed the entire territory of intervention effects in (114), we can now conclude with confidence that indeed, all of these constructions involve dependencies headed by a non-argumental bare *wh*-operator. For the ‘inner island’ effects first discovered by Ross (1984) and then further stratified by others (see (118)–(120)), the same holds true. It becomes feasible now to fold Beck-style quantifier-intervention effects and Ross-style inner islands into a single block, and to generalise that non-argumental bare *wh*-operator dependencies resist the presence of a negation or quantificational operator between the operator and the trace.

3.4.3.4.2 *Diagnosis and analysis*

Why would non-argumental bare *wh*-operators show this kind of sensitivity to intervening elements of a particular sort? How could we account for these intervention effects in a principled manner?

Before giving the answer to these questions, let me quickly review Beck’s (1996) own approach to the intervention effects that she catalogues. She argues that the problem in all of the examples in (114) is that the movement of the *in-situ* material up to the *wh*-operator at LF is what is sensitive to the intervener. For all of these cases, she wants the element associated to the operator to unite with that operator at LF. For multiple *wh*-questions, this is more or less the standard approach: textbook accounts of multiple *wh*-questions will have the *in-situ wh*-expression (*wo* ‘where’ in (114b)) raise up at LF to the operator already in SpecCP. For *wh*-scope marking constructions of the type in (114a), Horvath (1997), following Dayal (1994), presents an analysis in which the CP is the scope marker’s associate and must, at LF, adjoin to the scope marker.⁵¹ And for all the ‘floating’ and ‘splitting’ constructions in (114c–j), Beck also advocates an analysis in which LF puts Humpty Dumpty’s parts together again — in the left periphery of the tree. But that gets things exactly backwards: LF should be delighted with splits of the type illustrated in (114c–j), because there is no LF benefit in having the restriction of a quantifier represented in the operator position. Chomsky’s (1995) ‘preference principle’ states exactly that LF is guided by the desire to keep the restriction of the quantifier down low, and to have just the quantifier by itself represented in the operator position. Independently, Pesetsky (2000:70) also concludes that Beck’s (1996) phrasal LF-movement approach cannot be right. I will not adopt Beck’s analysis, therefore.

The alternative that I would like to advocate is one that, in all the examples in (114), establishes the relevant *wh*-dependencies in overt syntax, as non-argumental operator dependencies. These dependencies must not be obstructed by ‘harmful interveners’ because, unlike argumental fillers, non-arguments never get a second chance to get things right. Recall from our discussion of the argument/non-argument distinction towards the end of chapter 2 that argumental fillers may, after having been downloaded onto the edge of the closest predication structure and having bumped into an intervener of the same type, be re-uploaded onto the stack of the intervener. But non-argumental fillers may not be re-uploaded. They have to try as best they can to establish a dependency with a gap from their first (and only) download position: if they succeed, their filler–gap dependency converges; if they are prevented from linking to a gap because either an absolute barrier or a ‘harmful intervener’ is in the way, the sentence is irrevocably ruled ungrammatical. Non-argumental fillers do not have a θ -role that gives them access to re-uploading — because they do not have a θ -role there is never a compelling need for them to be re-uploaded; in the absence of a compelling need, re-uploading is forbidden, by economy

51 Beck (1996:8, fn. 5) herself alludes to an analysis of this sort as well, without presenting details.

of derivation. So once a non-argumental filler has been downloaded onto the edge of the closest predication structure, it is left entirely to its own resources; it will never get any help from anything else. Argumental fillers, on the other hand, can piggy-back on an intervening element that gets uploaded for independent reasons.

Let us see how this works out in the individual cases in (115). For sentential negation (115a), I make an important assumption that I have argued elsewhere is needed independently. Sentential negation is usually expressed by some sort of negative particle. But the position of this particle may very well be located very low in the structure. In Dutch and German, sentential negation is, as far as we can tell, just as low as manner adverbs. The fact that sentential negation takes scope over the proposition as a whole could be taken care of by raising the negation at LF — but in a single-cycle syntax, where LF movement is an anomaly, it has to be encoded already in the overt syntax, in the form of a silent operator. I assume, following the standard approach (see esp. Acquaviva 1997, and important predecessors such as Jackendoff 1969, 1972 and Lasnik 1975), that the negative operator scopes over a proposition (subject–predicate structure) that contains the Davidsonian event variable, and it says of this eventuality that it does not exist. Departing from the standard approach (but harking back to the Generative Semantics approach to negation, which treated it as a predicate), I interpret ‘saying of the eventuality that it does not exist’ as a *predication* relationship between the negative operator and the proposition that contains the event variable: the sentential negation operator is a predicate of the propositional eventuality that it negates, as it is overtly in (*it is*) *not that I dislike you (but...)*. In ordinary sentential negation constructions, \neg (the silent negation operator) entertains a relation of reverse predication (in the sense of Den Dikken 2006a) with its subject (i.e., the proposition that contains the event variable), mediated by a functional head, labelled ‘Neg’. Depending on whether the proposition in question is identified as *vP* (a ‘small clause’) or *TP* (a ‘full clause’), this leads us to (132a) or (132b). I will take both of these possibilities to be made available by UG — something for which I will provide an argument presently. The one thing that is impossible is (132c): as Han (2001) argues explicitly, sentential negation may not outscope the illocutionary force of a speech act, encoded on *C*.⁵²

- (132) a. $[_{CP} C [_{TP} \langle \text{SUBJECT} \rangle T [_{NegP} \neg [_{Neg} [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]]]$
 b. $[_{CP} C [_{NegP} \neg [_{Neg} [_{TP} \langle \text{SUBJECT} \rangle T [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]]]$
 c. $*[_{NegP} \neg [_{Neg} [_{CP} C [_{TP} \langle \text{SUBJECT} \rangle T [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]]]$

That (132a) and (132b) must arguably both exist, and that they deliver different empirical results, is suggested by the fact (see Pesetsky 2000:60) that there is a contrast between (133a) and (133b) in the context of ‘superiority-violating’ multiple *wh*-questions in English.⁵³

- (133) a. which book did which person not read?
 $[_{CP} \text{which which book} [_{did} [_{TP} \text{which person} [_{NegP} \neg [_{Neg} [_{vP} \text{not read which book}]]]]]]]$

52 It is easy to see that indeed negation cannot scope over the illocutionary force of a speech act. After all, in a yes/no-question like (ia), the negation cannot negate the speech act: (ib) is not a possible interpretation for (ia).

- (i) a. didn’t you like the movie?
 b. ‘I’m not asking you whether you liked the movie’

53 As Pesetsky (2000:60) indicates, (133b) is acceptable for some speakers on a single-pair reading. Like Pesetsky (mostly), I will set this single-pair reading aside. I will also not address the fact that the contrast between *-n’t* in *C* and *not* in clause-internal position does not manifest itself in the ‘superiority-obeying’ counterparts of (133).

- b. *which book didn't which person read?

[_{CP} which which book [didn't [_{NegP} ¬ [Neg [_{TP} which person [_{vP} read which book]]]]]]

Both (133a) and (133b) feature sentential negation: the scope of the negation in both sentences is the same, extending over the proposition. So why do we see an intervention effect in (133b) but not in (133a)? The answer, I propose, lies in the particular propositional constituent that the abstract sentential negation operator is predicated of in each the two examples in (133). In (133a), ¬ is associated with vP (as in (132a)), which contains the trace of the subject (in SpecvP) but not the surface position of the subject (SpecTP), which is where the *wh*-operator *which* binds its trace. The dependency between bare *which* in CP and its trace inside the structural subject in (133a) thus is not interfered with by ¬, which is lower in the tree. In (133b), on the other hand, ¬ is associated with TP (as in (132b)), and obstructs the dependency between bare *which* and the structural subject. The correlation between the placement of ¬ in the structure and the placement of the negative particle in the string can be captured by assuming (as is plausible) that the negative particle must be locally linked to ¬ in order to be licensed. When the negative particle is not pied-piped by Aux-to-Comp movement, I assume that it is in the complement of T, inside the NegP of (132a), in Neg⁰ or in a position within the complement of Neg. When the negative particle is inside the NegP below T, the abstract negation operator ¬ must also be in that NegP, to ensure a local link between the two. When, on the other hand, the negative particle is pied-piped to C by Aux-to-Comp movement, it must have been picked up by T as it raises to C, which means that it must be in the TP-external NegP of (132b). Whenever the negative particle is pied-piped to C, therefore, ¬ associates with TP — and consequently intervenes between the bare *wh*-operator of the *in-situ wh*-subject and the restriction in SpecTP.

For a filler in SpecCP, the grammar scans the syntactic structure from the top/left, and downloads it on the edge of the first predication structure encountered. With the *wh*-operator downloaded there, it starts its search for a gap. In (132a), this first predication structure is TP; in (132b), it is NegP. Either way, as soon as a *wh*-operator downloaded onto the edge of the first predication structure runs into ¬, another operator, this latter operator obstructs the establishment of a direct filler–gap dependency between the downloaded *wh*-operator and a trace inside the complement of Neg. As soon as we bump into ¬, this halts the search.

Argumental *wh*-fillers have a θ-role that gives them a chance to be ‘re-uploaded’, piggy-backing on the uploading of an intervening operator. The question that arises is whether ¬, the intervening operator in the negation cases at hand, is itself uploaded — if it is not, argumental *wh*-fillers will not manage to find their way around ¬; that would not be the right result. Note that although ¬ is interpreted *in situ*, it must associate with the physical negation, which is somewhere further down the tree in the languages under discussion. This makes ¬ subject to uploading. And it gives argumental *wh*-fillers the opportunity to be re-uploaded by piggy-backing on ¬. Once downloaded a second time, onto the edge of the next predication phrase (vP in (132a), TP in (132b)), the argumental *wh*-filler can proceed to linking to the gap that it is associated with.

For non-argumental *wh*-fillers, by contrast, re-uploading is not an option: they do not have anything in their baggage (like a θ-role) that would make re-uploading a necessity; and since re-uploading is an operation, and hence comes at a cost, it is resorted to sparingly. Since non-argumental fillers do not get the chance to be re-uploaded, they have to be interpreted in their position of first download; and if they cannot, the sentence cannot be interpreted. This is exactly how Beck (1996:3, fn. 3) herself characterises the empirical situation: sentences showing an intervention effect do not ‘sound bad’ but cannot be interpreted.

For (115b) and (115c), I will also assume there to be an abstract negation operator present in the structure. For (115c) this may not be self-evidently correct. But juxtaposing (115c) to the grammatical (116a) will be revealing.

- (115c) ??wen hat nicht HANS wo getroffen, sondern Luise?
 whom has not Hans where met but Luise
 (116a) wen hat nicht HANS, sondern Luise wo getroffen?
 whom has not Hans but Luise where met

Beck (referring to Jacobs 1982, 1991) mentions this contrast but admits to having no handle on it. It seems to me that a sensible approach to it would run along the lines shown in (134):

- (134) a. *wen hat [[nicht HANS wo getroffen], [sondern Luise ~~wo getroffen~~]]?
 b. wen hat [nicht HANS, sondern Luise] wo getroffen?

In (116a), *nicht HANS, sondern LUISE* ‘not Hans but Luise’ can readily be represented as a constituent occupying the subject position of a single clause, as in (134b), where *nicht* expresses constituent negation. But for (115c), such an approach would run into the problem of extraposition of the *sondern*-phrase from the subject — an operation that would cause insuperable difficulties in light of the robustness of the Subject Condition. A plausible alternative is to treat (115c) as a case of clausal coordination, along the lines of (134a), with ellipsis in the second conjunct. If we follow this approach to (115c), it is perfectly coherent to treat this example as a case of *sentential* negation, and to postulate \neg on the edge of the first conjunct of the TP coordination structure in (134a). This abstract sentential negation operator will then cause an intervention effect for the non-argumental *wh*-dependency between the silent copy of *wo* in the left periphery of this multiple *wh*-question and its pronounced copy in the first conjunct.⁵⁴

I will not discuss in any detail what kind of account of monotone decreasing quantifiers and the focus particle *only* would be best suited for the approach to intervention effects taken here. For concreteness I will assume an analysis that postulates an abstract operator in a high position in the tree; but I will not have the means here to develop such an approach in depth.

For ‘harmful’ quantifiers, single-cycle syntax makes available a treatment that is very similar to the one presented for sentential negation: an abstract quantifier is located on the edge of a phrase, linked to an overt element harbouring its restriction, and subject to uploading whenever its restriction finds itself further down the tree, in order for the dependency between the quantifier and the restriction to be establishable. For quantifiers that take scope from the edge of *vP*, the structure looks as in (135a). For those whose scope position is on the edge of *TP*, we get (135b). Unlike in the case of negation, where (132c) is ill-formed, it should logically be possible for a quantifier to take maximally wide scope and attach to *CP*, as in (135c).

54 On the analysis of (115c) given in (134a), we are dealing with a case of ATB-extraction of *wo* out of both conjuncts; the *wo*-dependency into the second conjunct is probably trouble-free but the one into the first conjunct is obstructed by the \neg operator linked to *nicht*. Interesting questions regarding polarity-item licensing are raised by this approach to (115c). In my judgement for Dutch, an NPI can in fact be licensed in focus-associated contrastive negation constructions provided that the NPI is pronounced in the conjunct that the negation particle (and hence, the negative operator) is in: see (i), where *een poot uitsteken* ‘(lit.) a leg out.stick, i.e., left a finger’ is a polarity item.

- (i) a. ik denk dat [[niet Hans een poot zou uitsteken], [maar Luise ____]] (Dutch)
 I think that not Hans a leg would out.stick but Luise
 b. *ik denk dat [niet Hans, maar Luise] een poot zou uitsteken

- (135) a. $[_{CP} C [_{TP} \langle \text{SUBJECT} \rangle T [_{vP} \text{QUANTIFIER} [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]$
 b. $[_{CP} C [_{TP} \text{QUANTIFIER} [_{TP} \langle \text{SUBJECT} \rangle T [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]$
 c. $[_{CP} \text{QUANTIFIER} [_{CP} C [_{TP} \langle \text{SUBJECT} \rangle T [_{vP} \langle \text{SUBJECT} \rangle \dots]]]]$

In the structure in (135c), the quantifier should never be able to interfere with any *wh*-dependency initiated from SpecCP. This makes immediate sense of the fact that the distributive reading for *jeder* in (136a) does not give rise to an intervention effect (recall (116d), and see (136b)). On the non-distributive reading of (136a) (recall (115f)), with *jeder* interpreted either at TP (as in (135b)) or at vP (as in (135a)), we get an intervention effect for the dependency (*wh*, t_{wh}), involving a non- θ -bearing *wh*-operator which is not eligible for re-uploading: see (136c).⁵⁵

- (136) a. wen hat jeder alles gesehen? → ✓ only if *jeder* is interpreted distributively
 whom has everyone all seen
 b. $[_{CP} \text{jeder} [_{CP} \text{wen} [C [_{TP} T [_{vP} \dots [t_{wh} \text{alles}] \dots]]]]]]$
 c. $*[_{CP} \text{wen} [C [_{TP} \langle \text{jeder} \rangle [_{TP} T [_{vP} \langle \text{jeder} \rangle [_{vP} \dots [t_{wh} \text{alles}] \dots]]]]]]$

Non-argumental *wh*'s cannot undergo object shift. So we expect it to be the case that non-argumental *wh*-operators whose trace is located inside vP can never be interpreted strictly outside the scope of the universal quantifier. This is correct: as we had already seen above, É. Kiss (1993) points out that a sentence such as (118) (repeated below) supports a distributive reading but not one in which *how* scopes over *every*. The reading in (118a) is derivable via (135c) (see (118a')); the reading in (118b) is not derivable at all because, with the universal quantifier located in any position lower than the CP-adjoined one, *how* will not be able to link to its trace inside vP.

- (118) how did every boy behave?
 a. *every* > *how*
 a'. $[_{CP} \text{every} [_{CP} \text{how} [C [_{TP} T [_{vP} \dots t_{wh} \dots]]]]]]$
 b. $*\text{how} > \text{every}$
 b'. $*[_{CP} \text{how} [C [_{TP} \langle \text{every} \rangle [_{TP} T [_{vP} \langle \text{every} \rangle [_{vP} \dots t_{wh} \dots]]]]]]$

55 In (135b), if the restriction of the quantifier is located in the structural subject position, SpecTP (as it is in most of Beck's examples), the quantifier should be interpretable *in situ*, without uploading onto a stack being necessary. When there is no uploading operation taking place, there can be no parasitic re-uploading either. This would predict even argumental *wh*-dependencies to be blocked by a subject-QP when it does not take scope over the *wh* — which is wrong: (i) is grammatical not just on a distributive reading (as is (116d)) but also on a non-distributive interpretation.

- (i) who did everyone vote for?
 a. 'for everyone, tell me who (s)he voted for'
 b. 'who is the person that received everyone's vote?'

On a non-distributive reading of *who did everyone vote for?*, *who* is interpreted specifically, and undergoes object shift to a position minimally on the outer edge of vP. When the object-*wh* is [+SPECIFIC] and the subject is a universal quantifier, the former must undergo object shift and the latter must be interpreted at vP. With the subject quantifier interpreted at vP (as in (135a)), below the shifted *wh*, we derive absence of distributivity, and we make it possible for the argumental *wh*-operator to link up to its trace (on the outer edge of vP) without being hindered by the quantifier.

Overt, non-split extraction of a low non-argumental *wh*-element thus gives rise to the same distributive-only interpretation that we see in (115f) vs (116d). The parallel between overt, non-split dependencies involving non-arguments and the Beckian constructions in (114) (‘splitting’, quantifier float, *wh-in-situ* and *wh*-scope marking) extends further to the blocking effect of adverbial quantifiers such as *often* and *twice*. In (115h) we saw that these adverbs set up intervention effects in the Beckian constructions. Doetjes (1997) points out that they block a *wh*-dependency for the low adverb *how* as well, as shown in (119), repeated here.

- (119) a. *how did you [behave *t* a lot]?
 b. *how did you [behave *t* twice]?

These parallels between the Beckian constructions in (114) and cases of overt, non-split *wh*-dependencies involving non-arguments strongly support the hypothesis in (121): intervention effects arise only in the case of NON-ARGUMENTAL *wh*-dependencies. What unites all the various intervention effects identified by Beck, Ross, Doetjes and others is that they involve failed attempts by non-argumental fillers to link up to a gap separated from the filler by the ‘harmful intervener’. Harmful interveners are themselves united by the fact that they occupy a scope position — this naturally generalises over quantifiers and negation, without forcing a treatment of negation as a quantifier itself.⁵⁶

3.4.3.4.3 Beck-style intervention effects and ‘inner islands’: Conclusion

The top-down theory of filler–gap dependencies developed in this work captures the overt-syntactic and the ‘covert’ intervention effects induced by scope-taking elements in a unified way. The central active ingredient in the account of these intervention effects is the hypothesis that non-argumental fillers, once downloaded onto the edge of a predication phrase, get just a single shot at linking to their variable — whereas arguments, endowed with a θ -role, can often piggy-back on an intervener by getting re-uploaded onto the intervener’s stack, non-arguments cannot do this. With sentential negation and ‘harmful’ quantifiers represented as \bar{A} -fillers associated with an element further down the tree (the negation particle and the quantifier’s restriction, resp.), their obstruction to non-argument dependencies follows, as does their general invisibility to argumental dependencies.

Readers whose appetite for intervention effects has been whetted by the discussion in this section are encouraged to consult the original literature (esp. Beck 1996 and Pesetsky 2000) for a wealth of further detail, which the preceding discussion has been able to do justice to only to a limited extent.⁵⁷ The foregoing remarks have been focused on showing that the top-down theory of filler–gap dependencies espoused in this book can account successfully, in a ‘single-cycle syntax’, for Beck-style intervention effects as well as Ross-type ‘inner islands’. They are not intended to be the last word on these effects.

56 The fact that the quantificational elements in (116) are ‘harmless interveners’ must be due, on this approach just as on Beck’s, to them not occupying a scope-taking position. Recall from the previous discussion that Beck (1996:32) attributes the behaviour of *die meisten Studenten* in (116e) to the availability of a referential interpretation for it. Beck (1996:33) notes that German *nicht nur x* (116b) and *auch x* (116c) do not give rise to a (significant) intervention effect either, but does not have anything to say about this. Neither do I.

57 Pesetsky (2000:ch. 5) discusses superiority-violating multiple *wh*-questions and their sensitivity to intervening sentential negation and quantifiers, in terms of LF feature movement. His account translates into the terms of the proposal advocated here, with ‘LF feature movement’ replaced with an overt-syntactic (but PF-silent) dependency between a bare operator in the C-domain and its restriction in the position of the *in-situ wh*-element.

3.5 Islands: Bottom-up or top-down?

For both absolute islands and intervention islands, we now have fully explicit and explanatory accounts embedded within the top-down theory of the building of syntactic structures and their filler–gap dependencies. For a proper understanding of both types of islands, the top-down model works much better than the standard bottom-up derivational approach. Let me summarise the main reasons here, by way of a general conclusion for this chapter.

3.5.1 Absolute islands

For absolute islands (a.k.a. ‘strong islands’), downward Agree relations are the active ingredient in the analysis. Downward Agree involves a relationship between a probe in a goal in the probe’s c-command domain. Such Agree relations are the determinants of the transparency or opacity of an embedded domain.

On a top-down approach, we can decide on the transparency or opacity of a subordinate domain quickly and efficaciously. As soon as we hit upon a domain, we can verify whether or not it serves as an Agree-goal for a c-commanding probe in the portion of the structure that has already been projected. Decisions about opacity can thus be taken immediately. The system is deterministic.

A bottom-up approach, by contrast, needs to postpone decisions about opacity until after a potentially considerable amount of structure has been erected on top of the subordinate domain. If Agree relations are the determinants of absolute islandhood, the opacity of a domain Δ can only be determined, in a bottom-up approach, when a head that could potentially serve as an Agree-probe for Δ is introduced into the structure. The status of Δ as an Agree-goal cannot be encoded directly on Δ , in the form of an uninterpretable or unvalued feature on Δ . After all, it is not the case that probe-goal relations systematically localise the uninterpretable/unvalued feature on the goal: for an Agree relation involving ϕ -features, it is the feature bundle on the probe that is uninterpretable/unvalued; the ϕ -features of the goal are meaningful and inherently valued.

Hence, on an Agree-based approach to absolute islandhood, a bottom-up model must leave the opacity or transparency of subordinate domains in limbo whereas a top-down theory can deliver immediate results. This means that for a proper understanding of absolute islandhood, a top-down approach to the building of syntactic structures and the dependencies established within them is optimal.

3.5.2 Intervention islands

What matters in intervention cases is whether or not there is an element between a filler and its trace that is of the same type as the filler. If there is, *and* if the element α_i engages in a *non*-argumental dependency with its trace t_i , we get an ungrammatical output. The structure in (137) (which repeats (49)) sums this up.

$$(137) \quad [_{XP} \alpha_i [_{YP} \alpha \dots t_i \dots]]$$

The key question we face when confronted with configurations of the type in (137) is why intervention of α between α_i and its trace should matter with respect to grammaticality. In a bottom-up derivational approach, α_i starts out life in the position of the trace and moves upwards, leaving a copy of itself behind (eventually converted into a trace) which is identified by the

complete feature content of α_i . Because of the fact that the ‘trace position’ is the base position of α_i and has all of α_i ’s features from the outset of the derivation, there can be no confusion about the identity of its antecedent.⁵⁸ Harmful intervention should logically be confined, on a bottom-up derivational approach, to cases in which the intervener α literally matches all of the feature content of the copy of α_i in the trace position: only then could α potentially serve as the ‘wrong’ antecedent for the trace. The presence between t_i and its antecedent α_i of any α that, while ‘of the same type’ as α_i , is not a total match for α_i should be harmless if (137) comes about via a bottom-up syntactic derivation.

As we saw in the discussion in section 3.4.1, configurations of the type in (137) in which the intervener has exactly the same feature set as the antecedent of the trace are indeed ungrammatical: recall (50), repeated here as (138).

(138) *who did you know who *ec* said *ec* talked to Mary?

But the overwhelming majority of intervention effects are not such that the intervener is an exact match for the trace. In the typical case, the intervening α has only certain features in common with α_i — in particular, its status as an *operator*. In our discussion of ‘Beck effects’, we discovered that being a scope-taking element is what defines an element’s status as a harmful intervener. The generalisation that α in (137) interferes in the establishment of an \bar{A} filler–gap dependency between α_i and t_i is not derivable from a bottom-up derivational approach.

3.5.3 A note on derivation versus representation

A purely representational account of intervention islands is one logical alternative to a bottom-up derivational analysis. It may in fact be the case that the top-down approach that I presented in this chapter can straightforwardly be coded in strictly representational terms. Indeed, the most important result emerging from the discussion of intervention islands — viz., that intervention effects arise only in the case of *non-argumental* dependencies — is itself stated representationally.

In this chapter, I derived this empirical generalisation from the way in which filler–gap dependencies are created in a top-down derivational model, with the distribution of the *re-uploading* operation playing the main explanatory part. One might endeavour to derive the generalisation in a representational way — for instance, along the lines of Cinque (1990), with reference to *pro*-binding. I doubt that that particular approach will manage to cover the entire landscape of intervention: for instance, it seems to me unlikely that a *pro*-based approach could capture the facts presented at the end of section 3.4.1.1 (see (54)–(56)) given that the measure phrase is non-referential both the ungrammatical and the grammatical examples. But there may be other means by which a representational approach can account for the entire spectrum of intervention effects.

If it should turn out that the main results of the discussion of intervention islands in this chapter can be captured in a purely representational model, that will be perfectly fine. I do not mean to insist on a derivational analysis of intervention effects. What I hope to have shown convincingly is that a bottom-up derivational approach to intervention effects is not feasible, and that the distribution of the re-uploading operation provides a simple perspective on such effects — something that can be chalked up as an achievement of the top-down derivational approach.

58 Recall from fn. 26 that approaching the problem from the point of view of the probe does not help either: there should be no reason for the deactivated α in YP to obstruct a search for α_i initiated by a YP-external probe.