

THE TOPOGRAPHY OF SYNTACTIC ISLANDS

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Abstract

The Adjunct Island Constraint proposed by Ross (1967) together with Chomsky's *Barriers* (1986) are not sufficient to account for the ungrammaticality of wh-extraction out of adjunct clauses, nor do they address the instances of grammatical extraction out of such constructions. Extraction out of Adjunct Islands is now completely predictable using a combination of Chomsky's *Minimalist Program* (1995) and Kehler's Coherence Theory (2002). The combination of these two theories gives an account of both the grammatical and ungrammatical instances of wh- extraction out of adjuncts.

The principles of the Minimalist Program together with evidence from Old English adverbial clauses determines the necessary structure for grammatical extraction, while an extension of the Coherence Theory mandates the required semantic relation between the matrix and adjunct clauses. This thesis proves that the possibility of wh-extraction out of adjunct islands is dependent upon the seamless integration of syntax and semantics.

Introduction

Languages around the world abide by the principles and parameters of Universal Grammar. There are general rules, or principles, that are applicable to all languages, while the parameters are what distinguish the individual languages. This combination of principles and parameters allows an infinite number of grammatical utterances to be spoken, written, heard, and understood. As linguists, it is our goal to understand what makes this phenomenon possible.

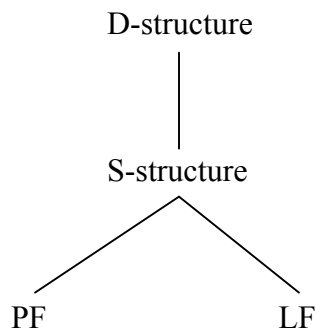
Syntax is the sub-field of linguistics that analyzes the way words and phrases combine to form clauses and sentences. Syntax is responsible for determining the relationship between the constituents within a sentence, the operations that must apply, and the specific parameters chosen for each language. Semantics is the sub-field of linguistics that analyzes the meaning of words, clauses, and sentences, how they relate to each other, and how they are interpreted. Syntax and semantics are unequivocally interdependent. The structure of any given sentence is reliant upon its meaning and vice versa.

In this paper, a phenomenon known as the Adjunct Island Constraint will be evaluated from both a syntactic and a semantic viewpoint. The syntax will be based on Chomsky's Minimalist Program (1995) and the semantics will be based on Kehler's Coherence theory (2002). The combination of the two will show that the Adjunct Island Constraint is too broad and will demonstrate the necessary conditions for extraction from an adjunct.

The Structure

Within syntax, it is commonly accepted that when forming a question in English, the wh-word or phrase moves from somewhere else in the sentence, simply called wh-movement or A' movement. There are certain constructions, such as complex subjects, wh- complements, adjuncts, and coordinate structures, out of which this movement often fails. These structures are otherwise known as islands. Theorists that have studied islands have attempted to explain the reasons behind the ungrammaticality.

One of the widely accepted theories within the Principles and Parameters approach was Government Binding (GB). In GB, there are four levels of representation. The Deep Structure (D-structure) is the underlying sentence determined by the properties of the lexical items, before any operations such as movement occurred. PF (Phonetic Form) and LF (Logical Form) are the phonetic and logical representations of the sentence, and Surface Structure (S-structure) mediates the relations between D-structure, PF, and LF.



Operations such as movement or deletion apply at various levels taking the derivation from level to level. If all operations are successfully completed without violating any of the many restrictions, a grammatical sentence is formed.

An integral part of GB was Barriers (Chomsky 1986) which employed resources such as subjacency, barriers, blocking categories (BC), and government to account for movement and its restrictions.

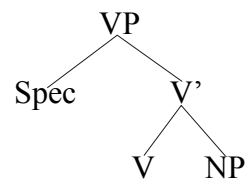
More recently and also within the Principles and Parameters approach, the Minimalist Program (MP) (Chomsky 1995) has dispensed with the ideas of government, deep structure, and surface structure that were essential to account for almost every aspect of syntax and replaced them with fewer and more “economical” principles. These changes have basically eliminated the theories of islands, but not the islands themselves. The intricate and complicated explanations of islands in previous accounts usually included notions of government. By eliminating government, MP also eliminated those theories. While the GB accounts went a long way to explain ungrammatical extraction out of islands, they also neglected to include the examples of extraction out of islands that produce a perfectly grammatical sentence. Concentrating primarily on adjunct islands, this paper will propose a new set of constraints on movement that encompass grammatical and ungrammatical results using a Minimalist approach.

A review of GB and its account of islands is essential in understanding the extreme deviance of Minimalism. The following components of GB are by no means an exhaustive compilation. They are, however, central to the discussion that follows.

It is important to recall that GB employs X-bar theory (X' theory). X'-theory is a representation of what constitutes a possible phrase in a natural language, also known as phrase structure. Phrase structure concerns the left-to-right and hierarchical relationship between syntactic categories. In X'-theory, phrases are maximal projections of lexical categories. A lexical head, X, is dominated by a phrase node of the same category type, XP. When a constituent *dominates* another, the dominating constituent is hierarchically higher than that

which it dominates. All phrases contain a head, X, and often a complement and/or a specifier.

The complement is often known as the sister of the head, denoting its hierarchical relation. XP is the maximal projection of X and dominates all of the specifiers and complements of X. For example, in a verb phrase (VP) (shown below), the verb expresses the head and the NP, or direct object of the verb, expresses the complement or sister of V. The subject expresses the specifier. VP is the maximal projection of V.



Another important concept when discussing syntactic islands is argument structure. Any verb selected from the lexicon requires that certain types of constituents (noun phrases complementizer phrases, or prepositional phrases) be selected with it. In English, a verb's internal argument in most cases is the direct object, or the sister of the V (verb) head. The indirect object, if there is one, is also considered an internal argument. The external argument (outside of the verb phrase) is the subject, which is generated in the specifier of the verb phrase (Spec VP) position. Internal arguments can be optional when they are recoverable from the context. A constituent that is neither a complement nor a specifier is an adjunct. These are modifiers of either the VP or the entire sentence and generally contain extraneous information not required by the verb. Adjuncts can be a single word or clausal.

The theta theory (θ -theory) is also a central concept in GB, the basic principle of which is the θ -criterion.

- θ -criterion

Each argument receives one and only one θ -role, and each θ -role is assigned to one and only one argument.

Predicates assign θ -roles to their arguments. The type and number of arguments is determined lexically. θ -roles are assigned only to the subject or complement(s) of the predicate; these are A-positions. Any other position in the sentence is an A'-position. The θ -criterion holds at LF, and the Projection Principle extends it to D-structure and S-structure.

- Projection Principle

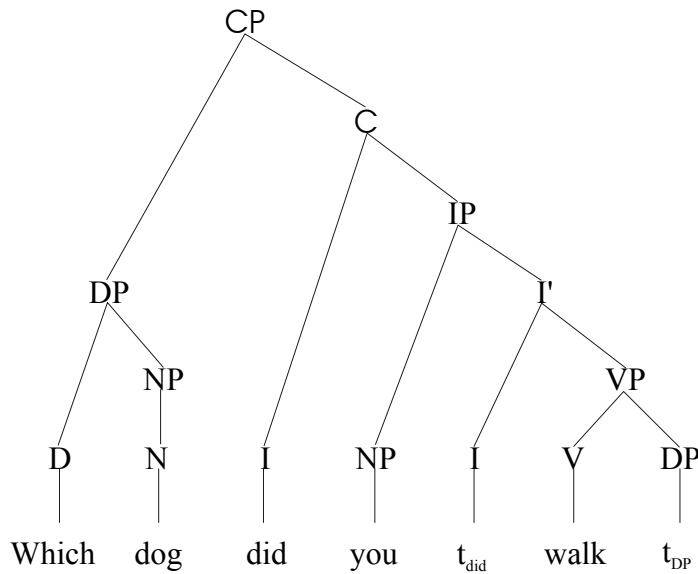
The θ -marking properties of each lexical item must be represented categorically at each syntactic level.

In other words, if a verb assigns a θ -role to a complement, the complement will be present and θ -marked at all levels of representation. It also means that all complement positions must contain an argument.

In GB, when a constituent moves, it leaves a trace (t) in its original position and any subsequent position it may occupy before landing in its final location. According to the Empty Category Principle (ECP), a trace or any other empty category must be properly governed or it will not be licensed.

GB employs two acceptable types of movement: A-movement (head to head movement) and A'-movement (such as wh- movement). In licit A'-movement, a constituent moves from an argument position, unless it is an adjunct in which case it moves from an A' to an A' position. In wh- movement, the most common form of A'-movement, a constituent moves from an argument position to a non-argument position, creating an operator-variable pair. For example, in the

formation of a question in English, the wh-word or phrase moves from an internal θ -position to Spec CP of the clause. The lexical I moves to the C' position.



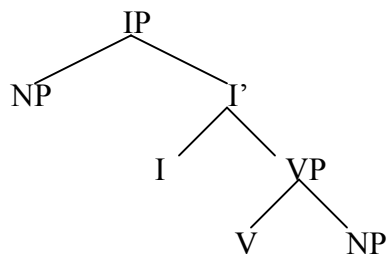
In order to get an accurate picture of the methods used in Government Binding, the following principles and definitions (Chomsky 1986) must be specified, many of which are not only interdependent, but also theory internal:

- C-command

α c-commands β iff α does not dominate β and every γ that dominates α dominates β .

- M-command

c-command where γ is restricted to maximal projections.



In the above structure, V and the lower NP exhibit a mutual c-command relationship, where V does not dominate the lower NP and everything that dominates V, dominates NP. The higher NP

c-commands VP although this relationship is not mutual. Everything that dominates NP, namely IP, dominates VP, but I' does not dominate NP. This disallows the VP from c-commanding the higher NP. The higher NP's relationship to I' is m-command because not only does IP dominate NP and I', but IP is also a maximal projection.

- θ -government

α θ -governs β iff α is a zero-level category that θ -marks β , and α and β are sisters.

Heads (N, V, P, I, C, etc.) are zero-level categories (X^0). That which is selected from the lexicon as a complement or subject of a head is θ -marked by that head. The θ -marked sister of the head is thereby θ -governed by the head. The constituent that occupies the specifier position is not θ -governed by the head because they are not sisters.

- L-marking

α L-marks β iff α is a lexical category that θ -governs β .

For example, a verb L-marks that which occupies its internal θ -position. An adjunct is not L-marked because it is not θ -governed. IP is not L-marked because C (which selects IP) is not a lexical category.

- Blocking Category (BC)

γ is a BC for β iff γ is not L-marked and γ dominates β .

For example, IP and VP are blocking categories for whatever they dominate because they are not L-marked.

- Barrier

γ is a barrier for β iff (a) or (b):

(a) γ immediately dominates H, H a BC for β

(b) γ is a BC for β , $\gamma \neq$ IP.

Barriers are limited to maximal projections. Any maximal projection that immediately dominates IP is a barrier for anything within IP because IP is a BC.

- Subjacency

β is n-subjacent to α iff there are fewer than n+1 barriers for β that exclude α .

To form a perfectly grammatical sentence, when a constituent moves it must not cross any barriers. If it crosses a barrier, the movement has violated subjacency. As the moving constituent crosses more barriers, the subjacency violation becomes worse.

- Government

α governs β iff α m-commands β and there is no γ , γ a barrier for β , such that γ excludes α .

In other words, the governing constituent must be in an m-command relation with that which it governs and there cannot be a barrier between the two.

- Proper Government

α properly governs β iff α θ -governs or antecedent governs β .

- Empty Category Principle (ECP)

a non-pronominal empty category must be

(a) lexically governed, or

(b) antecedent governed.

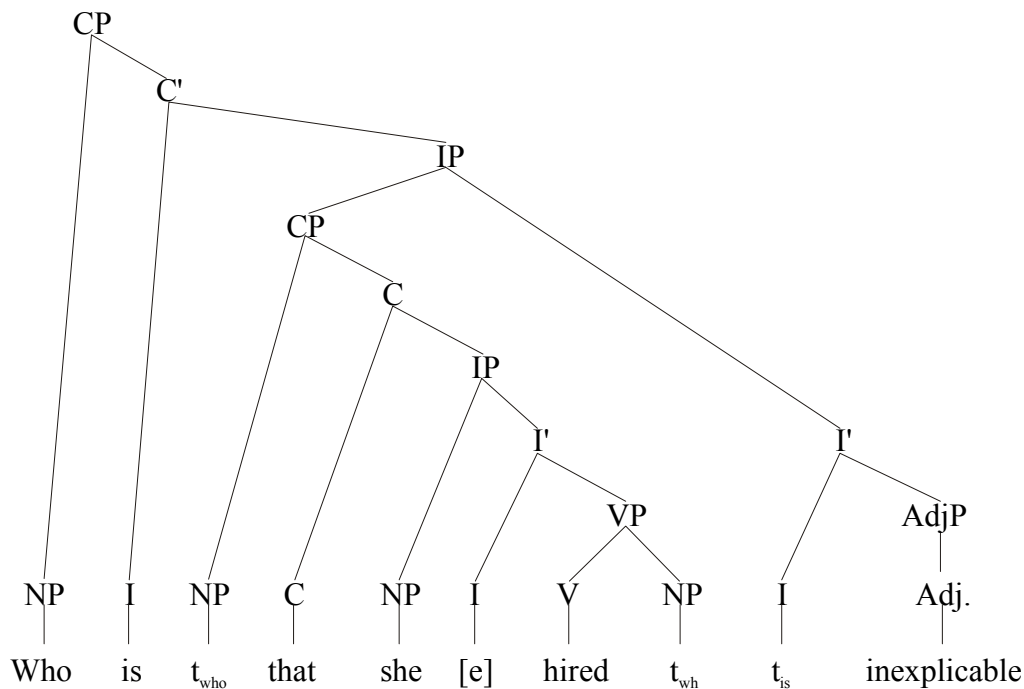
In the following discussion, we will refer to a non-pronominal empty category as the trace of a moved constituent. In order for this to be antecedent governed, there cannot be a barrier between the moved constituent and the trace. The term lexically governed is interchangeable with θ -governed. Any violation of the ECP will result in an ungrammaticality.

- Movement
 - There is no movement to complement position.
 - Only X^0 can move to the head position.
 - Only a maximal projection can move to the specifier position.
 - Only minimal and maximal projections are “visible” for the rule Move- α .

Chomsky’s Barriers (1986) employs the above definitions to explain the ungrammaticality of wh-extraction out of islands. Consider the following examples:

Subject Island constraint:

(1) * Who is that she hired inexplicable?



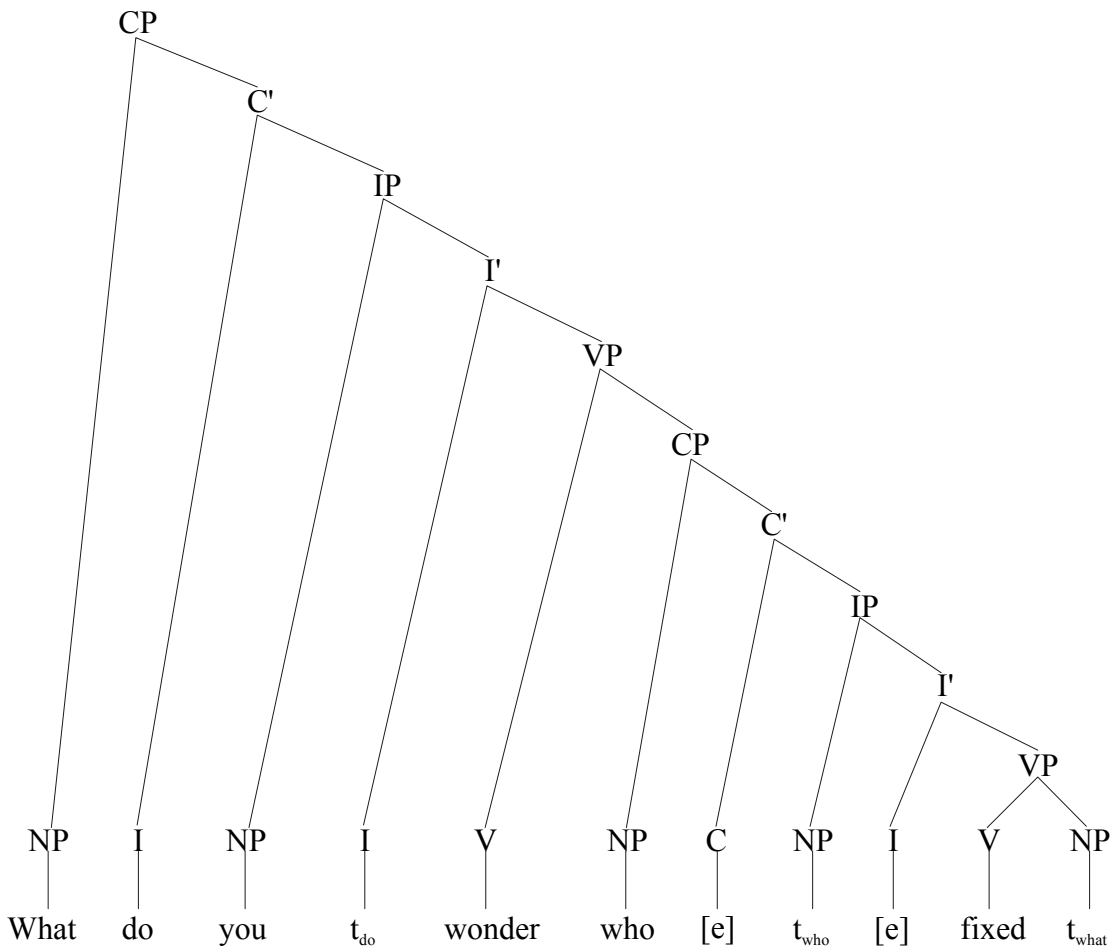
The wh-phrase, *who*, first moves to the Spec CP position of the internal clause, *that she hired t_{wh}*.

The IP of the internal clause is a BC because it is not L-marked and it dominates the trace of *who*. The CP of the internal clause is also a BC because it is not L-marked and it also dominates the trace of *who*. The internal CP is a barrier because it is a BC that is not an IP. The CP of the

lower clause is also a barrier by inheritance, namely that it dominates a BC. Therefore, movement from the Spec CP of the internal clause to Spec CP of the matrix clause crosses a barrier violating subadjacency. This derivation also yields an ECP violation because the trace of *who* in the Spec CP of the internal clause is neither θ -governed nor antecedent governed as there is a barrier between the moved constituent and its trace. This ungrammaticality is the result in most complex subjects. The internal clause, or subject clause, is known as a subject island because movement out of it is generally prohibited.

Wh-Island Constraint

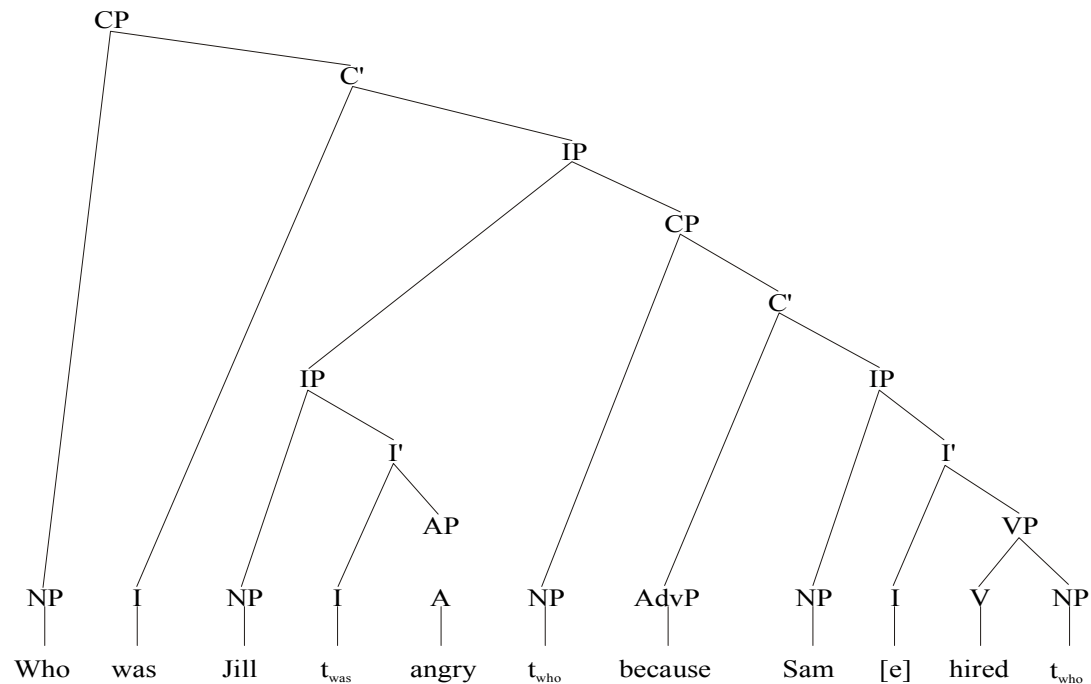
(2) *What do you wonder who fixed?



The wh- island constraint comes into play when the verb of the matrix clause requires a wh-complement. The attempted movement of the second wh- word or phrase in such a complement is the difficulty. When the first wh- expression moves into the CP, it can remain there occupying the lower CP or it can move into the higher Spec CP leaving a trace in its place. In either case, the Spec CP of the lower phrase is occupied requiring that the second wh- move over it without “resting.” In the above derivation, *who* moves into Spec CP of the lower clause. *what* then moves into Spec CP of the higher clause. In this move, *what* crosses a barrier, CP. CP of the internal clause is a barrier by inheritance because it immediately dominates IP, IP a BC for t_{what} . Often, when a verb requires a wh-complement, wh- movement out of such a complement is disallowed in English. The above is a prototypical example of a wh- island in English.

Adjunct Island Constraint

(3) * Who was Jill angry because Sam hired?

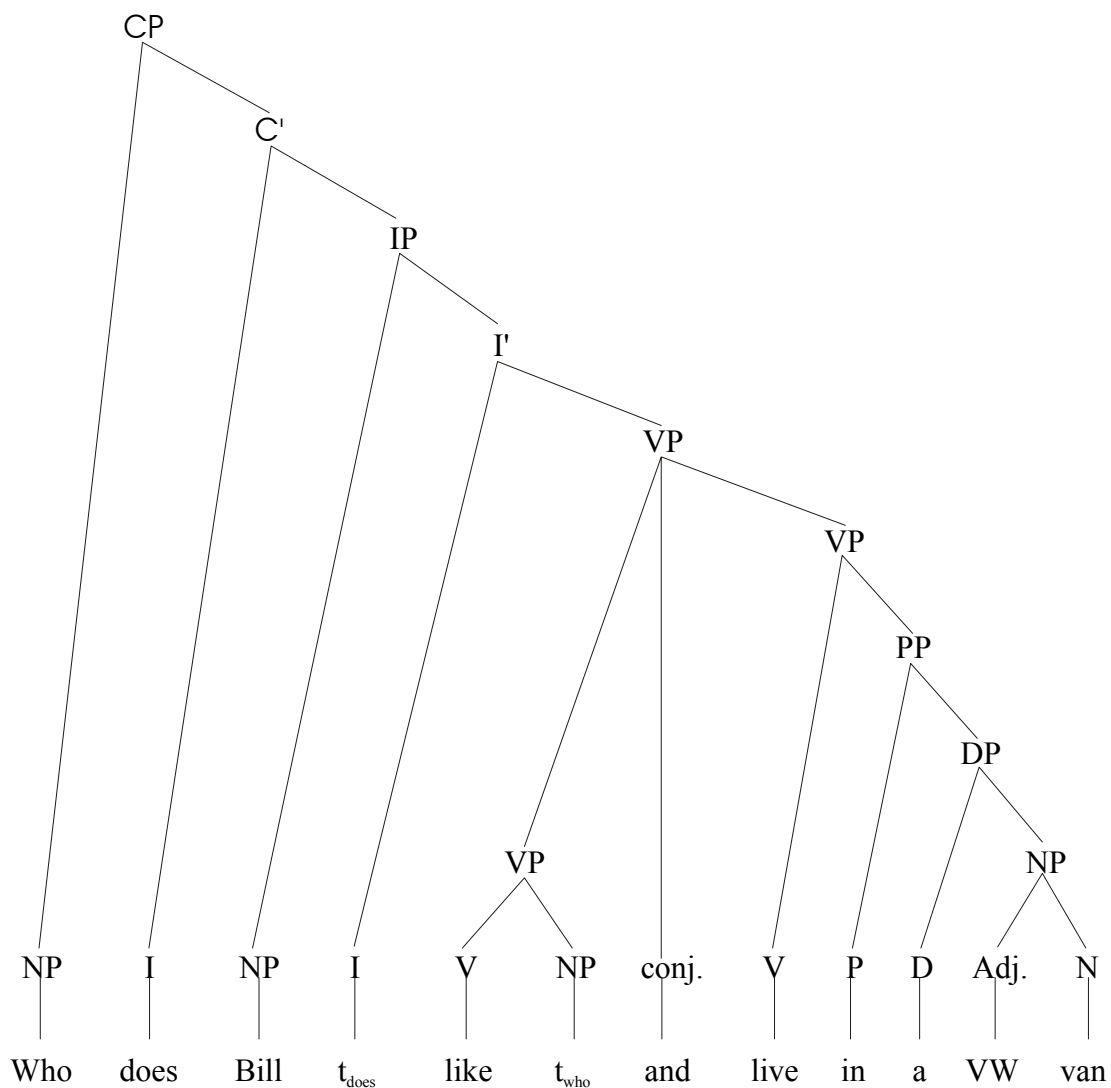


In this case, *who* moves to Spec CP of the lower clause without consequence. Movement from Spec CP of the lower clause to Spec CP of the higher clause, however, crosses a barrier, CP.

The adjunct CP is a barrier because it is not an IP and it immediately dominates the IP, which is a BC. Like the subject island, the adjunct island also yields an ECP violation as the trace in Spec CP of the adjunct is not properly governed. This sequence of events is common among complex adjunct clauses, although not invariable as will be discussed later.

Coordination Structure Constraint

(4) * Who does Bill like and live in a VW van?



The VP in coordination structures is not L-marked because it is not θ -governed. It does, however, dominate the lower VPs, making it a BC for anything within those VPs. The VP is also

a barrier by virtue of its being a BC and not an IP. Therefore, movement out of a VP into Spec CP is a violation of subadjacency. According to Barriers, movement out of coordination structures is therefore impossible.

The Minimalist Program (MP) (Chomsky 1995, 2000, 2002) was intended to be an enormous deviance from GB, using fewer theory internal conditions and concentrating more on simplicity or “economical” processes. MP is an attempt to find a “perfect” grammar. In MP, principles that are applicable in all languages are less costly and therefore preferred, while language specific principles are more expensive. Still a work in progress, MP has revised the theory of movement by eliminating many of the GB operations and requirements. After doing away with S-structure, D-structure, and government and either reforming or completely deleting any principles that depend on them, MP is left with three main operations: Merge, Agree, and Move.

Merge takes two syntactic objects (α, β) and forms $K(\alpha, \beta)$

In other words, the derivation begins by selecting two lexical items from the numeration and merging them, forming a projection. The derivation continues by selecting another lexical item from the numeration and merging it into the derivation forming a projection which encompasses both the new lexical item and the previously formed constituent. This continues until the numeration is empty.

Agree establishes a relation between a lexical item α (LI_α) and a feature F in some restricted search space (domain). This is language specific.

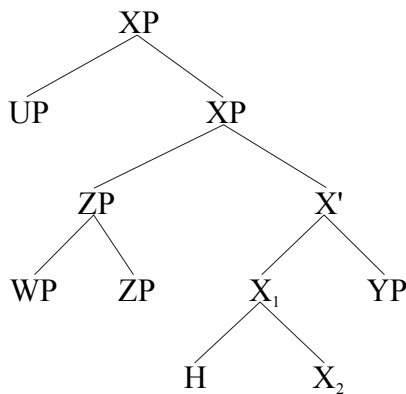
All features of a lexical item must agree with a corresponding feature in another node of the derivation. Agree takes place in a Spec head relation.

Move establishes agreement between α and F and merges P(F) to αP , where P(F) is a phrase determined by F and αP is a projection headed by α . P(F) becomes the Spec of α ([Spec, α]).

As agree takes place in a Spec Head relation, it is often necessary for a constituent to move to the specifier of a projection to check a feature. In MP, movement does not take place unless that movement checks a feature. If, after all movement has taken place, a feature remains unchecked, the derivation will crash.

Merge and agree or their combination are more simple than move, therefore, move is chosen only when neither merge nor agree is possible.

Minimalism also employs new definitions which express relations among constituents:



- Domain

The domain of a head α is the set of nodes contained in Max (α) that are distinct from and do not contain α .

In the above structure, the domain of X_2 is {UP, ZP, WP, YP, H}

- Complement Domain

The complement domain of α is the subset of the domain reflexively dominated by the complement of the construction. (also the *internal domain*)

The complement domain of X_2 (and H) is YP and whatever it dominates.

- Residue

The residue of α is the domain minus the complement domain. (also called the *checking domain*)

According to Chomsky (2000), the primary agents in Minimalist operations are lexical items (LIs). For the most part, movement affects functional lexical items, C, T, and v , these will be referred to as the core functional categories (CFCs). C expresses force/mood, T expresses tense/event structure, and v is a "light verb" head of transitive constructions. All three CFCs can have Φ -features (phi-features) which, according to Chomsky, are uninterpretable driving case agreement and move. For purposes of this paper we are primarily concerned with C. The uninterpretable features of C are what drive wh-movement into Spec CP. This requires that the wh-move into Spec CP to check the feature for convergence of the derivation.

It has been proposed in the literature (Sabel 2002) that in addition to their selectional properties, each CFC allows an extra specifier beyond its s-selection. For the purposes of this paper, this will be regarded as a parameter setting necessary for constructions such as Slavic multiple wh- fronting. There is no evidence that English, on the other hand, requires an extra specifier for any of its constructions, and therefore, the unmarked, one specifier, parameter setting is sufficient.

LIs, together with the operations merge, agree, and move, form phases (Chomsky 2000, 2002). Phases are propositional syntactic objects, comprised of either a verb phrase in which all θ -roles are assigned or a full clause including tense and force. Here it will be assumed that tense and force are required for a complete phase. Multiple phases in a derivation are developed in parallel and only phases in which all selectional requirements have been fulfilled will proceed past the phase level. Those in which all selectional requirements have not been satisfied will crash at the phase level. It is only the "edge" of a phase that is accessible to Move after the

phase level is complete. This is exemplified in the Phase-Impenetrability Condition (Chomsky 2000):

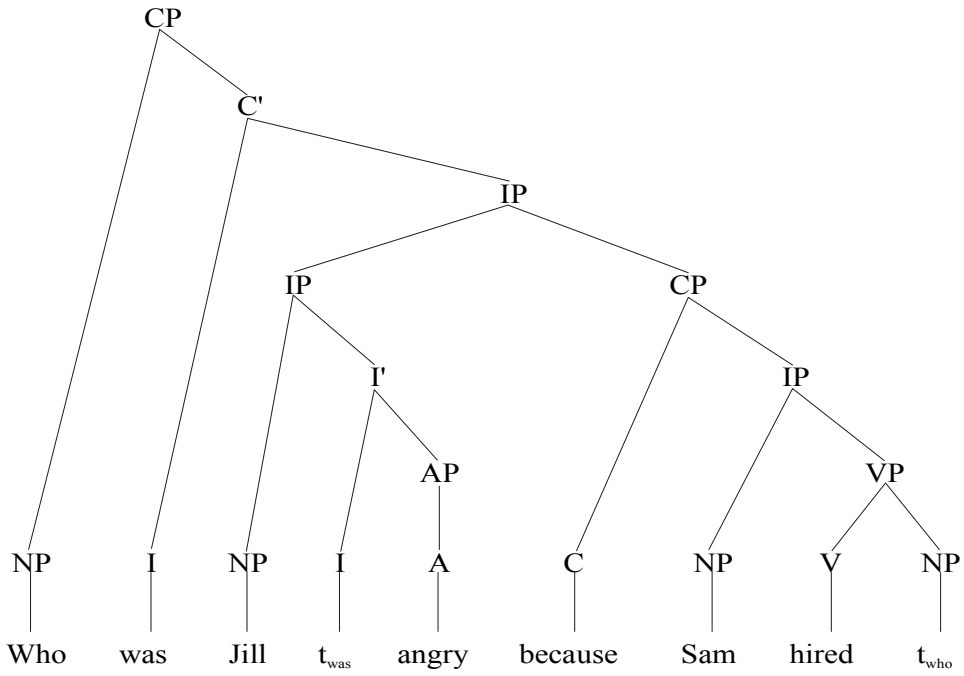
In a phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

This condition, in addition to Merge, Agree, and Move, becomes extremely important when developing a Minimalist approach to islands. For example, consider the derivation of the following non-island:

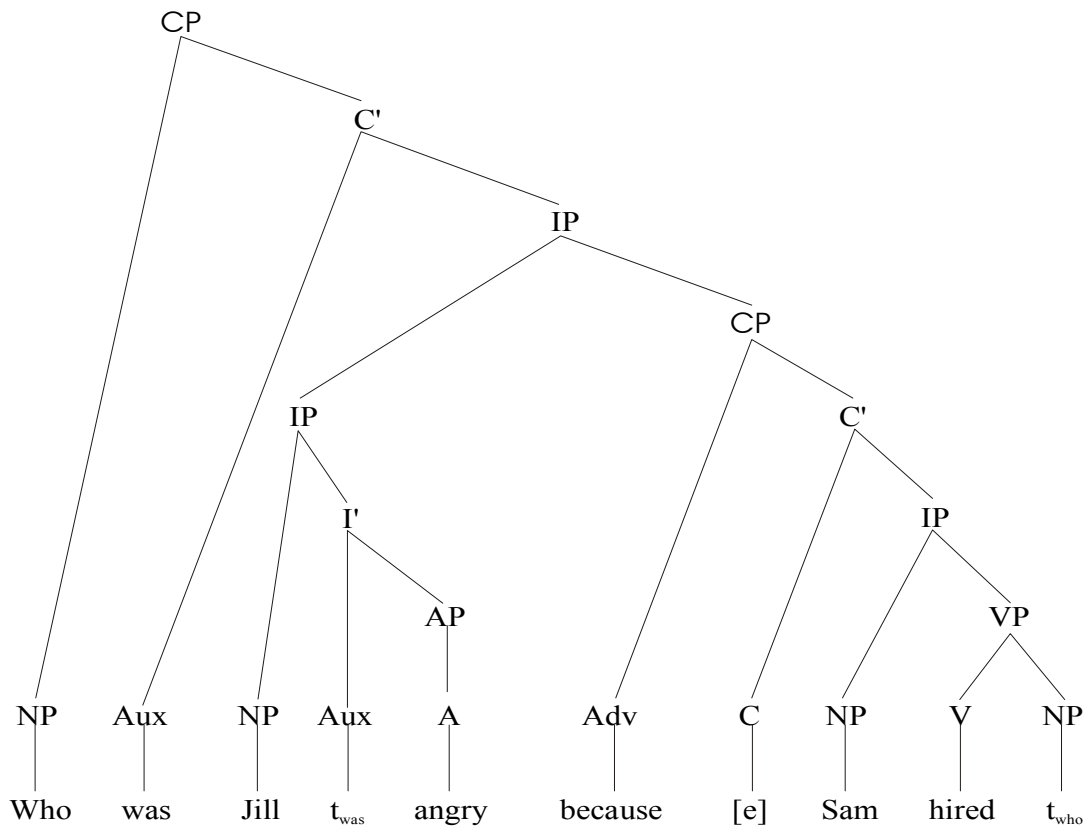
(5) which article is there some hope [$_{\alpha}$ that John will read t_{wh}]

Both phases are derived in parallel before they merge. The wh- phrase (*which article*) is first moved to Spec CP of the lower phase. It remains with an uninterpretable feature and therefore the phase cannot converge on its own. After the phases Merge and only the edge of the lower phase is accessible to the higher phase, the wh- is selected by the probe in Spec CP of the higher phase. Upon Move to Spec CP of the higher phase, the wh- agrees with the [Q] feature in C of the higher phase, the uninterpretable feature is deleted, the sentence converges and goes on to PF.

Considering the above, the existence of islands continues to be left unexplained. Notice that one of the more prominent features of a phases account of movement includes that Spec CP of the lower clause be vacant allowing for movement of the wh- constituent into the higher clause. Typically, (3) has the structure shown in the diagram below (assuming X bar theory). If this structure were correct, movement of *who* should not yield an ungrammaticality.



I propose that this structure is incorrect and replace it with the following structure with evidence following:



Notice that the difference between the two structures is the placement of *because* in Spec CP rather than C. This difference is derived from the structure of subordinate clauses in Old English.

A distinctive feature of Old English adverbial clauses is the use of compound conjunctions.

(6) for Ðan Ðe on me is afunden ætforan Gode rihtwisnyss

because that in me is found before God justice

'because justice before God is found in me.' (Fischer et al. 2000)

for Ðæm/Ðan Ðe translates to modern English as *for that which* or *because*, *mid Ðæm Ðe* translates as *with that which* or *when*. Old English *Ðe hwile Ðe* becomes Middle English *whilst* with *whiles that* as an intermediate stage. It is the history of adverbials such as these that dictates their phrase structure. In Middle English, *that* begins to be used as a general indicator of subordination with the preposition (after that, until that) or adverb (so that, now that) that precedes it indicating the type of subordination. It was not until Modern English that speakers began to drop the *that* leaving only the preposition or adverb to introduce the adverbial clause. This historical evidence indicates that adverbials such as *because*, *while*, and *after* should occupy the Spec CP position in the phrase structure rather than the traditional C representation, because *Ðe* “that” occupies the C position.

Minimalism also includes the Shortest Movement Condition (SMC) which stipulates that several short movements are more economical than one long one. This correlates nicely with the requirement that the moving constituent must move to the “edge” of a phase to be visible to the next higher phase. If *because* is in Spec CP, this position is occupied and no other constituent can move into it. If the *wh*- phrase cannot move into the Spec CP of the lower clause, it is not

visible to the higher clause. Movement directly into the Spec CP of the higher clause, a longer movement than one into the lower Spec CP, is a violation of the SMC and the derivation crashes. When combined with the definition of phases, I propose that the SMC requires that a constituent stop in each phase to check a feature. If that feature is uninterpretable and the constituent is at the “edge” of the phase, the constituent is free to move on to the next higher phase.

Several theorists have correctly come to the conclusion that extraction out of islands is only possible if it takes place from a θ -position.

Consider the following derivations:

(7) *How do you wonder what Joe caught?

(8) ?What do you wonder how Joe caught?

Neither (7) nor (8) is completely acceptable, but (7) is significantly less grammatical than (8).

Both have an occupied Spec CP in the lower clause which requires that movement into the higher clause violate the SMC yielding an ungrammatical derivation. (8), however, is more acceptable because it is an argument that has moved from within the lower VP, thereby crossing only one phase boundary. Whereas the *wh-*, *how*, in (7) begins outside the lower phase, passes through the lower phase and into Spec CP of the higher phase without stopping to check a feature at the edge of the lower phase. Because an argument begins within a phase and stops in that same phase to check a feature, it will move a shorter distance and will, therefore, be more acceptable than adjunct movement, which begins outside the phase.

Adjunct islands still exist within Minimalism, primarily because the Spec CP of the adjunct phase is occupied by an adjunct introducer such as *because*, *during*, *while*, or *after*.

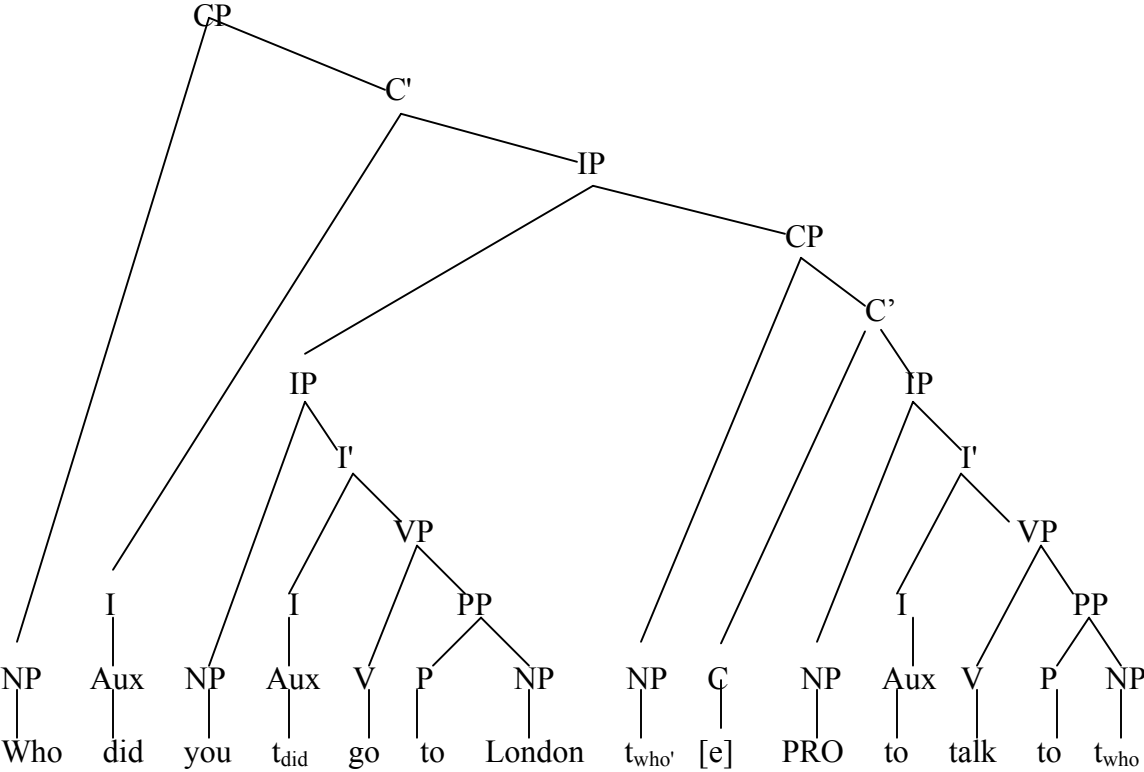
Adjuncts that allow extraction are now easily explained. Consider (9):

(9) Who did you go to London to talk to?

(9) is an example of wh- extraction from an adjunct that has not previously been accounted for.

It is perfectly grammatical in most, if not all, dialects of Modern English. *Who* is an internal argument of *talk* and the Spec CP position of the adjunct is left unoccupied. It is non-problematic A' movement throughout, and the intended meaning is easily interpretable.

The following diagram shows the derivation:



The two phases begin their derivations in parallel, each with merge and agree. *who* of the lower phase moves to Spec CP where it is now visible by the higher phase. When the two phases merge, *who* is available for movement into the higher phase where it checks the interpretable Q feature in C. The trace of the uninterpretable feature in the lower phase deletes and the derivation converges.

The above derivation proves that many of the principles of Government Binding can either be eliminated or revised. An adoption of the principles of the Minimalist Program is

sufficient to account for the Adjunct Island Constraint. I believe that the other island constraints can be accounted for using the same methods.

The Meaning

Although syntax is wonderful for demonstrating the structure of any given sentence as well as the derivation of such sentences, it is overwhelmingly apparent that syntax alone cannot account for the grammaticality of extraction out of islands. The comprehension of a discourse is dependent upon the hearer's ability to understand the way that utterances or phrases combine to form interpretable propositions. Therefore, something more than syntax is required. The relation between utterances is often reliant upon material that is understood, though not explicitly stated, by both parties. In addition to a knowledge that is common to all parties in a conversation of the world, there are inherent rules of conversation by which all speakers and hearers abide, as pointed out by Paul Grice (1989).

- Quantity

1. Make your contributions as informative as is required (for the purposes of the current exchange).
2. Do not make your contribution more informative than is required.

- Quality

1. Do not say what you believe to be false.
2. Do not say that for which you lack adequate evidence.

- Relation

1. Be relevant.

- Manner

1. Avoid obscurity of expression.
2. Avoid ambiguity.
3. Be brief (avoid unnecessary prolixity).

4. Be orderly

Somehow these rules are understood and accepted by the majority of interlocutors. The abiding by or flouting of Grice's Maxims allows inferences to be made as to the relation between utterances. Kehler (2002) gives the following example:

(10) John took a train from Paris to Istanbul. He has family there.

The inference is that his having family there is the reason that John took the train to Istanbul, although it is not explicitly stated. This inference, naturally drawn due to the assumption that the speaker has abided by Grice's Maxims and the utterances are related to each other, is what makes this discourse coherent.

According to Kehler (2002), it is this coherence that allows people to communicate and understand more meaning than that conveyed by the sentences alone. From this, Kehler compiles a theory of the possible ways in which successive utterances can be combined to form a coherent discourse based on David Hume's categorization (Hume 1748 repeated in Kehler 2002).

Though it be too obvious to escape observation that different ideas are connected together, I do not find that any philosopher has attempted to enumerate or class all the principles of association – a subject, however, that seems worthy of curiosity. To me there appear to be only three principles of connection among ideas, namely *Resemblance*, *Contiguity* in time or place, and *Cause or Effect*.

Kehler analyzes the three classes of Hume's relations, Resemblance, Contiguity, and Cause and Effect. "The recognition of Resemblance requires that commonalities and contrasts among corresponding sets of entities and relations be recognized" (Kehler 15). He asserts that for each multi-clause utterance the hearer identifies a relation that applies over a set of entities from the first sentence or clause and a corresponding relation over a second set of entities in the second sentence or clause. Coherence is the result of inferring a common or contrasting relation

between the two sentences. He believes that the canonical instance of Resemblance is Parallel as shown in (11) (Kehler's 21).

(11) Dick Gephart organized rallies for Gore, and Tom Daschle distributed pamphlets for him. *Organized rallies for* and *distributed pamphlets for* are parallel, possibly under the heading *do something to support*, just as *Dick Gephart* and *Tom Daschle* are both known to the discourse participants as politicians. The parallel elements *Gore* and *him* refer to the same individual. Although none of these relations are explicitly stated, the hearer infers the common relation between the two clauses, primarily due to the conjunction *and*.

Another Resemblance possibility is Contrast, which focuses upon the points of departure among corresponding sentences or clauses. There are two types of contrast: (i) the relations expressed by the utterances are contrasted, and (ii) a set of parallel entities is contrasted, as exemplified in (12) and (13) (Kehler's (22) and (23)).

(12) Gephart supported Gore, but Arney opposed him.

(13) Gephart supported Gore, but Arney supported Bush.

The difference between Parallel and Contrast is determined by whether the similarities or differences between the two sentences are highlighted. Notably, whether the conjunction *and* or *but* is used.

The remaining Resemblance relations are derived from a membership or subset relationship in a set of clauses. For example, Exemplification is the relation between a general statement and an example of that statement as in (14) (Kehler's 24).

(14) Young aspiring politicians often support their party's presidential candidate. For instance, Bayh campaigned hard for Gore in 2000.

One who hears this set of utterances would immediately infer that Bayh is a young politician and Gore was his party's presidential candidate. A reversal of the clause order adds Generalization to the Resemblance Relations.

(15) Bayh campaigned hard for Gore in 2000. Young aspiring politicians often support their party's presidential candidate.

(15) (Kehler's 25) leads the hearer to draw the same conclusion as (14), the only difference being which clause is a subset of which.

Similar to the difference between Parallel and Contrast, negation of Exemplification and Generalization leads to the Exception relations (i) and (ii), as shown in (16) and (17) (Kehler's (26) and (27)) respectively.

(16) Young aspiring politicians often support their party's candidate. However, Rudy Guiliani supported Mario Cuomo in 1994.

(17) Rudy Guiliani supported Mario Cuomo in 1994. Nonetheless, young aspiring politicians often support their party's candidate.

The final Resemblance relation is Elaboration which is a limiting case of the Parallel relation.

(18) A young aspiring politician was arrested in Texas today. John Smith, 34, was nabbed in a Houston law firm while attempting to embezzle funds for his campaign.

It is imperative when participating in a conversation in which (18) (Kehler's 28) is used, that the hearer recognize that the two utterances refer to the same event.

The second category that Kehler elaborates upon is the Cause-Effect relation, which is based on a different type of reasoning than that for Resemblance. The hearer must draw a path of implication connecting a pair of utterances. All of the sub-relations of Cause-Effect are a

derivative of Result. With a Result relation, there is information that must be presupposed in order to facilitate coherence.

(19) George is a politician, and therefore he's dishonest.

When interpreting (19) (Kehler's (32)), it must be presupposed that *being a politician implies being dishonest*. The same presupposition is required for the coherence of the following three relations with only slight variations.

Explanation is often indicated by the conjunction *because* as in (20):

(20) George is dishonest because he's a politician.

Violated Expectation is used to contradict an expected inference as in (21), often with the conjunction *but*:

(21) George is a politician, but he's honest.

Violated expectation with reversed clause order, as in (22), is the Denial of Preventer relation:

(22) George is honest, even though he's a politician.

The primary requirement for each of the Cause-Effect relations is that the hearer infer an implicational relationship between the utterances. Cause-Effect relations, as opposed to the Resemblance relations, focus on clause level semantics rather than the lexical level.

The final class of relations analyzed by Kehler (2002) is Contiguity. The only sub-relation he proposes is Occasion, to which he gives two formats, to infer a change of state for a system of entities from the first sentence or clause to the second or vice versa. Kehler explains Occasion as a "mechanism for communicating a complex situation in a multi-utterance discourse by using states of affairs as points of connection between partial descriptions of that situation"

(22). For example, consider (23) (Kehler's 38):

(23) Larry went into a restaurant. The baked salmon sounded good and he ordered it.

The hearer's experience in restaurants allows him to infer that Larry was probably seated, either read a menu or was told about the salmon by a server, and spoke to a server about his desired entrée. It is the 'script' or the set of events that typically co-occur in a particular setting and a predictable order that allows this sequence of utterances to be coherent. The Occasion relation allows the speaker to leave unsaid the predictable events of a situation that are otherwise provided by world knowledge.

Kehler uses the above relations to account for the extractability of constituents out of coordinate structures. According to Ross's Coordinate Structure Constraint (1967):

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

This is obviously incorrect as evidenced by (24), which Ross realized.

(24) a. I went to the store and bought some whiskey.

b. Here's the whiskey which I went to the store and bought.

c. What did you go to the store and buy?

After reviewing several theories regarding extraction out of coordinate structures, Kehler comes to the conclusion that different types of extraction are possible out of different types of clause relations. In the Resemblance relation Parallel, across the board (ATB) extraction is allowed meaning that the same constituent must be extracted from each sentence, but all other extractions will yield an ungrammatical result.

(25) * What book did John buy and read the magazine?

(26) What book did John buy and read?

In the Cause-Effect relations Violated Expectation (27) and Result (28), extraction is possible out of the first (primary) clause without extraction out of the second (secondary) clause.

(27) How much can you drink and still stay sober?

(28) That's the kind of firecracker that I set off and scared the neighbors.

This extraction is only possible if there is a primary clause as well as a secondary clause. If both clauses are primary, as in (29), any extraction yields an ungrammatical result.

(29) a. Joan went off to New York for the weekend and cannot afford to get herself a new rug.

b. *Where did Joan go off to for the weekend and cannot afford to get herself a new rug.

Finally, Kehler examines the Contiguity relation Occasion from which he deducts extraction is possible out of the clauses that are not scene-setting. This is exemplified in (24b) repeated as

(30). (31) shows the awkward effect of extraction from a secondary clause.

(30) Here's the whiskey which I went to the store and bought.

(31) *What store did you go to and buy the whiskey?

Consider the difference between the seemingly synonymous coordination structure (31) and its adjunct counterpart (32) which is perfectly acceptable.

(32) Where did you go to buy the whiskey?

That (31) and (32) are unequal was pointed out by Schmerling(1972) (cited by Kehler 2002).

Schmerling gave the following two examples:

(33) a. *I went to the store and bought some whiskey, but the sales clerk persuaded me to buy Ripple instead.

b. I went to the store to buy some whiskey, but the sales clerk persuaded me to buy some Ripple instead.

The fact that the two are not synonymous becomes important when establishing the extractability out of adjuncts.

The difference between (33a) and (33b) in the Occasion relation is also the difference between extraction out of coordinate structures and adjuncts. Adjuncts can be categorized in most of the same ways as Kehler categorizes coordinate structures, and extraction is possible out of the same types of relations with only one exception. Due to the meaning of the lexical items that introduce most adjuncts, not all of the relations apply. For example, it is extremely uncommon for an adjunct to have a Resemblance relation with the main clause as the Resemblance relation is typically designated with conjunctions such as *and* or *but*. The Cause-Effect relation for adjuncts, on the other hand, is identical to Kehler's Cause-Effect for coordination structures where extraction is only possible from the primary clause. Consider (34)

- (34) a. Jack and Jill went up the hill because they needed some water.
b. Where did Jack and Jill go because they needed some water?
c. *What did Jack and Jill go up the hill because they needed?

The only variation from Kehler's coordination structure constraint is that adjuncts allow extraction from any clause within the Occasion relation, including a scene-setting clause.

- (35) a. Here's the whiskey which I went to the store to buy.
b. Where did you go to buy the whiskey?
c. What did you go to the store to buy?

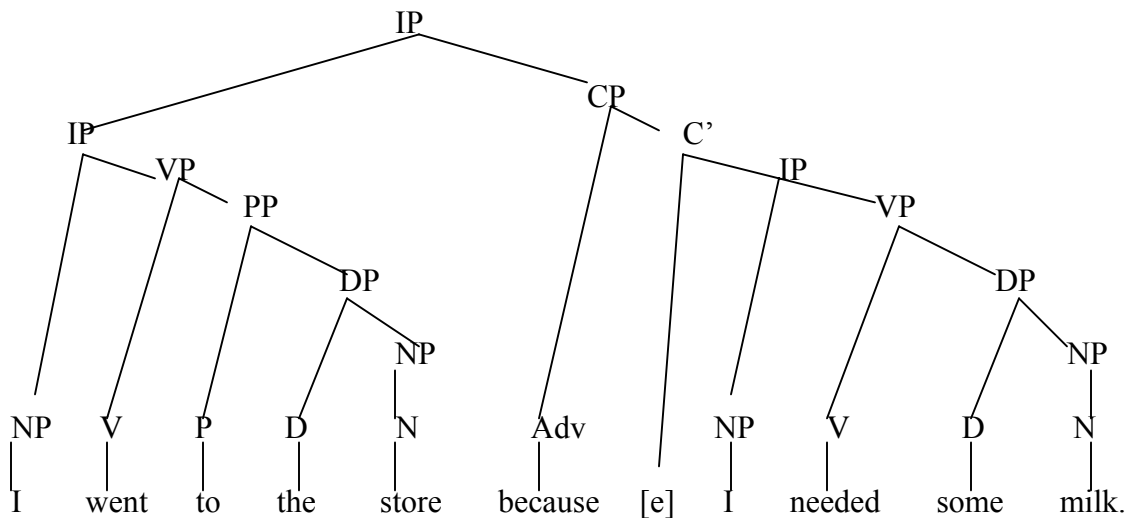
The above shows that Kehler's analysis that extraction from coordinate structures is based on the relation between phrases also applies to adjuncts. This conclusion not only explains which adjuncts allow extraction, but also strengthens the syntactic account. The only instance, syntactically or otherwise, in which extraction is possible out of an adjunct clause is when the adjunct is not introduced by an adverbial word or phrase and the subject of both clauses is the same. This apparently occurs only in clauses that fall into the Occasion relation for adjuncts.

The Merger

The two sections above are seemingly at opposite ends of the linguistic spectrum. The first is purely syntactic, based on rules and constraints where the second is semantic, based on the meaning of the words and the intuitions of the participants. The theories, however, not only account for the same phenomena, namely wh-extraction out of adjuncts, they also integrate nicely with each other. Recall that extraction out of adjuncts within Minimalism requires, first and foremost, that the Spec CP of the lower clause be vacant, allowing the wh-a place at the edge of a phase to be “seen” by the higher phase. Also recall, that adjuncts that fall within Kehler’s Occasion relation are the only one that allows extraction. The adjuncts that fall within the Occasion relation are also those that do not require an adjunct introducer such as *because*, *during*, *while*, or *after*. These adjunct introducers all fall into Spec CP in the syntactic representation.

The diagram below illustrates the syntactic representation of *I went to the store because I needed some milk*, with discussion to follow.

(36)



When an argument from the adjunct is extracted, the result is the ungrammatical (37).

(37) *what did I go to the store because I needed.

(36) falls into Kehler's Cause-Effect relation Explanation, which prohibits extraction out of coordinate structures. It has been extended to adjuncts, and again, extraction is prohibited. The syntactic explanation for this ungrammaticality lies in the fact that the Spec CP of the adjunct clause is occupied by because making it impossible for anything else within the clause to move into the higher clause.

Other example sentences that produce an ungrammatical result due to extraction out of adjuncts include (38) – (40)

(38) *who did they leave before speaking to

(39) *what did John drive his car while reading

(40) *what did John leave after fixing

(38) and (39) fall into the Resemblance relations, Exception and Elaboration respectively, while (40) falls into the Cause-Effect relation Violated Expectation. All three of these relations disallow extraction and all three sentences have an occupied Spec CP prior to movement.

It is adjuncts that fall into the Occasion relation that, seemingly without fail, have a vacant Spec CP. This allows syntactic as well as pragmatic extraction. For example:

(41) What is Susan studying to be?

(42) Who did John buy that dog to protect?

The use of the infinitive in all of the clauses that allow extraction is not a coincidence. The infinitive adjunct is apparently "closer" to the matrix clause both syntactically and semantically. The infinitive subject, represented in the syntax as PRO, is an understood null subject. PRO is understood as a copy of the subject of the tensed verb, which is most often found in the matrix clause, although it has no overt phonetic form. The lower clause must look

to the higher clause to allow for complete comprehension. The dependence of the lower clause on the higher clause increases its coherence. It is this embellished coherence, found only in the Occasion relation, that allows extraction out of adjunct clauses.

Conclusion

In syntax, it is yet to be determined whether a phase consists of only a verb with all of its arguments or a full clause including tense and force. It has been argued that an infinitive clause is without tense and force and is not a phase. As tense and force are found in the C system, a clause without tense and force is without such a system and must look to the higher clause to acquire tense and force. It follows that the *wh*- word or phrase found in an infinitival adjunct is actually in the same phase as the Spec CP to which it moves and there is no boundary that it must cross. It seems unlikely, however, that an adjunct is in the same phase as the verb and its arguments because the adjunct is unequivocally separate and apart from the verb phrase. It also seems unlikely that different types of adjunct phrases would be classified differently. We will then assume that all types of adjuncts have a complete C system and constitute a phase.

The possibility of *wh*- extraction from an adjunct clause is predictable using a combination of syntax and semantics, specifically Minimalism and Coherence. The Minimalist approach allows linguists to determine the structure that is necessary for such extraction while the Coherence approach allows them to determine whether the relation between clauses is a viable option for extraction. Simply stated, if there is a vacant Spec CP in the adjunct phrase and the relationship between the clauses is that of Occasion, then movement from the adjunct clause into the matrix clause is permissible. If either of these conditions is not met, then extraction is forbidden.

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Vita

Danielle Alfandre was born on September 13, 1974, in Mahwah, New Jersey, where she lived until she began college. In 2001, she completed a Bachelor of Arts in English and Spanish at Southeastern Louisiana University. Shortly thereafter, Danielle was introduced to and fell in love with linguistics. She then decided to pursue a master's in linguistics. After attaining her Master of Arts degree from Louisiana State University in December 2004, Danielle intends on pursuing a doctorate with the hopes of attaining a position as a university instructor.