Syntax III Assignment I (Team B): Transformations

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A layout of this paper:

I. Transformations! An Introduction
   a. What
   b. Why
   c. What Not
II. A-Syntax: Operations on Arguments Pre-Surface Structure
III. Morphology: Form and Function
    a. Lexical assumptions:
    b. VP Internal Subject Raising Hypothesis
    c. Form Rules
    d. Morpho-Syntactic Rules:
    e. Further Questions
IV. A-Bar Syntax
    b. Islands
    c. Features & Percolation: Not Just for Subcats
    d. Successive Cyclic Movement
V. Where Do We Go From Here?
   a. Summary
I. Introduction

Before going into the specifics of transformational syntax as we've learned it, it behooves
us to consider transformations on a high level. What are they, how do they operate, and,
very importantly, why do we have them? We should also make a distinction regarding the
purpose of this paper, which is not to provide a complete or authoritative enumeration of all
transformational operations (likely an impossible endeavour), but rather to investigate those
operations and affirm our understanding of the framework in which they exist.

I. a. What

What are transformations? A transformation (Xn) takes an existing syntactic structure
and renders a new construction by performing one or more of the following three operations
upon it: movement, deletion, or insertion. These operations are constrained by a number of
rules and traditionally adhered-to constraints. Furthermore, it has been mentioned that semi-
legitimate syntactic theories have eschewed certain of these operations while retaining sufficient
descriptive power. This would, in theory, be a good thing except that it pushes elements of
transformations into deep structure. More on that in a moment!

I. b. Why

Why transformations? An attempt to describe any natural language (English being
the example used here) solely through a phrase structure grammar (PSG) would find itself
very quickly overencumbered with rules. The traditional example used to show this phrase
structure rule (PSR) duplication is the passive, and it will be used as an example here as well.
For instance, in order for a PSR to model a normal declarative sentence, one could (in a toy
grammar) simply stipulate that:

\[ S \rightarrow \text{NP}_{\text{subj}} \text{ V NP}_{\text{obj}} \]
or something of the sort. This allows sentences of the form ‘Dogs like pie.’ Then, in order to
model a passivized sentence, we’d have to create a different set of rules:

\[ S \rightarrow \text{NP}_{\text{obj}} \text{ be V NP}_{\text{subj}} \]
Similarly, for a question:

\[ S \rightarrow \text{V}_{\text{aux}} \text{ NP VP}_{\text{main}} \]
This is more than simply aesthetically displeasing, although it is certainly that. Crucially, using
separate individual rules to describe sentences which are so very clearly linked misses a major
generalization, and fails to reflect semantics at all. With transformations, the same alternations
can be expressed from a single kernel of meaning (NB: we’ve been using the terminology ‘deep
structure’ to refer to the most basic form of a sentence, where all of its meaning is encoded;
similarly, we’ve been using ‘surface structure’ to refer to the form of a sentence as it might be
uttered, after transformations (if any) have applied and morphological processes have taken
place. Our compatriots in team A should have some more in-depth analysis of this terminology,
but for the sake of this paper their working definitions will be as above.)
I. c. What Not: Constraints on movement and transformations

Xns are constrained. Without constraints, a theory of movement would be too powerful, potentially capable of expressing cellular-level communication via hormones, signals produced by semirandom number generators, or baseball games. We want a theory which models natural language; for this reason, we must look not only to a theory’s descriptive potential but also to its predictive capabilities. Describing and predicting anything with a signal-noise relationship is not our goal. For this reason, restrictions are placed not only upon structure but also upon any operations which act upon that structure. These restrictions come in two flavours, to our way of thinking. These we shall refer to as ‘strong’ and ‘weak’ constraints. There exists one additional (tentative) variety of constraint in this typology, which is the ‘in-between’ constraint, though it most likely represents something which belongs in one of the other two categories, but of which we are currently too ignorant to make any accurate judgment.

‘Weak constraints’ - These are trends which we’ve observed consistently. They are not written in stone, but serve as rules of thumb. Examples are the upward movement hypothesis, which stipulates that, when something is moved, it must end up in a location that C-commands its previous location. Were an analysis of some data to apparently violate one of these, we’d likely want to re-evaluate the data to be sure that such a thing is necessary before deciding to adopt said analysis. However, these sorts of trends are not theoretical lynch-pins and with sufficiently convincing evidence, we could probably be convinced to give them up, while continuing to work within the same generative framework.

‘Strong constraints’ - Explicitly stated constraints upon transformation, built into the framework. These are also not exactly written in stone, but abandoning these represents abandoning what is essentially a core tenet of our theory, and would reflect a break from canon. An example of this type of rule is the phrase-boundary respecting (constituent movement) rule, which states that the object of a transformation must be an X₁. For this reason, a single operation will not insert, delete, or move something into or from across a phrase boundary. It would be an interesting exercise to try to think of possible discoveries or bits of data which would cause us to want to abandon any of these theoretical restrictions. The “can’t seem to” puzzle certainly looks like a mark in favor of abandoning the constituent movement restriction, for instance.

‘In-between constraints’ - Some constraints may be language-specific, or we may just not be familiar enough with things to say one way or another whether it is or is not an ‘absolute’ constraint. An example of this is the structure preserving hypothesis, which states that when a Xn operates upon a structure, the resultant structure must conform to x-bar theory (ie, no multiple heads in phrases). This has been called into question with regards particle movement, where a head might be analysed as moving upwards to become sister to another head.

II. A-Syntax

The following discourse will discuss the various properties of A-Syntax. However, before the discussion begins, it is worthwhile to note the definition of A-Syntax, which is a set
of transformations that precede form rules, morphology, and any other type of transformations within a sentence or phrase. This being so, it is now relevant to discuss the different types of transformational processes within A-Syntax. For instance, transformations pertaining to A-Syntax in the set include raising vs. control verbs, dative movement, and passive movement.

There are several different types of raising vs. control verbs, some verbs only raise subjects to other higher subject positions, while other verbs with subjects in the matrix clause can delete or ‘control’ the downstairs subject. The following chart will provide a brief overview of the various types of subcategorization found in raising vs. control predicates.

<table>
<thead>
<tr>
<th></th>
<th>Subject-Subject Raising</th>
<th>Subject-Object Raising</th>
<th>Object-Subject Raising</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>seem V</td>
<td>expect V</td>
<td>difficult Adj.</td>
</tr>
<tr>
<td></td>
<td>&lt;[_CP[theme]]&gt;</td>
<td>&lt;_DP[agent][_CP[theme]]&gt;</td>
<td>&lt;[_CP[theme][_DP[patient]]]&gt;</td>
</tr>
<tr>
<td>2.</td>
<td>hope V</td>
<td>persuade V</td>
<td>choose V</td>
</tr>
<tr>
<td></td>
<td>&lt;_DP[agent][_CP[theme]]&gt;</td>
<td>&lt;_DP[agent][_DP[patient][_CP[theme]]]&gt;</td>
<td>&lt;_DP[Patient][_CP[theme]]&gt;</td>
</tr>
</tbody>
</table>

Some example sentences follow for each different type of verb or predicate. For example,

1. The monkey seems to want a banana.

![Diagram of transformational processes](image-url)
2. I expect there to be beer in the fridge.

3. The monkey appears to be difficult to feed.
4. The monkey hopes to eat a banana.

5. I persuaded Harvey to kiss the pig.
6. I choose a book for Harvey to read.

There are also two other types of transformations not present within raising vs. control. For instance, there is a transformation that moves the indirect object with the direct object, also known as dative movement. Dative movement takes two DPs and switches those positions; however, it only switches with specific dative verbs. For example, I bought a flower for a woman; dative movement can create ‘I bought a woman a flower.’

As stipulated earlier, only dative verbs allow for this type of DP switching, notice

(i)*I cleaned the woman the carpets.

with the deep structure being

(ii) I cleaned the carpets for the woman.

The last type of transformation is the passive transformation, in which the subject and direct object change focus and also swap positions. For instance, in the example sentence ‘the monkey eats the banana,’ the passive takes the subject ‘the monkey’ and switches with the direct object ‘the banana’ and also a be\textsubscript{2} verb is inserted resulting in the following outcome,
(iii) The banana was eaten by the monkey.

Probably the most important point to take away from this discussion is the fact that A-Syntax precedes A-Bar Syntax, morphology and form rules. It may also be the case that A-Syntax is the most fundamental set of transformations, because it denotes the ‘action’ of the verb or adjective predicate.

III. Morphology: Form and Function

III. a. Lexical assumptions:

So far we have assumed that the lexicon has an entry for each word, with information regarding possible word senses, (is ‘regarding’ a preposition?) word type (verb, adjective, etc) and argument structures, including what complements are required. Because the number of possible environments for each word are restricted by the lexicon, phrase structure rules can be stated more broadly.

An example argument structure for a verb would be as following:

Intend v <DP [+ sentient] [ _ CP[+ theme]]>

This argument structure specifies what type, and how many theta-roles a verb requires. Intend, for example, requires one sentient theta-role as subject, and one theme.

III. b. VP Internal Subject Raising Hypothesis

Within the syntactic structure of a sentence, it is appealing to say that heads only are able to stipulate the theta-roles of their own complements (and heads of those complements), and specifiers. We’ve seen no other reason for a verb to look beyond its maximal projection to assign theta roles. However, this requirement for the control of a main verb to stipulate its theta-roles locally means that the verb subject should initially start within the maximal projection of the main verb. This theory brought about the VP Internal Subject Raising Hypothesis, which
requires that the subject begins in the specifier position of the VP, and always moves up to being
the specifier of the TP.

VP Internal Subject Raising Movement:
Structural Description: take a CP or DP from the specifier position in a VP.
Structural Change: Move the CP or DP to the specifier of the TP above it.
Example sentence:

*The butterfly spread its wings*

Of course, it’s hard to justify always moving the subject, rather then just keeping it in the TP
position we always see it. There isn’t necessarily any evidence in English that the subject
ever was anywhere else to begin with, and within our group, there is some question as to the
legitimacy of this hypothesis.

III. c. Form Rules
Some verbs and pronouns have multiple structures that they take depending on their syntactic
position. To decide which form to use, our theory turns to morphological form rules. Two main
examples that we have come across in our study of English include the form of verbs, and
pronoun forms, such as ‘me’ vs. ‘I’.

Pronoun Form Rules
A pronoun is in nominative form when it is the subject
A pronoun is in accusative form elsewhere.

Verb Form Rules
*V* → *Base Form / M_*_ M = Modal (ex. I might _)*
*V* → *Past Participle Form / H _ H = Have (ex. I may have _)*
*V* → *Present Participle Form/ B _ B = Be (ex. I will have been _)*

These form rules, and other issues with morphology must be related to our theory of
transformations, because often the form rules must apply after A-syntax transformations in order
for the surface structure to be pronounceable. For example, the passive transformation inserts an
auxiliary verb into the structure, and moves the subject.

Active: I have eaten grapes
Passive: Grapes have been eaten (by me).

If form rules applied prior to passive movement, then the form of the verb wouldn’t be specified, and the pronoun wouldn’t change to the accusative form, potentially ending up with an ungrammatical surface form:

* Grapes have have eaten by I.

However the form rules must also apply before A-bar syntax. For example, Topicalization is an A-bar movement but doesn’t change the pronoun, which stays in accusative form.

For me, the apartment was too cold.
*For I, the apartment was too cold.

Case Form Rules & Co-reference:
If a pronoun is co-referent with another DP within the same clause, then it can take a reflexive form.
I know myself.
However, if the pronoun isn’t in the same clause, then the pronoun cannot take the reflexive form.

* I know that he saw myself
  I know that he saw me.
This co-reference simply means that two or more things refer to the same thing. The pronoun’s form is again dependent on the structure of the sentence.

III. d. Morpho-Syntactic Rules:
Within our list of syntactic rules, some are more affected by morphology then others. Superlatives, such as ‘smarter’ might take a structure like ‘more smart’ and transform the word ‘more’ to the morpheme ‘er’ and moves it to attach with smart. Also, contractions of auxiliary verbs and negations that create ‘would’ve’ or ‘can’t,’ also take syntactic elements and transform them to attach as morphemes.

III. e. Further Questions:
Further questions to consider are what other morphology rules there are, and how they related to syntax. Do other morphological processes happen after A-bar syntax? How would these different morphological processes differ?
IV. a. A-bar syntax

A syntax and A-bar syntax differ importantly in two respects. First off, A syntax normally precedes morphology and A bar syntax follows morphology. This has been discussed in the previous section, and also in sentences like (1) and (2) below:

(1) He was seen by the ghost.
(2) Whom did he see?

In order to generate the first sentence, 'he' is given the nominative case after passive moves it. Since we know that passive is an inherently A-syntax movement, if it assigned case before moving, then it would be:

(A) *Him was seen by the ghost.

Since (A) is ungrammatical, we can tell that passive acts before morphology. In order to generate (2), 'who' gets its accusative case before moving to the front of the sentence. This implies that WH movement acts after morphology. In fact, this distribution can be seen across A and A bar syntax.

Secondly, A-synta deals with argument structure and A bar syntax does not. Whereas A syntax moves around arguments of the verb, A bar syntax deals with the creation, movements and interactions of islands. A-bar syntax takes elements out of clauses, i.e. a WH word, and moves that element possibly quite far away. What's left behind is an island, a construction that nothing else can move out of. Not all islands are created this way; some seem to be there at deep structure, such as subjects. But many of the islands we've seen are created by A syntax.

Transformations: (assume examples take place after VP internal subject raising)

WH Movement:
D: Take a CP that is [+WH] or [+R] and commands an XP that is [+WH].
C: Move the [+WH] phrase up to the next highest spec of CP. It keeps moving up until it reaches a [+WH]/[+R] CP.

(3) DS: You decided for you to get which tattoo.

Xns:
1. S->S Control
2. T->C
3. WH movement
(3) SS: Which tattoo did you decide to get?

Relative Clause Deletion:
D: Take a DP with a CP adjunct headed by 'that'. That CP must have a WH-pn in it that is coreferent with the original DP.
C: Either delete 'that' or the WH-pn.

(4) DS: The dog that who ate my gerbil was cruel

Xns:
A. Delete who
B. Delete that
(4A) SS: The dog that ate my gerbil was cruel

(4B) SS: The dog who ate my gerbil was cruel

**Topicalization:**
D: Take a TP with an object.
C: Optionally move the object to be an adjunct. If the object is in the root CP, then it adjoins to the TP. If the object is in an embedded CP, then it adjoins to CP.
(5) DS: The penguin sent a nice letter in February.

(5) SS: In February, the penguin sent a nice letter.

Comparatives:
D: Take a [+comp] CP adjoined to a DP or AP. That CP must command a DP or AP co-referent to the one that it modifies.
C: Delete the DP or AP in the [+comp] CP

(6) DS: The puppy hid more toys than he could find.

find.
(6) SS: The puppy hid more toys than he could find.

It cleft raising:
D: Take a root TP with 'it' as its subject and 'be₀' as its main V. There must be a CP right sister to 'be₀' headed by 'that'.
C: Take a DP, NP, or PP in the embedded CP and move it to be an immediate right sister of 'be₀'.

(7) DS: It was [ ] that Jimmy killed the detective.

(7) SS: It was Jimmy that killed the detective.
There are a lot of questions when trying to move forward with our transformations from here. WH movement seems to be fine. Relative clause deletion is fine with the caveat that WH movement happens on the WH pronoun. There seems to be nothing that explains how Topicalization can move something to a different place depending on whether or not the CP is a root CP. And what can Topicalization move? It just requires a TP with an object. And it seems to be able to move almost any type of XP. For It-Cleft Raising, there's another way of forming the transformation that creates the structure above the original clause. We rejected this hypothesis because if there were modals in the newly created structure, it seemed unlikely that they moved up from the bottom clause. But is there any way to redeem such a structure-creating hypothesis? Is it possible to say that modals could start in the bottom clause and move their way up to the newly created clause to generate the sentences that we've seen?

IV. b. Islands: there's no escaping them.

Islands may be thought of as self contained structures within sentences. They are little chunks that trap their constituents, disallowing any of them from being moved out of them. There are some islands that are based on the location that they occur in the deep structure and other islands are created through A-bar movements which have extracted some constituent to another location in the sentence while locking everything else in place. While we have only explored their occurrences within English, Islands are known to be a universal, occurring throughout the languages of the world.

Those syntactic chunks which are islands based simply upon their deep structures include

- Specifiers
- Heads
• Adjuncts
• Complex DPs
• Coordinate Structures

In addition to these islands, we have also found islands that are formed because of a transformation. These include
• Comparative Clauses
• ‘WH’ Questions
• ‘WH’ Relative Clauses
• ‘That’ Relative Clauses
• Topicalized Clauses
• It-CLEFTs
• WH-CLEFTs

Of the four main positions provided to us by X-bar theory (Specifiers, Heads, Adjuncts, Complements), the only position that is not inherently an island is the complement position. This means that when we do A or A-bar movements within the sentence, they may only originate from a complement position, moving elsewhere from there as the movement and structure detail. Why is this though? What about complements allows them to be the de facto starting point for the movements that turn our deep structures into more complex questions, relative clauses, cLEFTs and more?

In order to test whether something is an Island, we have several different methods that we may employ. We can Topicalize a sentence, moving a constituent within a potential Island out of it; we may replace a relevant constituent with a WH word and attempt to move it and thus create a WH question; or we can extract a constituent and use it to from a relative clause. Some examples include. . .

**COMPLEX DPs**
• The girl threw the ball.
• What did the girl throw _____?
• Tommy saw the girl throw the ball.
• What did Tommy see the girl throw _____?
• Tommy saw [the girl who threw the ball].
• *What did Tommy see the girl who threw _____?
SPECIFIERS
- The cat scratched the leg of the chair.
- What did the cat scratch the leg of?
- [The leg of the chair] was old and splintered.
- *What did the leg of ____ was old and splintered?

ADJUNCTS
- Colorless green ideas sleep furiously [because brown thoughts eat neurons].
- *What do colorless green ideas sleep furiously because brown ideas eat ____?

COORDINATE STRUCTURES
- Jack rolled down the hill and landed in a puddle.
- *What did Jack roll down ____ and land in a puddle?
- Jenny despised Jack and Jill.
- Who did Jenny despise?
- *Who did Jenny despise Jack and ____?
WH QUESTIONS

- Harvey knew who ate his hat.
- *What did Harvey know who ate ____?
- Timbo pondered where his pig found the hat.
- Timbo pondered where his pig found what?
- *What did Timbo ponder where his pig found ____?

Interestingly, there are both strong and weak islands. Strong islands refer to structures that will always produce ungrammatical sentences when they've island hood tests performed on them, while weak islands will give much more mixed results. The sentences produced by weak islands will sound bad to some speakers, but perfectly acceptable to others. What leads to this? Is it simply speaker and location variation? It is important to note that the strong Islands are generally those that have been formed via some form of movement (meaning that they some form of a gap), while weak islands tend to be those structures that are islands based simply upon their deep structures.

In the following sentence, nothing should be able to be pulled out of the complex DP '[a, the] book about kittens.' When a complex DP is definite, an island hood test on it will produce a bad sentence. However, when the DP is indefinite we can produce a grammatical sentence, even when we should not be able to.

'Gerold told Andrew to read [a, the] book about kittens.'

- INDEF//WEAK: ?What did Gerold tell Andrew to read a book about ____?
- DEF//STRONG: *What did Gerold tell Andrew to read the book about ____?

Why do VP and NP ellipsis disobey island constraints? What purpose do Islands serve within syntax; why are they there; how do they help a language to function better? Why are there both strong and weak islands? What about those islands that are formed simply via their deep structures tends to make them weaker? Perhaps it is because those movement generated islands have already been modified to some extent, leaving them with a gap of some kind, and further exploitation of this already targeted structure simply pushes the acceptability of it over the top? Why are complements the only deep structure elements exempt from natively being islands? How does definiteness affect the strength of an island? Why is it the case that an indefinite determiner allows us to extract grammatical structures from islands when our rules say that they should be bad?

IV. c. Features

Features are characteristics of words that may characterize whether a sentence is grammatical or ungrammatical. Although sentences may be grammatical when it comes to structure, sentences
can still end up being ungrammatical if the features of a word do not agree with the sentence. Theta-roles are features of a verb that characterizes the complements and the specifier of the verb and even the number of complements that a verb assigns. Lets take fore example the verb ‘put’ and the theta roles it assigns.

put V, < DP  [___ DP   PP]>
   Agent  Theme  place (on, in)

Features also play an important role when it comes to transformations. We have seen in some movements that features carry on in movement. Therefore, if a word undergoes movement then the features of the words also move so that the features are also carried wherever the word stops. Examples are V-to-T movement and T-to-C movement because the features of the verb carry to T-position and then to C-position. Along with movement of features in transformation, we see movement of a feature from a head to a maximal projection.

**Feature Percolation**

While studying transformations in A-bar syntax we came to some conclusions about features, which help explain the grammatical and ungrammatical sentences that are the result of a transformation. In WH-movement we saw that sentences such as:

What did he say __?

are grammatical, so that when the WH-word undergoes movement the sentence is grammatical. But we also saw that a WH-phrase can undergo movement to Spec CP and in many cases, sentences are ungrammatical when only the WH-word undergoes movement.

What book did you read __?
*What did you read __ book?

This shows us that WH- phrases undergo movement. A WH-phrase consists of a phrase with a WH-word in it or a DP that has a WH-word in its specifier. A WH-word has the feature [+wh], but if a WH-phrase moves then the phrase must also have the same feature as the WH-word. As a result of the movement of WH-phrases we got that feature percolation. Feature percolation says that if a head has a feature, its maximal projection also has that feature. Therefore, in DP phrases like the following we see that feature percolation takes place so that that the maximal projection also has a [+wh] feature like its head.
Whose book did you borrow? Which book did you borrow?

Feature percolation also explains other movements that occur in WH-movement that account for multiple grammatical movements. Take for example, the following two sentences.

Which table did you put the papers on _? [On which table] did you put the papers?

Both sentences are grammatical for WH-movement, but note that there is movement of a PP with a [+wh] in the second sentence. The explanation for such movement is called Pied-piping, which has a connection with feature percolation or may be a result of feature percolation. Pied-piping includes feature percolation to be able to account for the multiple WH-movements that allow for the sentence to be grammatical. Pied-piping includes the following to be true for feature percolation.

1. Every wh-word has a [+wh] feature.
2. A maximal projection has all the features of its head.
3. A pp with a [+wh] DP {complement or complement of ‘of’ in it} that is complement of modifier of VP is optionally [+wh]
4. A DP with a [+wh] specifier is [+wh].

Pied-piping accounts for the optional grammatical sentences of WH-movement, therefore supporting feature percolation. Thus far, we have only seen feature percolation for WH-movement and the [+wh] feature. If new features were to come up, it may be the case that feature percolation can also be true for other features. Thus far, we have also seen that feature percolation occurs when a head has a feature and is optional in a PP with a [+wh] DP {complement or complement of ‘of’ in it} that is complement of modifier of VP. These occurrences of feature percolation predict that feature percolation occurs for the features of the head or specifier, but not for the features of complements or adjuncts (It may be possible that feature percolation is optional in complements or adjuncts, just like pied-piping).

IV. d. Successive Cyclic
Now that we seem to have a working theory of islands and of features and their properties, we must raise the question of just how these two parts of our theory interact. Specifically, we are interested in how we are to account for the seeming unboundedness of movement of and movement out of islands. From previous examples, we have looked at how the A’ transformations we have defined work with island constraints, and we have seen how features of a head can percolate upwards to effect the maximal projection that it is contained in. However, what we have left unanswered is how these two pieces of the puzzle are combined. In the analysis up until this point, we have pushed to the side the notions of bounded and unbounded transformations, though they have been hinted at. In the section concerning A’-Syntax, we have seen sentences that have WH-Movement, but the seeming recursiveness of this rule is not touched upon. Similarly, in our section concerning A-Syntax, we have the notion that these transformations concern only adjacent clause levels, and here, we see no evidence that after a transformation has happened, it can mandatorily call itself to happen again. These are what we have come to define as “bounded” dependencies—those that distinguish themselves just as we have described the A-syntax transformations. But does this make A’-transformations necessarily “unbounded”? And what, really, is meant by unbounded? Before we get into this discussion, however, it might be helpful to have a few sentences that explicate what is really going on.

Let us first make the distinction between [+Q] and [+WHQ] CPs. On the surface, this may seem to be a trivial distinction. However, when faced with the fact that there are many [+Q] C heads that we have encountered, it is important that we make this distinction. We know that both of the complementizers ‘if’ and ‘whether’ are [+Q] heads, as demonstrated by the sentences below:

(1) Emil wondered whether kittens could swim.
(2) *Emil wondered that kittens could swim.
(3) Emil asked if kittens could swim.
(4) *Emil asked that kittens could swim.

We can see marked difference in the sentences with the complementizer ‘that’ and those with if/whether. We know that heads can subcategorize for their complements, and it seems that with these verbs (we’ll call them ‘wonder-verbs’), this is exactly what is happening. However, to simply categorize ‘if’ and ‘whether’ as one kind of C-head, and ‘that’ as another and to analyze WH-phrases entirely differently misses a generalization. ‘If’ and ‘whether’ share a property with these WH-phrases as well, for if look at another pair of sentence, we see another fact that is able to shed a bit more light on the situation:

(5) Emil wondered who could swim.
(6) Emil asked who could swim.

It seems that these WH-phrases are also able to occur with wonder-verbs. Since we know that WH words are most certainly not complementizers, and that they move into the specifier of CPs with a [+Q] head, it seems quite certain that both ‘if’ and ‘whether’ are also [+Q] heads. However, we must make the distinction between [+Q] heads and [+Q] heads that also have the
feature [+WH]. If this feature were not present, one might expect that a WH-phrase could be able to move into the specifier of a CP with an overt [+Q] head. But as we can see from the example below, this is not the case:

(7) *Emil wondered who if could swim.

We can then reason that there must be another feature that distinguishes if/whether C heads from those which can allow WH movement to take place. In structures that do allow this WH movement, we posit that there is a silent [+WH] feature on the C head where the WH-phrase ultimately will land, thus triggering the movement of the WH-phrase in question to land in its specifier (as opposed to staying where it spawned and forming a ‘quizmaster question’).

With that said, we can now refine our theory of unboundedness of movement. We will start off with the deep structure of sentence (8) below, and from there put forth an argument in favor of a restricted type of unboundedness, which we will call successive cyclic movement. This will be contrasted with another hypothesis, namely, the fell swoop hypothesis.

(8) Which pie do you think Emil wanted to buy?

We can see from this tree that sentence (8) has three clause levels, each indicated by the presence of a CP. In order to get the WH-phrase, which occurs as a complement of the verb ‘buy’ in the downstairsmost clause up to the specifier position of the leftmost CP, one could hypothesize that since we know that this CP must have a [+WH] head, it must move up all in one fell swoop to that specifier position. However, this ignores an important generalization that we have seen in all of the other transformations, A- and A’-syntax alike. Never have we seen a transformation span more than two clause levels at one time. This, of course, is not to say that transformations cannot move the elements they involve more than one clause level higher than where that
element began in deep structure (because, as we can see from sentence (8) above, this is certainly not true), but rather it seems to make a case for a this one potential case of a free jump from starting point to ending point a bit far-fetched. Because of this, we have chosen to implement the successive cyclic method of analysis of these WH-question-like transformations. As I have shown in (8a-b) below, we can see the differences between a fell-swoop analysis (8a) and a successive cyclic one (8b). With the successive cyclic method, we can see the Wh-phrase being moved up to the specifier of each CP that occurs in the tree higher than it. What really drives the successive movement upwards, though, is the absence of a [+WH] feature in each of the CPs that occur before the highest CP, which is headed by a [+WH] C. When the WH-phrase lands in a specifier that does not contain this feature, it must continue searching for a place in the structure where it will fill all the requirements of the head.

Now, one might argue that these two methods of analysis are empirically the same. It seems to effectively get the same job done, and one might even tend to favor the method of doing so with the least amount of steps--that of the fell swoop. But as previously noted, this method ignores the generalizations we have made in the past about the interactions among adjacent clause levels. Simply to hypothesize a method based solely on the fact that fits with our past analyses of transformations would be naive. However, in languages other than English, residues of this successive cyclic movement have been observed, which not only fits with our theory of how clause levels interact with each other, but also seems to prove the successive cyclic hypothesis. In the following example from Afrikaans, we can see the residue of the WH-word in exactly where we would expect them to be if they were successively moved up in the tree:
(9) *Waarvoor dink julle waarvoor werk ons [__]?
   what-for think you what-for work we [__]

What do you think we work for? (Du Plessis, 1977)

With this bit of information firmly in our grasp, we can remain confident of our theory of successive cyclic movement of WH-phrases, and a theory of (restricted) unbounded movement. However, there are still a few areas of inquiry related to this topic, with one of them being is this successive cyclic movement found anywhere other than WH-questions? Why is it that successive cyclic movement explains islandhood in some circumstances but fails to explain many structural islands? Is it actually a good-required theory?

**V. Where do we go from here?**

**V. a. Summary**  
And so we come to the end of our recap of syntactic phenomena. Deep structures undergo transformations from within the oeuvre of A-syntax, which yield surface structures which are in turn worked upon by morphology. Eventually, A-bar syntax works upon these surface structures, often creating islands. As noted in each section, there is still room for improvement upon our analyses of many of these.