Syntax 380L
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Wh-Movement

For notational convenience, I have used traces (t_i, t_j etc.) to indicate copies throughout this handout.

1 Wh-Movement

Question formation involves fronting of the questioned element (e.g. in the Germanic, Romance and Slavic languages). Typically this fronting is obligatory.

(1) a. Who_i does Martin like t_j?
   b. *Martin likes who?

The * on (1b) refers to the fact that (1b) is not a possible information seeking question. It can be used as an echo question though.

The process of question formation in English involves two distinct movements: I-to-C movement and fronting of an interrogative phrase. The two movements are independent of each other. I-to-C movement can take place without interrogative phrase fronting and interrogative phrase fronting can take place without I-to-C movement.

(2) a. Y/N Questions: I-to-C but no fronting:
   Has Martin left?
   Did Martin leave?
   b. Embedded Questions: fronting but no I-to-C:
   I wonder [who John will annoy today].
   ???/*I wonder [who will John annoy today].
   I wonder [who John annoyed today].
   ???/*I wonder [who did John annoy today].

Since most interrogative pronouns in English (the exception is how) start with wh, the process by which interrogative phrases are fronted is referred to as wh-movement.

1.1 Pied-piping

Wh-movement is triggered by the presence of an interrogative pronoun. We can assume that interrogative pronouns have a [+wh] feature that forces them to move.

(3) Who_i does Derek like t_j?

Wh-movement can also be triggered by wh-determiners.

(4) [Which doctor]_i does Derek like t_j?

Presumably the wh-determiner’s [+wh] feature percolates and makes the entire phrase which doctor count as a wh-phrase.
Since possessors in English seem to occupy the same syntactic position as \textit{wh}-determiners, it is not surprising that when interrogative pronouns function as possessors, their [+wh] feature percolates and makes the entire phrase into a \textit{wh}-phrase.

\begin{enumerate}
\item \[ \text{a. } \text{[Whose doctor]} \text{ does Derek like } t_i? \]
\item \[ \text{[Who is person]'s doctor] does Derek like } t_i? \]
\item \[ \text{b. } \text{[Whose doctor]'s brother] does Derek like } t_i? \]
\item \[ \text{[Who is person]'s doctor]'s brother] does Derek like } t_i? \]
\end{enumerate}

From a certain perspective, in (5), it is only \textit{whose} or \textit{which person} that needs to move. However in order to move \textit{whose} or \textit{which person}, we need to take along a bigger constituent that contains it. This process is called \textbf{pied-piping}.

In (5), if we try to move something smaller than the phrase that actually moves, we get ungrammaticality.

\begin{enumerate}
\item \[ \text{a. } \text{*[Whose] does Derek like } [t_i \text{ doctor}]? \]
\item \[ \text{*[Which person]'s does Derek like } [t_i \text{ doctor}]? \]
\item \[ \text{b. } \text{*[Whose] does Derek like } [t_i \text{ brother}]? \]
\item \[ \text{*[Which] does Derek like } [[t_i \text{ person}] \text{ doctor}]? \]
\end{enumerate}

There are cases when pied-piping is optional. This is often the case with \textit{wh}-phrases that are complements of prepositions. \textit{wh}-complements of prepositions are also able to percolate their [+wh] feature to the entire PP.

\begin{enumerate}
\item \[ \text{a. } \text{[To whom] will Derek give a present } t_i? \]
\item \[ \text{[On which table] did Derek put the book } t_i? \]
\end{enumerate}

\subsection{1.2 Preposition Stranding}

Pied-piping of the preposition is not obligatory in (7). It is also possible to leave the prepositions behind and just move the \textit{wh}-phrase.

\begin{enumerate}
\item \[ \text{a. } \text{[Whom] will Derek give a present } t_i? \]
\item \[ \text{[Which table] did Derek put the book } t_i? \]
\end{enumerate}

This process is known as \textbf{preposition stranding}.

Preposition stranding is not possible in Latin and in any Romance language.

\begin{enumerate}
\item \[ \text{French} \]
\item \[ \text{a. Stranding} \]
\item \[ \text{*Qui as-tu parlé de?} \]
\item \[ \text{who have-you talked about} \]
\item \[ \text{b. Pied-piping} \]
\end{enumerate}
De qui as-tu parlé?
about who have-you talked
‘Who have you talked about?’

(10) Italian
a. Stranding
*Cui hai parlato di?
who have-you talked about
b. Pied-piping
Di cui hai parlato?
about who have-you talked
‘Who have you talked about?’

Preposition (or rather postposition) stranding also does not seem to be an option in any postpositional language such as Japanese, Korean, Hindi, Kashmiri etc.

Prescriptive grammarians suggest that it is to be avoided in English too, but there seems to be little other reason to avoid it. In fact, in certain environments pied-piping of prepositions that could have been stranded feels artificial and stilted.

Sometimes the pull of prescriptive grammar (pied-pipe, don’t strand!) and the syntax of English (strand!) is met simultaneously in curious sentences like the following.

(11) [To whom] did you give the book to _?

2 Island Phenomena

Wh-Movement is unbounded i.e. a wh-phrase can move unboundedly far from the clause where it is merged.

(12) a. Who, does Magnus like t_i?
    b. Who, did Loida think that Magnus liked t_i?
    c. Who, did Agustin believe that Loida thought that Magnus liked t_i?
    d. ...

However, it is not always possible to move a wh-phrase from one location to another. Configurations from which extraction is not possible are called islands.

2.1 Adjunct Islands

An important class of island consists of adjunct clauses. Adjunct clauses are very robust islands and do not allow any kind of expression to be extracted out of them.

Extraction out of Adjunct Clauses:

(13) because clauses
    a. John is unhappy because Sally likes Molly.
    b. *Who, is John unhappy because Sally likes t_i?
(14) *when clauses
   a. John is unhappy when Sally hits Molly.
   b. *Who, is John unhappy when Sally hits t_i?

(15) *if clauses
   a. John will be unhappy if Sally hits Molly.
   b. *Who, will John be unhappy if Sally hits t_i?

(16) Relative clauses
   a. Olafur likes the artist who composed Hyperballad.
   b. *What, does Olafur like the artist who composed t_i?

2.2 Wh-islands

Another class of island is exemplified by the wh-islands shown below. These islands are weak in
that extraction of arguments seems to only cause degradation and not ungrammaticality. Extraction of
adjuncts out of wh-islands, however, leads to ungrammaticality.

(17) a. I wonder whether to invite Preston.
   b. ?Who, do you wonder whether to invite t_i?
   c. I wonder whether to fix my car today?
   d. *How, do you wonder whether to fix my car today t_i?

(18) a. Mary wonders whether Will invited Preston.
   b. ?? Who, does Mary wonder whether Bill invited t_i?
   c. Mary wonders whether she should fix her car today.
   d. *How, does Mary wonder whether she should fix her car today t_i?

The existence of wh-islands can be related to the fact that deriving these involves skipping an
already filled [Spec,CP] position. This is similar to what we found for A-movement. Note though
that the argument-adjunct asymmetry that we find with wh-islands does not follow directly from
the ‘do not skip intervening [Spec,CP]’ requirement on wh-movement.

2.3 Subject-Object Asymmetries

Subject-Object Asymmetries: All arguments are not created equal. It seems to be easier to extract
objects rather than subjects. Further it seems to be impossible to extract from subject but it is
possible to extract out of objects.

2.3.1 Comp-trace Effects

Comp-trace effects: It is not possible to extract from the subject position in the presence of an
overt Complementizer.

(19) *that-trace
(20) *for-trace

a. Ásta would prefer for Einar to marry Hafdis.
   b. *Who, would Ásta prefer for t, to marry Hafdis?
   c. *Who, would Ásta prefer t, to marry Hafdis?
   d. Who, would Ásta prefer for Einar to marry t,?

2.3.2 Sentential Subjects

Extraction from out of a clause in subject position: we know that the arguments of adjectives can be left behind in their in-situ object position or moved to the subject position. It turns out that extraction out of such clauses is possible only if they are left in the object position.

(21) a. It is important to invite Will to our party.
   b. (?) Who, is it important to invite t, to our party?
   c. To invite Will to our party is important.
   d. * Who, is to invite t, to our party important?

(22) a. It is probable that Bill likes Einar.
   b. Who, is it probable that Bill likes t,?
   c. That Bill likes Einar is probable.
   d. *Who, is that Bill likes t, probable?

2.3.3 Extraction out of NP

Extraction out of a clause embedded in an NP in subject position: Extraction from a clause embedded in an NP leads to degradation. We find the familiar argument-adjunct asymmetry at work - extraction of arguments leads to a minor degradation while extraction of adjuncts leads to ungrammaticality.

(23) Complex NP Islands (in object position)

a. John heard [a rumor that you had read the Sandman comics].
   b. ?[Which book], did John hear [a rumor that you had read t,]?
   c. John announced [a plan to fix the red car].
   d. [Which car], did John announce [a plan to fix t,]?
   e. *How, did John announce [a plan to fix the red car t,]?

However, in all of the above examples, the NP from which we were extracting was in object position. If the relevant NP is placed in subject position the previously marginal but grammatical example becomes wholly ungrammatical.
Complex NP Islands (in subject position)

a. [A rumor that you read the Sandman comics] has been circulating.

b. *[Which book], has [a rumor that you read it] been circulating?

Extraction out of PPs embedded inside NPs displays the same pattern. Extraction from subject NPs leads to ungrammaticality while extraction from object NPs is grammatical (though perhaps slightly marginal).

(25) a. What, should I bring [a bottle of it]?

b. *What, should [a bottle of it] be brought?

3 Other Environments for A’-Movement

• Relative Clauses

(26) Finite Relative Clauses

a. the man who Roland met

b. the man who Susan thinks that Roland met

c. *the man who Susan likes the boy who gave a book to

d. ??the car that Bill knew how John had fixed

(27) Infinitival Relative Clauses

a. I found a book for you to read.

b. I found a book for you to arrange for Mary to tell Bill to give to Tom.

c. *I found a book for you to arrange for Mary to meet the boy who gave to Tom.

d. ???I found a book for you to wonder whether to read.

• Topicalization


b. This book, I asked Bill to get his students to read.


d. ??This book, I wonder who read.

• It-Clefts, Pseudoclefts

(29) it-clefts

a. It is this book that I really like.

b. It is this book that I asked Bill to get his students to read.

c. *It is this book that Susan likes the boy who gave to Roland.

d. ??It is this book that I wonder who read.

• Tough-movement

Tough-movement is the name given to a certain kind of displacement found in complements of adjectives like easy/tough etc.
(30)  a. John is easy for us to please.
    b. John is easy for us to convince Bill to do business with.
    c. *John is easy for us to introduce Mary to the woman who loves.
    d. *What is John easy to give to?
       (* compare with: John is easy to give presents to *)

In addition to the above constructions, $A'$-movement is also found in comparatives, and degree clauses (e.g. ‘John is tall enough for you to see.’). The element that $A'$-moves in many of these constructions is a covert element, sometimes called a null operator. The constructions where a null operator appears are called null operator constructions.

4 Some Properties of Movement

• Islands

4.1 Properties of $A'$-Movement

• Strong and Weak Crossover

Strong Crossover: a pronoun cannot bind a wh-chain it c-commands.

(31)  a. *Who$_t$ does he$_t$ think t$_t$ left?
       (* bad on the reading: who is such that he thinks that he left? *)
    b. *Who$_t$ does he$_t$ think you saw t$_t$?
       (* bad on the reading: who is such that he thinks that you saw him? *)
    c. Who$_t$ t$_t$ thinks that he$_t$ left?
    d. Who$_t$ t$_t$ thinks that you saw him$_t$?

Weak Crossover: If a wh-chain and a pronoun are co-indexed, the tail of the wh-chain must c-command the pronoun.

(32)  a. Who$_t$ t$_t$ loves his$_t$ mother?
    b. *His$_t$ mother likes every boy$_t$.
       (* bad on the reading: Who is such that his mother loves him? *)

Recall that weak-crossover is also found with quantifiers.

(33)  a. Every boy$_t$ likes his$_t$ mother.
    b. *His$_t$ mother likes every boy$_t$.
       (* bad on the reading that (a) had. *)

This (among other things) has led people to propose that quantifiers also move by $A'$-movement. However, this movement is covert and takes place at LF (the level of Logical Form). At this level the configurations with quantifiers and wh-phrase are identical.

(34)  a. Every boy$_t$ [t$_t$ likes his$_t$ mother].
    b. *Every boy$_t$ [his$_t$ mother likes t$_t$].
A-movement, on the other hand, does not trigger WCO.

(35) Every boy, seems to his, mother [ti to be intelligent].

Licensing of Parasitic Gaps

(36) Which book, did John file ti [without reading ti]?

The second gap, inside the without reading clause, is called a parasitic gap because it depends upon the main gap (associated with file) for its existence. This can be seen below:

(37) a. *John filed Oresteia [without reading pg].
    b. John filed Oresteia [without reading it].

Only A'-movement is able to license parasitic gaps. A-movement is not able to license parasitic gaps.

(38) a. *This book was filed [without reading pg].
    b. *This book seems to have been filed [without reading pg].

Case Requirement on the launch site of A'-movement:

A'-movement is not case-driven. The tail of an A'-chain must always receive case. This is in contrast to the tail of a non-trivial A-chain, which must not receive case.

The case-requirement is nicely exemplified by relative clauses in which there is null-operator movement.

(39) a. the student [Op, [Mary is fond of ti]]
    What{i} should I bring [a bottle of ti]?
    b. * the student [Op, [Mary is fond ti]]
    *What{i} should I bring [a bottle ti]?

5 Pre-Minimalist Approaches to Island Effects

Observation:

• It is not possible to extract from adjunct clauses.
• It is not possible to extract from clauses in subject position/clauses embedded in subject position.

Based on these two observations, it was proposed that for a clause to not be an island for extraction, the clause must be a complement.

The proposal used proper government as a theoretical primitive, which we can recast as sisterhood with a head. So subjects and adjuncts are not sisters of any head, while objects are. In order for us to be able to extract from a maximal projection, the maximal projection must be properly governed.

Proper Government also surfaces in what is called the ECP (the empty category principle). The ECP is a principle that regulates where empty categories (copies, null elements like empty complementizers etc.) can appear.
The ECP states that empty categories must be either (i) properly governed or (ii) antecedent governed. **Antecedent Government** captures the insight that no two consecutive links in a movement chain can be very far from each other. We can recast *antecedent government* as **local c-command**.

The ECP has been used to explain Comp-trace effects. It has been proposed that the presence of an overt complementizer *that/for* serves to block antecedent government.

- The above objects vs. everything else distinction, however, does not explain the distinction between arguments and adjuncts that is found in weak island configurations (*wh*-islands, Complex NP islands etc.). For this a distinct constraint called **subjacency** is proposed.

**Subjacency**: Two consecutive links of a chain can be separated by at most one NP/IP node. If a movement violates subjacency, then there is no **antecedent government** between the two links of the chain that violate subjacency.

Subjacency seems to be a weak constraint. As long as the movement chain only violates subjacency and not the ECP, we only find a minor degradation in acceptability. The ECP, on the other hand, triggers a strong violation leading to outright ungrammaticality.

Now, we can explain why there is an argument vs. adjunct asymmetry with *wh*-islands/Complex NP islands. Objects are sisters to a head (i.e. **properly governed**), so they do not need **antecedent government** to satisfy the ECP. Long-movement of objects as we see below violates subjacency, which is responsible for the degradation in acceptability.

(40) Subjacency violations, No ECP violation

a. ?*Which car* is \( [_{IP} \text{John wondering} [_{CP} \text{whether} C^0 \ [_{IP} \text{PRO to fix} \text{which car}]]] \)?

b. ?*Which car* did \( [_{IP} \text{John announce} \ [_{NP} \text{a plan} \ [_{IP} \text{PRO to fix} \text{which car}]]] \)?

Adjuncts, however, are not properly governed. So for adjunct chains to satisfy the ECP, each link must be antecedent governed by the immediately higher link. If we long-move an adjunct, the antecedent government requirement fails and the ECP kills the derivation.

(41) Subjacency violation and ECP violation

a. *How* is \( [_{IP} \text{John wondering} [_{CP} \text{whether} C^0 \ [_{IP} \text{PRO to fix the red car} \text{how}]]] \)?

b. *How* did \( [_{IP} \text{John announce} \ [_{NP} \text{a plan} \ [_{IP} \text{PRO to fix the red car} \text{how}]]] \)?