

# Islands

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### 1. Strong vs weak islands

'Islands' is the cover term for nodes which obstruct syntactic movement, i.e. antecedent-*trace* dependencies, as in (1). Islands do not stand in the way of the establishment of (A $\phi$ -)dependencies *in general*: (2) is grammatical. By way of a representational convention to be used throughout this paper, islands are enclosed in angled brackets, and the empty position within an island linked to an antecedent outside the island is marked with the aid of a single underscored space.

- (1) \*            This kid, I must call <the teacher who punished \_>.  
(2)            This kid, I must call <the teacher who punished him>.

Islands come in two flavors: *strong* (or absolute) islands and *weak* (or selective) islands, the latter blocking extraction of some but not all phrase types. This dichotomy is not particularly straightforward; moreover, the borderline between strong and weak islands is not very firm, there being a number of intriguing empirical parallels between the two (see Szabolcsi 1999:section 3.4.2 for discussion of issues relating to the strong/weak dichotomy which space does not allow us to address here). We will follow standard practice in assuming that the dichotomy exists, and in taking Cinque's (1990) key diagnostic for it as the way to tease them apart (but see Postal 1998 for an alternative way of cutting the weak/strong pie, in terms of 'locked' vs 'unlocked' islands, and also for a wealth of novel data):

- (3)            Cinque's diagnostic of strong versus weak islands:  
                 Among the domains that do not allow all standard extractions, those that allow a PP-gap are weak islands, and those that can at best contain a DP-gap are strong islands.

By this diagnostic, adjunct islands are *strong* islands (cf. (4a)) while non-finite *wh*-islands are *weak*, at least for many speakers (cf. (5a)). Finiteness functions as an 'overlay', strengthening otherwise weak islands — the b-examples in (4) and (5) get worse once the infinitival clauses are converted into their finite counterparts.

- (4)    a. \*        This is a topic about which John left <without talking \_>.  
         b. ?        This is a topic which John left <without talking about \_>.  
         c. \*        This is the way that John left <without behaving \_>.  
(5)    a. %        This is a topic about which John asked <whether to talk \_>.  
         b. ?        This is a topic which John asked <whether to talk about \_>.  
         c. \*        This is the way that John asked <whether to behave \_>.

### 2. Preview

Up until the late eighties, virtually all islands (with the exception of *wh*-islands) had been thought to be of the strong kind. With the advent of Relativized Minimality (Rizzi 1990), however, an ever growing variety of weak islands has come to be recognized. Concomitantly, theories of weak islands have mushroomed, each typically coming with a significant set of novel data and important new links to other domains of inquiry. No such upsurge has presented itself in the realm of strong islands, and there is a broad consensus as to their analysis in the theory.

Reflecting this difference in ‘heat’, our focus in this article will therefore be on weak islands, with strong islands being brought up only to set the stage for the discussion of weak island effects.

In the discussion to follow, we will lay out the facts and the major players on the analytical front. We will start out by briefly discussing strong islands, then proceeding to an investigation of weak islands — their inducers, the kinds of elements whose extraction is sensitive to them, and the theoretical questions they pose.

### 3. Strong islands

#### 3.1. Bird’s eye view

Classic discussions of islands (starting with Ross’s 1967 seminal work) have typically focused on *strong* ones (with the exception of certain *wh*-islands). The following is a list of strong islands (where, for the sake of gaining space, we will present illustration only with DP-gaps).

- *adjunct clauses* (see (4))
- *tensed wh-clauses* (but not tenseless ones; cf. (5))
- (6) \*? This is a topic which John asked <who was talking about \_>.
  
- *definite DPs* (cf. Fiengo & Higginbotham, Manzini)
- (7) Which man did you discover <{\*Mary’s/??the/üa} poem about \_>?
  
- *definite complex DPs with relative clauses* (but not indefinite ones; cf. Postal 1998)
- (8) What the police arrested <{\*the man/?everyone} who saw \_> was this video
  
- *definite complex DP with complement clauses* (but not indefinite ones;; cf. Rothstein 1988)
- (9) Which man did they consider <{\*the/?Æ} rumors that Bob would betray \_>
  
- *subjects* (regardless of definiteness), *unless clausal* (presumably because so-called sentential subjects are topics rather than subjects; cf. Koster 1975)
- (10) \* Which man did <(his) visiting \_> shock you?
- (11) ? This is something which <for you to try to understand \_> would be futile  
(Kuno & Takami 1993)
  
- *coordinate structures, unless extraction is across-the-board* (13) or a ‘fake coordination’ is involved (14) (on the latter, cf. section 1.9 of Progovac’s 1998 ‘state of the article’ on coordination, and especially Postal 1998 for detailed discussion)
- (12) \* Which man did you invite <Mary and (a friend of) \_>?
- (13) Which man did you invite <a friend of \_ or a brother of \_>?
- (14) This is the beer that I <bought \_, loaded \_ into the car, went home, and then fell asleep>. (Jacobson 1996)
  
- *left branches (in some languages)* (see Corver 1990)
- (15) \* Which (man’s) did you see <\_ picture>?
- (16) Combien as-tu lu <\_ de livres>? (French)  
how-many have-you read of books

### 3.2. Types of explanation

The standard explanation of the islandhood of Complex DPs, Subjects, *wh*-complements, and Left Branches is in terms of **Subjacency**. Subjacency is classically viewed as a condition on movement requiring that movement not cross more than one bounding node, with bounding nodes originally defined in terms of a list — NP and S (= DP and IP) for English (Chomsky 1973, 1977), NP and S $\phi$  (= DP and CP) for Italian (Rizzi 1978).

Chomsky (1986) redefines bounding nodes as *barriers*, which are themselves defined in terms of *blocking categories* (BC). An XP is a BC for an element  $\alpha$  iff XP dominates  $\alpha$  and is not L-marked (i.e.,  $\theta$ -governed by a lexical category). All BCs for  $\alpha$  *except* IP are also *inherent barriers* for  $\alpha$ ; in addition, a node YP which immediately dominates XP (a BC for  $\alpha$ ) will be a *barrier by inheritance* for  $\alpha$ . Chomsky (1986) assumes that movement is constrained by 1-subjacency (i.e., not more than one barrier should separate a trace from its antecedent); but crossing even a single bounding node leads to a mild degradation, and moreover, Chomsky (1986) crucially invokes 0-subjacency as a constraint of ‘chain composition’, operative in his analysis of parasitic gap constructions. Cinque (1990) takes a 0-subjacency approach, *en passant* rethinking subjacency as a constraint on binding chains, not just movement.

Adjunct islands are standardly explained by Huang’s (1982) **Condition on Extraction Domains (CED)**, hence by the **Empty Category Principle (ECP)**: an extraction domain needs to be properly governed. Likewise, Pesetsky (1982) subsumes the Coordinate Structure Constraint under the path containment version of the ECP. The ECP has also been held responsible for the fact that adjuncts are impossible to extract out of islands, strong or weak (cf. the c-examples in (4) and (5)).

Manzini’s (1992) integrated theory of locality is the only attempt to unify the effect of tense (cf. (5) *vs* (6)) and definiteness (cf. (7)) with other locality phenomena: D and T block dependencies based on **Case-addresses**, which, in her theory, DPs otherwise rely on to escape from islands (dependencies based on categorial indices being blocked across all islands).

Manzini’s approach in terms of Case-addresses is only one of the extant ways of making the DP/PP distinction, which serves as Cinque’s principal diagnostic for the strong/weak dichotomy (cf. (4a) *vs* (4b)). Chomsky (1986:32, 66), who notes it in passing and attributes the observation to Adriana Belletti, suggests an account of the contrast in (4a,b) in terms of the *Barriers* theory of adjunction (such that intermediate adjunction to the adjunct PP to circumvent the island is allowed only in the case of extraction of a DP). Alternatively, the DP/PP dichotomy is due to the fact that DP-gaps may be **null resumptive pronouns** while PP-gaps cannot be — there are overt resumptives for noun phrases but according to Cinque (1990) there are none for PPs.

(17) The DP-gap inside strong islands is not a trace but an A $\phi$ -bound empty pronoun, *pro*.

Perlmutter (1972) originally proposed that *all* extractions leave invisible resumptive pronouns, regardless of whether the gap is in an island or not. Obenauer (1984/85) claims that *all* extraction *from islands* involves null resumptives. Postal (1998) essentially follows this line of thought, while appealing to a different cutting of the strong/weak pie. Cinque (1990) narrows the application of the null resumption strategy down to A $\phi$ -dependencies between a DP and a gap contained in a *strong* island.

## 4. Weak islands

### 4.1. Bird’s eye view

Leaving the strong islands behind, we now embark on a voyage in the archipelago of weak islands (WIs). These come in a variety of forms, listed in (A), below, according to the types of constituents which *induce* WI effects.

The list in (B) enumerates the types of elements whose extraction is *sensitive* to WIs.

- (9) *What induces a WI?*
- (A1) tenseless *wh*-islands
  - (A2) VP-adverbs
  - (A3) negatives and other affective operators
  - (A4) response stance and non-stance *vs* volunteered stance predicates
  - (A5) scope islands
  - (A6) extraposition islands
  - (A7) anti-pronominal contexts (cf. Postal 1998)
- (10) *What extractions are sensitive to WIs?*
- (B1) arguments versus adjuncts
  - (B2) referential versus non-referential
  - (B3) D(iscourse)-linked versus non-D-linked
  - (B4) individual versus non-individual; collectives ('one time only' predicates)
  - (B5) functional readings and event-related readings
  - (B6) split constructions
  - (B7) negative polarity items (NPIs)
  - (B8) cross-sentential anaphora

For an exhaustive overview of the ins and outs of the WI-inducers and WI-sensitivity, we refer the reader to Szabolcsi (1999). In what follows, we will highlight the main *theoretical* issues in the domain of weak islands, zooming in on the three major players in the field, as listed in (C) (where, for each approach, we have listed the data and generalizations accounted for; as a caveat, we should point out that (C3) collapses a variety of specific representatives of the Scope Theory, whose individual empirical coverage is not as broad as their sum total):

- (C) *Theories of weak islands*
- |                             |                        |           |
|-----------------------------|------------------------|-----------|
| (C1) ECP and Subjacency     | (A1)                   | (B1)      |
| (C2) Relativized Minimality | (A1, A2, B3%, B4, B5%) | (B2, B7)  |
| (C3) Scope Theory           | (A1, A3, A4, A5, A6)   | (B3)–(B9) |

In the presentation to follow, we will bring up the various theories in conjunction with the empirical data to which they are most closely tied — more or less as a reflex of the fact that practically each new theory of island phenomena in the literature comes with its own new set of data. Most of the time, we will illustrate weak islands with primary reference to adjunct extraction, adjuncts being the quintessential constituents whose extraction is sensitive to WIs (see (B1)).

#### 4.2. Types of explanation

#### 4.2.1. ECP and Subjacency (C1)

The historical starting point when it comes to weak islands is the assumption, made in Huang (1982), Lasnik & Saito (1984, 1992) and Chomsky (1986), that the paradigmatic (if not the only) case of weak islands is (tenseless) *wh*-islands (A1):

- (18) a. ? Which man are you wondering <whether to invite \_>?  
 b. \* How are you wondering <whether to behave \_>?

The distinction between **arguments and adjuncts (B1)** seen in (18) is standardly taken to follow from the division of labor between the **Empty Category Principle (ECP) and Subjacency (C1)**. While all extraction out of a *wh*-island violates the Subjacency Condition (hence delivers a degraded result, to a greater or lesser degree depending on factors such as finiteness and definiteness), adjunct extraction from such an island in addition incurs a violation of the ECP, in ways that differ in detail in the various approaches developed in the literature but which need not be made precise in the present context. The essence is that the extraction of some phrase is ECP-sensitive to *wh*-islands because of the fact that it originates in a non-argument position.

On the ECP and Subjacency approach, the theory of weak islands is purely syntactic, both with respect to the WI-inducer (a constituent with a filled SpecCP, occupying the ‘escape hatch’ position) and when it comes to the sensitivity of extractees to weak islands (originating in argument or non-argument positions). But through the years it has become abundantly clear that such a straight and simple syntactic classification of WI-inducers and WI-sensitive expressions is totally insufficient to cover the data uncovered in the archipelago of weak islands, on both counts. In the inducer domain, it is especially the scope islands (A6) that lay bare the inadequacy of a strictly syntactic approach. And in the realm of WI-sensitive expressions it is not at all obvious how, alongside non-individual *wh*-phrases, we might capture the amount and event-related readings of numerical QPs, functionally interpreted *which*-phrases, definite dependents of ‘one time only’ predicates and negative polarity items under one and the same syntactic umbrella.

The first indication that the C1 approach was inadequate came from Obenauer’s (1984/85) observation that **VP-adverbs (A2)** block so-called ‘quantification at a distance’ (QAD; cf. (19)–(20)), a case of ‘split constructions’, B6 (see also de Swart 1992, Honcoop 1998 for cases of Dutch *wat voor* split blocked by VP-adverbs; see (54), below, for illustration). That they also block adjunct extraction (B1) is illustrated in (21)–(22) (see Doetjes 1997 for detailed discussion).

- (19) J’ai beaucoup consulté [\_ de livres].  
 I-have a-lot consulted of books  
 ‘I consulted a lot of books’  
 (20) \* Combien as-tu <beaucoup consulté [\_ de livres]>?  
 (21) \* How did you <behave \_ a lot>?  
 (22) \* How did you <behave \_ twice>?

These island effects clearly do not fit the classic ‘escape hatch’ model developed on the basis of *wh*-islands, for the simple reason that VP-adverbs do not occupy any escape hatch position.

#### 4.2.2. Relativized Minimality (C2)

Rizzi (1990) capitalized on Obenauer’s data in (20) and used them as the key to a novel theory of locality. His **Relativized Minimality (C2)** deserves the credit of being the first relatively broad-scale attempt at providing the classic ‘escape-hatch based’ approach to weak islands (C1) with a more empirically accurate successor (see also Cinque 1990).

Rizzi (1990) builds primarily on the theoretical analysis of QAD in Obenauer (1984/85), whose crucial insight is that a local relation between an operator and its variable is blocked by the intervention of any third party that may be derivationally totally unrelated to them but is sufficiently similar to the operator. Relativized Minimality is a representational theory of ‘like’ intervention. It replaces Chomsky’s (1986) ‘rigid’ approach to minimality (according to which only an intervening head governor induces a minimality barrier) by a theory which relativizes minimality to the kind of relationship that obtains between the governor and the dependent:

- (23) *Relativized Minimality*  
 X  $\square$ -governs Y only if there is no Z such that  
 (i) Z is a typical potential  $\square$ -governor for Y, and  
 (ii) Z c-commands Y and does not c-command X.

Rizzi distinguishes four kinds of values for  $\square$ : head government, antecedent government in an A-chain, antecedent-government in an A-bar chain, and antecedent government in a head-chain. Recent developments of Relativized Minimality are Chomsky’s (1995) Minimal Link Condition and its revision in Manzini (1998).

Since we are concerned with chains headed by a *wh*-phrase in A $\phi$ -specifier position, all and only A $\phi$ -specifiers are relevant interveners in the discussion to follow. That *wh*-expressions such as *who* and *whether* count as such will not be surprising, so the classic *wh*-island effect is straightforwardly accommodated. The VP-adverb facts reviewed above also fit in, on the assumption that the VP-adverbs in question occupy an A $\phi$ -specifier position.

The theory can also be applied to explain the WI effects induced by **negative and other affective operators (A3)**, illustrated in (24)–(26) (cf. Williams 1974 for the original observation that (unstressed) negatives block adjunct extraction; also cf. Ross’s 1984 ‘Inner Islands’, and Rizzi 1990 for a broadening of the empirical domain to all affective operators in the sense of Klima 1964):

- (24) \* I asked how John <didn’t behave \_>.  
 (25) \* How did <few men think that you behaved \_>?  
 (26) \* How did <only John think that you behaved \_>?  
 (27) \* How did <you deny that you behaved \_>?

Rizzi (1990) accommodates the blocking effect of affective (or downward entailing) operators by assuming that they come to occupy A $\phi$ -specifier positions at LF (see Rullman 1994, 1995 for a semantic explanation in terms of maximality effects). That analysis has difficulty, however, accounting for the parallel behavior of negative

verbs like *deny*, seen in (27), which could raise to an  $A\bar{\phi}$ -specifier position only on pain of a violation of Structure Preservation. Nor is *deny* the only head that induces WI effects — the broader generalization, due to Cattell (1978) (cf. also Hegarty 1992), is that all so-called **response stance and non-stance predicates (A4)** block extraction of WI-sensitive expressions. Response stance includes, alongside *deny*, items like *accept*, *confirm*, *verify*, *admit*. Non-stance includes a large class of factive verbs: *realize*, *know*, *regret*, *remember*, *surprise*, *notice*, etc.

Cinque (1990) suggests that factive complements are islands because they are not a sister to the verb, on the assumption that clauses from which extraction takes place must be sisters of a  $\theta$ -marking [+V] head. (This assumption carries over to **extraposition islands (A6)**, which we will not discuss.) Cinque's approach to factive islands is tantamount to saying that not all complements are sisters to the selecting head — a heterogeneous, hence conceptually unattractive perspective on complements. An alternative analysis within the Relativized Minimality framework suggested by Progovac (1988) and Melvold (1991) has it that there is a null operator in the SpecCP position of the complement of verbs like *regret* and *deny*. On this approach, these islands are reduced to the typical case of an intervening  $A\bar{\phi}$ -specifier.

#### 4.2.3. WI-sensitivity — From syntax, via pragmatics, to semantics

The discussion of Relativized Minimality so far focused primarily on its account of WI-*inducers* and its empirical superiority over the ECP-*cum*-Subjacency approach. But Relativized Minimality was also instrumental in toppling the C1 approach in the domain of WI-*sensitivity*.

The classic approach (cf. Huang 1982, Lasnik & Saito 1984, 1992, Chomsky 1986) capitalizes on a purely syntactic property: the argument/adjunct dichotomy (B1) here. But this is too blunt a move, for various reasons.

First, the temporal adverbial *when* is noticeably less sensitive to WIs than, for instance, *why* or *how*; and moreover, *where* does not fit the B1 picture at all because its WI-sensitivity does not seem to depend on whether it is subcategorized for or not:

(28)            {\*Why/\*How/??When} did John ask <whether to do this \_>?

(29) ?            Where did John ask <whether to {put/read} this book \_>?

Rizzi's Relativized Minimality presents an account of the fact that temporal and locative phrases are less sensitive to WIs than manners and reasons built on the role played by **referentiality (B2)** in the domain of WI sensitivity. According to Rizzi, *manner* and *reason* phrases may be arguments but they do not have the theta-roles of event-participants (i.e., they do not have *referential* theta-roles). This is what makes them inextractable from weak islands. In this respect they are just like *amount* phrases (cf. (31)), which, though subcategorized by the verb, are nonetheless WI-sensitive (Ross 1984). Cases like (31) are the crucial argument that originating in an argument position is not enough: a successful extractee must also be *referential* in some sense (or, as É. Kiss 1993 has it, *specific* in the sense of Enç 1991).

(30)            What did <no imitation pearls touch \_>?

(31) \*            What did <no imitation pearls cost \_>?

On the other hand, as events take place in time and space, Rizzi surmises that the event specification may license a temporal and locative index that accounts the reduced WI-sensitivity of *temporal* and *locative* phrases.

Drawing on work by Kroch (1989) and Comorovski (1989), Cinque (1990) makes a finer distinction that

involves *pragmatics*: a referential *wh*-phrase, in addition to having a referential theta-role, needs to be **D(iscourse)-linked (B3)**, i.e. drawn from a pre-established set. The most persuasive examples advanced to underpin this point involve *how many*-phrases. The good examples below involve a contextually established set of books or a specific range of points that figure skating jurors conventionally assign to mistakes in the program.

- (32) \*           How many books are you wondering <whether to write \_ next year>?  
 (33)           How many books on the list are they wondering <whether to publish \_ next year>?  
 (34) \*           How many points are you wondering <whether to earn \_>?  
 (35)           How many points are the jurors debating <whether to take off \_>?

The proposals reviewed immediately above define WI-sensitivity in terms that combine syntax with pragmatics. The pragmatic argument is very powerful: indeed, almost any *wh*-phrase (save for *why*, perhaps) can be made immune to WIs by D-linking. But ‘aggressively non-D-linked’ *wh*-phrases such as *wh-the-hell* (Pesetsky 1987) should be systematically unextractable from weak islands. The deviance of (36) seems to go along with this prediction of the pragmatic account. But as Szabolcsi & Zwarts (1993) point out, (37) is felicitously used when seeing someone rifling through a dictionary. In a context such as this, we have unquestionable evidence that there exists a referent of the object of the embedded verb, and we can ask a *wh-the-hell* question in order to identify that object.

- (36) ??           Who the hell are you wondering <whether to invite \_>?  
 (37)           What the hell do you still <not know <how to spell \_>>?

Szabolcsi & Zwarts (1993) argue that the moral of such ‘salient checklist’ examples is that D-linking is not the discriminating factor when it comes to WI-sensitivity; instead the checklist turns elements of a *non-individuated* domain into discrete **individuals (B4)**. D-linking may play an important role in transforming a domain but, Szabolcsi & Zwarts claim, it is not D-linking itself but the emergent set of individuals that is decisive.

Perhaps the clearest example demonstrating the significance of individuals, in contradistinction to D-linking, comes from Dobrovie-Sorin (1994). Clitic doubling in Romanian signals D-linking, and indeed, it enables a *how many*-phrase to extract from a factive island:

- (38)           Pe câte femei regre<sub>i</sub> <câ le ai iubit \_>?  
                   ‘how many (of the) women are such that you regret having loved them’

On the other hand, *câte femei* ‘how many women’ can be extracted even if it is not doubled by *le* and, consequently, is not D-linked. It turns out that the critical factor is whether it is interpreted as quantifying over numbers of women (case (i), which is bad) or over individual women (case (ii), which is okay):

- (39)           Câte femei regre<sub>i</sub> <câ ai iubit \_>?  
                   (i) \*       ‘for what number, you regret having loved that number of women’  
                   (ii)       ‘how many women are such that you regret having loved them’

These data lead to the conclusion that *semantics*, rather than pragmatics, plays the real role in the characterization of WI-sensitivity — in particular, the **individual/non-individual distinction (B4)** is what sets apart WI-escaping *which/what*-phrases from manners, reasons, amounts, and other WI-sensitive expressions (when the latter are not individuated by contextual brute force); see also Aoun (1986), Frampton (1990), Rullman

(1993), Szabolcsi & Zwarts (1990, 1993) and Cresti (1995). This conclusion is further confirmed by Cresti's observation that *wh*-phrases on their **functional readings (B5)** are also WI-sensitive:

- (40) I know which book you wonder whether no/any student read.  
 (i) \* I know that you wonder whether no/any student<sub>i</sub> read her<sub>i</sub> mother's book.  
 (ii) I know that you wonder whether no/any student read War and Peace.

This fact would be impossible to explain on the earlier, syntactic or pragmatic, theories. Cresti argues that on the functional reading, the trace of *which book* must be of a higher order, functional type, as opposed to the individual type. Functional readings neatly fall under the individual versus higher order generalization.

Both Cresti (1995) and Rullman (1993) propose a *filter* that requires elements that extract from out of an island to be of type *e*, the type of individuals. But they do not offer an explanation for why this should be the case. It is here that the primary contribution of Szabolcsi & Zwarts's (1993) work lies — as will be seen in 4.2.5, they present a general theory of *scope* from which an *explanation* for why certain expressions (the WI-sensitive ones) are unable to scope above certain others (the WI-inducers) follows as a theorem.

#### 4.2.4. Scope islands (A5)

The weak islands we reviewed so far are all cases of *intervention* islands: the WI is induced by the intervention of a certain element between the final locus of the extracted phrase and its extraction site. As we have seen, Relativized Minimality generally accommodates these with ease (see Szabolcsi & Zwarts 1991 for a recasting of these results in semantic terms, taking *monotonicity* to be the key to the identification of harmful interveners). But despite the impressive coverage of this approach, it seems unlikely in the final analysis that the entire class of WI-inducers can be identified as intervening *A $\phi$* -specifiers. The discovery of a body of **scope islands (A5)** eventually carried this conclusion home.

At first sight, it would seem that, while *wh*-, negative (or downward entailing/affective) and VP-adverbial intervention induces a weak island, that of other operators is harmless — a sentence like *how did every boy behave?* is grammatical. But the scope that the *every* QP takes is essential here. *Every boy* is three-ways scopally ambiguous — it may scope either below or above a *wh*-phrase, or be scopally independent of it. Let us illustrate the three possibilities with an example where the *wh*-phrase is immune to WIs:

- (41) Which book did every boy read \_?  
 (i) *every* > *wh*  
 'For every boy, which book did he read?'  
 (ii) *wh* > *every*  
 'Which book is such that every boy read it?'  
 (iii) independent scope (uniformity presupposition)  
 'Taking for granted that every boy read the same book, what was this book?'

Reading (i) is often called a pair-list reading: it is answered by a list of pairs: 'Bill read Magic Mountain, Jim read The Russia House, ...'. Readings (ii) and (iii) both ask for a single book that was read by every boy, but differ as to the possibility of what else each boy may have read. For instance, if Bill read Jurassic Park and Tom Jones, Jim read Jurassic Park and Airframe, and so on, reading (ii) is felicitous and the answer is 'Jurassic Park.' Reading (iii) is not felicitous in the same situation: it presupposes that each boy read just one book, and moreover, the same one, and merely asks to identify the book. The question is whether these three readings are equally possible when *every boy* interacts with a WI-sensitive expression.

É. Kiss (1993) and de Swart (1992) make the fundamental observation that universals are harmless only when they (i) scope above or (iii) independently of the sensitive *wh*-phrase. When they scope below it (ii), they induce a WI. Thus, É. Kiss observes that the example in (42) is grammatical on two of its three readings only. (See Szabolcsi 1997 for a range of even subtler pair-list data.)

- (42) How did every boy behave \_?  
 (i) *every* > *wh*  
 ‘For every boy, how did he behave?’  
 (ii) \* *wh* > *every*  
 \*‘What was the common element in the boys’ non-uniform behavior?’  
 (iii) independent scope (uniformity presupposition)  
 ‘Taking for granted that every boy behaved the same way, what was it like?’

The **Scope Generalization** emanating from these observations can be stated in either of the following ways:

- (43) If  $Op_i$  has scope over  $Op_j$  and binds a variable in the scope of  $Op_j$ ,  $Op_i$  must be specific. (É. Kiss 1993)  
 (44) A quantifier  $Q_1$  can only separate a quantifier  $Q_2$  from its restrictive clause if  $Q_1$  has wide scope over  $Q_2$  (or is scopally independent of it). (de Swart 1992)

The Scope Generalization puts the whole WI phenomenon in an entirely new light (see also Frampton 1991). Just as Relativized Minimality was based on the observation that the range of WI-inducers is much wider than Subjacency can account for, the Scope Generalization expresses the observation that both the range and the nature of WI-inducers is different from what Relativized Minimality (in its original form or in its monotonicity reincarnation) can take care of.

Tying everything in the domain of WI-inducers to the property of ‘being scopal’ is too blunt a move, however. After all, there are expressions that some well-established theories classify as scope-bearing operators but which nevertheless do not induce WIs. Such are indefinite DPs and intensional verbs like *want*:

- (45) How did a boy behave \_?  
 (46) How do you want me to behave \_?

Confronted with such cases, one may either embrace an analysis according to which indefinites and intensional operators are not scopal, or draw some principled demarcation line between scopal expressions, predicting some of them to be innocuous. Szabolcsi & Zwarts (1993) and Honcoop (1998), who both seek to explain the Scope Generalization stemming from É. Kiss (1993) and de Swart (1992) in formal semantic terms, follow the latter strategy.

#### 4.2.5. Scope Theory (C3) — The Algebraic Semantics version

Szabolcsi & Zwarts (1993) (reprinted, with a handful of new notes, as Szabolcsi & Zwarts 1997) is an instantiation of the **Scope Theory (C3)** embedded in the theory of **Algebraic Semantics**. It is proposed that WI-violations are semantically incoherent, in much the same way as *\*six airs* is, where a numeral is applied to a mass term. In both cases, the source of incoherence is the fact that an operator wants to perform an operation which cannot be performed in the denotation domain of the rest of the expression.

It is well-known that the semantic contribution of many operators can be defined in terms of set-theoretic (Boolean) operations. *Not* is definable in terms of complement formation, *every* in terms of intersection, *some* in terms of union, and many other operators as combinations of these (and perhaps further non-Boolean ingredients). Szabolcsi & Zwarts propose to make this explicit in the interpretation of sentences and thereby use it to explain why certain expressions can, and others cannot, scope over certain operators.

When an expression E scopes over some operator O, the operations that define O need to be performed in E's denotation domain. For instance, in calculating the denotation of *Who didn't you see?* we take the complement of the set of those whom you saw. This is possible precisely because *who* ranges over individuals, and individuals form sets, on which complementation (as well as the other two Boolean operations) can be performed. On the other hand, Szabolcsi & Zwarts argue that the denotation domain of WI-sensitive amounts, manners, etc. does not lend itself to complementation and/or intersection (they form join semi-lattices). Therefore, these cannot scope over negation, universal quantifiers, or other operators whose definition involves similar operations. They can scope over existentials (whose definition is in terms of union) or intensional verbs (whose semantic contribution is not Boolean in nature).

This proposal straightforwardly accounts for the WI-inducing effect of affective operators (A3) and (non-existential) quantifiers (A5). It is claimed, albeit somewhat programmatically, that the same analysis carries over to *wh*-expressions (A1), quantificational adverbs (A2) and response stance and non-stance predicates (A4). Szabolcsi & Zwarts also explain the absence of WI-effects in (45)–(46), with the aid of the observation that plain indefinites like *a boy* only rely on union (the operation that even join semi-lattices have), and *want* and *should*, while scopal, do not make a Boolean contribution. Hence the intervention of plain indefinites and intensionals is correctly predicted to be perfectly harmless.

Szabolcsi & Zwarts's algebraic Scope Theory has the additional advantage of accounting for an original observation of theirs which seems problematic for all other approaches to what expressions are immune to WIs. They observe that arguments and adjuncts of non-iterable or '**one time only**' predicates (B4), which, by virtue of the very nature of the predicate, must be interpreted as collectives, are sensitive to weak islands. The extraction from a negative island in (47b) is acceptable only on the assumption that the same house can be destroyed more than once; i.e. it is unacceptable on the verb's natural 'one time only' interpretation:

- (47) a. Which soldier(s) didn't \_ visit this house?  
 b. ?? Which soldier(s) <didn't \_ destroy this house>?

*Which N(s)* in non-iterative contexts does not come under any of the umbrellas for WI-sensitive expressions canvassed in the preceding sections. It is clearly an argument, not an adjunct. It is also an event-participant. And it is in all probability D-linked. Finally, the fact that it ranges over collectives does not correspond to having a logical type that is distinct from the one it has in iterative contexts. Szabolcsi & Zwarts's algebraic scope theory, on the other hand, does capture the WI-sensitivity of *which soldier(s)* in (47): on one standard analysis (Link 1983), collectives form join semi-lattices, the same kind of poor algebraic structure that was attributed to manners and amounts.

#### 4.2.6. Scope Theory (C3) — The Dynamic Semantics version

Szabolcsi & Zwarts's approach to the Scope Generalization emerging from the work of É. Kiss and de Swart can be thought of as providing a formal implementation of É. Kiss's line, in terms of what can scope over what. De Swart (1992) arrived at a different version of the Scope Generalization, from the angle of **split constructions** (B6), another type of WI-sensitive expressions (cf. Obenauer's 1984/85 QAD cases in (19)–(20), and also *wat*

*voor* split in Dutch). Honcoop (1998) picks up on de Swart's line, presenting a version of the **Scope Theory (C3)** rooted in the framework of **Dynamic Semantics** (cf. Groenendijk & Stokhof 1990).

A fundamental novelty of Honcoop's (1998) 'dynamic excursions on weak islands' is that it lays bare an uncanny similarity between the expressions that create weak islands and those that block **cross-sentential anaphora (B9)** when they take scope over the indefinite. In (49), we see that negation creates an inaccessible domain for cross-sentential anaphora, and Honcoop demonstrates that the same holds for all the WI-inducers (A1) through (A5) when their scope includes the indefinite but excludes the pronoun.

- (48) I saw a man<sub>i</sub> in the park. He<sub>i</sub> was tall.  
 (49) \* I didn't see a man<sub>i</sub> in the park. He<sub>i</sub> was tall.

Honcoop's proposal is to reduce the explanation of weak island effects to that of the anaphora facts.

The basic desideratum of Dynamic Semantics is to account for the ability of indefinites to antecede non-c-commanded pronouns. It maintains that indefinites are existentially quantified noun phrases that effectively bind the pronoun even in these non-c-command contexts, although they do so in a logically novel (*dynamic*) fashion. The fact that (50) can be interpreted as (51) is a problem for this assumption:

- (50) Usually, a new coat is expensive.  
 (51) Most new coats are expensive.

We see that an indefinite can apparently act as a variable bound by an adverb of quantification. If indefinites are existentially quantified, such binding is possible only if the existential quantifier can be removed. So what is needed, on the assumptions of Dynamic Semantics, is an operation that removes the existential quantifier and turns *a new coat* into an expression denoting the property of being a new coat, a property that *usually* in (50) can then take as its restriction much like *most* in (51) does. The operation in question was invented by Dekker (1993) and is called Existential Disclosure (ED). ED maps (52a) to (52b), the set of *x*'s such that each *x* is identical to some new coat or other. In turn, (52b) is equivalent to (52c), the set of new coats:

- (52) Existential Disclosure (ED):  
 a. there exists a new coat P<sub>ED</sub>  
 b. {*x*: there exists a new coat<sub>i</sub> and it<sub>i</sub> is identical to *x*}  
 c. {*x*: *x* is a new coat }

In (52b), *a new coat* does not c-command *it*. Hence *a new coat* can only bind *it* in a dynamic fashion. Consequently, the application of ED is well-formed only in contexts that allow **cross-sentential anaphora**. But if the indefinite is inside an inaccessible domain created by some operator, and the pronoun is outside that domain (as depicted in (53)), binding, and ED, are not possible.

- (53) \* {*x*: ... OP [...indefinite<sub>i</sub>...] and it<sub>i</sub> is identical to *x*}  
 where OP creates an inaccessible domain for anaphora

Honcoop now makes two crucial predictions. First, he predicts that scopal operators that create inaccessible domains for anaphora will make splitting impossible, on the assumption that the operator in split constructions is related to the indefinite in the same way as an adverb of quantification (like *usually* in (50)) is

related to the indefinite it binds and that, hence, ED is required in both cases.

- (54) **Wat** heeft hij (\*niet/\*twee keer) gezegd dat hij *voor boeken* heeft gelezen?  
 what has he not/two times said that he for books has read

This prediction is borne out, as the discussion of (B7) has shown.

Secondly, Honcoop predicts that any other phenomenon whose treatment necessitates an application of ED for some other reason will, similarly, be sensitive to WI-inducers, *viz.* inaccessible domain creators. An interesting novel domain that bears the second prediction out is that of NPI-licensing. Linebarger (1987) observed that the licensing relation between **negative polarity items (B8)** and their triggers is blocked by a variety of interveners. Picking up on this observation, Honcoop makes the novel argument that these are precisely the same interveners that create weak islands/inaccessible domains. Conclusive evidence for the WI-sensitivity of NPIs comes from **scope islands (A5)**.

- (55) John didn't give the beggar a red cent.  
 trigger: not; NPI: a red cent
- (56) \* John didn't give <{every beggar/at most three beggars/exactly three beggars} a red cent>.

To account for NPI licensing (B8), Honcoop — rather than relating this directly to splitting, which would be impossible since not all NPI-licensors can be analyzed as unselectively binding them — points out that all NPIs are associated with a scalar implicature. This requires computing entailment relations between alternative propositions, and the formation of these alternatives in turn requires an application of ED (52).

Honcoop also notes that his Scope Theory provides for an explanation of the WI-sensitivity of Krifka's (1990) **event-related readings (B5)**:

- (57) Four thousand ships passed through the lock last year.  
 (i) object-related: 'there were 4,000 distinct ships that passed through the lock'  
 (ii) event-related: 'there were 4,000 lock traversals by ships'
- (58) How many ships <\_ didn't pass through the lock>?  
 (i) object-related:  $\bar{u}$   
 (ii) event-related: \*

Doetjes & Honcoop (1997), who discovered their WI-sensitivity, analyze event-related readings as quantification over <event, object> pairs. Both event arguments and indefinites come with their own existential quantifiers. These need to be removed in order for the pair to be formed. Removal, in Dynamic Semantics, is by ED (52) — and this is why event-related readings are WI-sensitive.

## 5. Evaluation

In the above, we presented a bird's eye view of the data in the domains of strong and weak islands, and the theoretical approaches to them in the extant literature. The original account of both types of islands was purely syntactic, and, in the weak islands domain, was confined to what we now know — thanks to first Relativized Minimality and then the Scope Theory — to be the tip of an immensely larger iceberg of facts. A unified explanation is called for, but no fully unified theory is currently at our disposal. What does seem clear, though, is that a very substantial portion of this large phenomenon is genuinely semantic in nature.

This is true not just because we have found that there are semantic approaches on the market to date which cover substantially more ground than the extant syntactic theories, but also because the prospects for a revision of the syntactic approach embodied by Relativized Minimality such that it can accommodate the Scope Generalization look dim. In order to capture the Scope Generalization, LF ought to disambiguate scope; but Rizzi (1990) relies on May's (1995) theory of scope, in which this is precisely not the case, and in which, moreover, QR'ed categories are not in specifier positions but in adjunction positions instead and hence should not induce Relativized Minimality effects. We could of course espouse a different theory of scope, such as for instance the feature-checking approach of Beghelli & Stowell (1997). But that theory does not yield the desired result for Relativized Minimality either, since it has good reasons not to unite universal quantifiers and modified numerals, both WI-inducers, under a single heading. The long and the short of it is that the Scope Generalization has shed light on a set of WI-inducers that looks far too broad to capture under a single *syntactic* umbrella. Besides, it is not even clear that all WI-sensitive expressions fit one single syntactic recipe: alongside non-individual *wh*-phrases, WI-sensitive elements include the amount and event-related readings of numerical QPs, functionally interpreted *which*-phrases, definite dependents of 'one time only' predicates, and NPIs. How syntax can unite them all is quite unclear; semantics, on the other hand, is much better equipped to accomplish the desired unification.

The semantic approaches that seem most promising at this time are the algebraic and dynamic versions of the Scope Theory, due to Szabolcsi & Zwarts (1993, 1997) and Honcoop (1998), respectively. There are a variety of data sets that both theories can account for more or less equally well, but there are also data that only one or the other can accommodate. As regards WI-inducers, the observation that a set of quantifiers and other operators induce WIs is at the heart of both theories. Naturally, both account for it equally well. Islands caused by a *wh*-XP can in principle be accounted for by both theories but, as Honcoop points out, the tentative analysis in Szabolcsi & Zwarts (1997) does not extend to *whether*-islands. Both proposals account in principle for the fact that response stance and non-stance, but not volunteered stance predicates induce WIs; but Szabolcsi & Zwarts only offer suggestions regarding the analysis, while Honcoop offers a detailed analysis that also accounts for the fact that these expressions do not affect extraction and cross-sentential anaphora in the same way.

In the domain of WI-sensitive expressions, Honcoop himself shows that the two theories score equally well on event-related readings. But the algebraic approach can explain the WI-sensitivity of collective arguments, and *how* (and probably, of *why* and other comparable expressions), while there seems to be no reason to assimilate them to split constructions under the ED approach. Conversely, the fact that there is a difference between split and non-split constructions when it comes to WI-sensitivity as well as the fact that NPI-licensing is blocked by WI-inducers can be accounted for by the ED theory but not by the algebraic approach of Szabolcsi & Zwarts.

Why is it that precisely those expressions whose algebraic semantic definition involves intersection and/or complement-formation create inaccessible domains for cross-sentential anaphora? Honcoop addresses this question and proposes, although in a preliminary fashion, that the algebraic properties can be used to explain the relevant Dynamic Semantic properties. If this line of reasoning is correct, the two theories may be viewed, to some extent, as two sides of the same coin.

There are, however, intriguing syntactic residues. On the one hand, at least some of the extraposition islands and some of the anti-pronominal context data of Postal (1998) do not fall under either of the Scope Theories. On the other hand, in retrospect it does not seem entirely clear whether the presupposed demarcation line between weak and strong islands is as solid as one might want it to be. The reason is that the DP/PP distinction is not entirely clear-cut throughout the domain. Furthermore, the DPs that are capable of binding a variable in weak islands and of being linked to a resumptive pronoun in strong ones are rather strikingly similar (an observation that emerges from, but is not addressed in, Cinque 1990).

There is no inherent conflict between these facts and the Scope Theories. This is because they both reduce the WI effect to independent semantic facts. Providing that the proposals are internally logically correct, the semantic facts they point out will constrain the range of expressible meanings, irrespective of whether their consequences overlap with those of other syntactic or semantic considerations. Nevertheless, the issue of exactly what island phenomena form a single natural class remains an intriguing one and calls for further research.

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