

Syntax & Semantics: *Capita Selecta*

\bar{A} -DEPENDENCIES

LTXo23B10.2012–2013.1

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UNIVERSITY OF GRONINGEN AUTUMN 2012 VERSION

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Syllabus

- (1) **Date of examination and resit**
Final paper due at the end of exams period.
- (2) **Title:** Syntaxis & semantiek: capita selecta
Module code: LTX023B10.2012-2013.1
Degree programme: Bachelor Linguistics
Study phase: 3rd year, sem. I
Module type: elective
Lecturer(s): Rudnev
- (3) **Number of ECTS credits:**
10
- (4) **Entry requirements**
Prerequisite classes: *Current Issues in Syntax*, *Current Issues in Semantics*.¹
- (5) **Course description**
An in-depth examination of the phenomenon of \overline{A} -dependencies and its rôle in contemporary linguistic theory.
- (6) **Bibliography**
Various research articles, to be posted on the class website.
- (7) **Competences to be developed**
 - a. identification of research problems and theoretical questions
 - b. critical discussion of research literature
 - c. structured and coherent writing
 - d. summarizing and presenting a scientific topic
- (8) **Learning objectives of the module (learning outcomes at module level)**
 - a. Knowledge of basic concepts of syntactic and semantic theory.

¹If you haven't taken either of the prerequisite classes but would still like to attend this course, contact the instructor as soon as possible.

- b. Ability to read and assess research articles dealing with a particular empirical phenomenon.
 - c. Understanding how detailed examination of an empirical phenomenon can inform theoretical linguistic work.
- (9) **Position of the module in the degree programme**
Seminar in the BA programme.
- (10) **Weekly programme**
4 hours per week (3 contact, 1 additional reading) for a 14-week semester.
Detailed programme will be distributed in class.
- (11) **Breakdown of workload**
Attendance/participation = 2 ECTS
Reading (ca. 450 pages) = 3 ECTS
Presentations = 2 ECTS
Final paper = 3 ECTS
- (12) **Assessment procedure**
A brief presentation of at least one research article in class, a presentation of the literature survey for the final paper, and a final paper (about 10pp.) on a topic of choice (with the approval of the lecturer). Presentations and final papers will be evaluated on the basis of standard criteria of clarity, coherence and form.
- (13) **Availability of lecturer**
Rode Weeshuisstraat 12, room 213 (available Tue–Thu); please schedule appointments via e-mail: p.rudnev@rug.nl

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Introduction

1.1. Organisational matters

1.1.1. General

- (1) Although this is a reading course, I will occasionally assign written problem sets to be solved at home. Even though I shan't impose any sanctions on those who don't do the exercises, I strongly advise that you nevertheless do them, primarily because they will allow you to tackle some highly technical stuff that many of the papers are peppered with. You're welcome to work on the exercises in pairs but you aren't allowed to plagiarise each other's or other people's work.

NB: I prefer written assignments to be typed, which is why I recommend that you find a suitable way of drawing syntactic trees and entering mathematical/logical formulæ. I myself highly recommend \LaTeX .

- (2) During the course you will be asked to present, in class, one or more of the papers from the reading list. You have the choice of doing so either individually or in pairs. In the latter case you will be co-presenting 2 papers ($.5 + .5 = 1$).
- (3) In addition to the written exercises, at the end of the course you will have to write a research paper of no more than 10 pages (5,000 words).
- (4) There will be no class in week 48, i.e. on 30th November, which is why the rest of the term following that week is moved one week up.
- (5) For further details please consult the [Syllabus](#), and feel free to contact me by email at p.rudnev@rug.nl, should there be any questions.

1.1.2. Schedule and reading list

S	Topic	Readings	Notes
1	Introduction, organisational issues	—	Homework #0 due
2	Phrasal movement; islands	Pesetsky to appear Boeckx 2008	Homework #1 due
3	Phrasal movement; reconstruction	Pesetsky to appear	Homework #2 due
4	Locality; <i>wh</i> -movement	Müller 2010	
5	<i>Wh</i> -in situ	Reinhart 1998 Uribe-Etxebarria 2002 ^a	Homework #3 due
6	Question particles	Cable 2010 ^b	Homework #4 due
7	Question particles (cont'd)		Paper topics due
8	Relativisation	Bhatt 2002 ^c	
9	Relativisation (cont'd)		Paper proposals due
10	Non-movement dependencies	Adger & Ramchand 2005 Potsdam 2006	
11	Semantics of focus	—	Homework #5 due
12	Intervention effects and focus	Beck 2006 ^d	
13	Split topicalization	Ott in press	Draft paper due
14	Information structure	Kučerová 2012	
15	Remaining issues		Final paper due

^aPresented by Charlotte

^bPresented by Fenna

^cPresented by Mathea

^dTo be presented by Jeanine

1.2. What this course is about

1.2.1. The title

- (6) SYNTAX refers to the study of how sentences are constructed, in a hierarchical manner, from smaller units like words, morphemes etc. The term is also sometimes understood as including the procedures which relate hierarchical structures to linear representations.
- (7) SEMANTICS refers to the study of meaning.
- (8) CAPITA SELECTA translates from Latin as 'selected chapters'.

Our course is, therefore, a reading course in which we will be reading and dis-

cussing a number of papers on syntax, semantics and their interface.

1.2.2. The topic

In this course we will be considering the mechanism underlying the derivation and interpretation of (some of) the sentences in (9):

- (9) a. Who did John miss at the railway station?
b. I know whom John missed at the railway station.
c. Did John get home safely?
d. John, I believe his mother likes.
e. I'm reading the book that John has recommended.
f. A marble filled every hole.

So is there anything that (9a)–(9e) have in common besides *John*? On the face of it, (9a) and (9b) contain a question word; the same could be said about (9e) if we replaced *that* with *which*. Is this where the similarities end? Not really: we can also see that (9c) is a question, just as (9a) and (9b) are. Similarly, *John* in (9d) seems to be acting similarly to *who* in (9a) and (9b) in occupying a position distinct from its usual one (the verb's object, in these particular cases). This, however, is only half of the answer.

The other half of the answer is already fairly theory-loaded. Simply put, what all sentences above have in common is that they all involve *operator–variable* dependencies, best known amongst theoretical linguists as \bar{A} -dependencies.

1.2.2.1. A- and \bar{A} -movement

- (10) A-MOVEMENT is movement to an A(argument)-position.

Because A-movement targets argumental positions of a verb, it is bound to alter its argument structure. Instances of A-movement include, for example, the movement of the theme in unaccusatives to the subject position (11a), passivisation (11b).

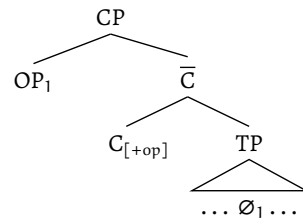
- (11) a. [_{TP} The snow [_{VP} melted ~~the snow~~]]
b. [_{TP} John was [_{VP} seen ~~John~~]]

- (12) \bar{A} -MOVEMENT is movement to a non-argument position, most commonly known as an \bar{A} -position.

\bar{A} -positions are also known as *operator* positions, and they normally correspond to portions of the clause in and around the complementiser domain. \bar{A} -movement,

therefore, does not affect argument structure. A very rough approximation of what an \bar{A} -dependency looks like is given in (13) below.

(13) **\bar{A} -construction**



where 'Ø' denotes the gap/unpronounced material

The schema above is obviously very general; as we know from a lot of empirical work, complementisers come in various flavours: declarative Cs, interrogative Cs, topical Cs etc. We will be discussing some of these at various junctions of this course.

1.2.2.2. Properties of \bar{A} -movement

(14) **At least in English, *wh*-phrases are obligatorily fronted**

*You saw who(m)?

(15) **It leaves a gap**

Who did John miss at the railway station __?

(16) **It can cross multiple clause boundaries**

What [do you think [James said [his girlfriend should wear __]]]?

(17) **The filler and the gap cannot be separated by islands**

- a. *Who did John miss at the railway station [the man that saw __]?
- b. *What did John come to the party [after he did __]?
- c. *Who did John miss [Mary and __] at the railway station?

(18) **There are more properties, which we'll discuss in later sessions**

1.2.2.3. A preview of \bar{A} -dependencies in other languages

Given that you're familiar with an impressive number of other languages, a question might pop up in your heads: Do all \bar{A} -constructions share the very basic properties outlined in the preceding section? It looks at first blush that the answer should be "no", for the following reasons:

First, there might be no gap involved in the dependency:

- (19) *Von welchem Maler glaubst du, dass Petra ihn mag?*
 of which painter believe you that Petra him likes

[German, Salzmann 2006: 153]

Second, *wh*-phrases may appear non-fronted:

- (20) a. *Qui as-tu rencontré?*
who have you met
b. *Tu as rencontré qui?*
you have met who
'Who(m) did you meet?' [French]

Third, in some languages *wh*-phrases cannot cross multiple clause boundaries:

- (21) **Kogo ty думаеš, что Ivan пригласил __?*
Whom you think that Ivan invited
(‘Who do you think that Ivan invited?’) [Russian, Khomitsevich 2007: 134]

Fourth, in some languages the parallel between relative clauses and *wh*-questions is not as easy to establish as in languages like English, Dutch, Russian or Estonian, since the formation of the relative clause does not involve a relative pronoun:

- (22) a. *lic a narkotikal r-ičule-l?*
who.ERG drugs.NOM PL-sell.PRT:IPF-PL
'Who sells drugs?'
b. *[[__ narkotikal r-ičule-w] čiči] alida w-ixana.*
drugs PL-sell.PRT:IPF-M man Ali.LOC M-see.PAST
'Ali has seen the man who is selling drugs.' [Avar,
Nakh-Daghestanian]

A theory of grammar that strives to give a uniform treatment to all of these constructions with seemingly non-overlapping properties must be flexible enough to accommodate the range of the facts and restrictive enough so as to rule out all and only the unattested configurations and linearisations.

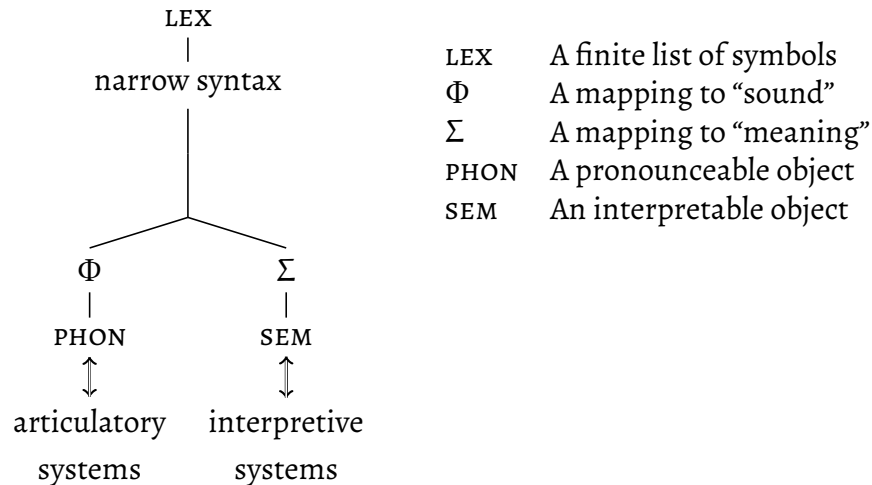
1.3. Syntax

Although the basic framework that this class will be couched in is a more or less recent version of the Minimalist Programme (Chomsky 1995, 2000, 2001, 2008), we will occasionally be turning to somewhat out-of-date notions and concepts, particularly so when reading some of the “classics”. We shall also be using most of the traditional labels like “verb”, “noun”, “determiner phrase” etc., albeit only

descriptively, without putting too much theoretical sense in them.

1.3.1. The architecture of the grammar

(23) The so-called “Y-model” of UG

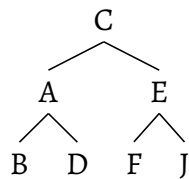


A very important consequence of the Y-model is that the interfaces (Φ and Σ) cannot “talk” (i.e. the output of the one is not interpretable by the other). Finally, one thing to bear in mind is that the Y-model is not a *production* model but one of our linguistic *competence*.

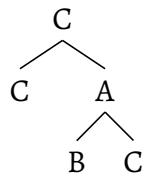
1.3.2. Core operations

- *Merge*, a set-forming operation, creates hierarchical syntactic structures

– External Merge/First Merge:



– Internal Merge/Move: Merge of a node A with a node contained within A



- *Agree*

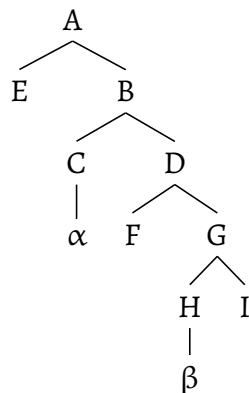
- Formal features ($\{[D], [Num:pl], [Pers:1], [Case:Acc]\}$), which can be valued or unvalued
- Probe–Goal

EXERCISE 1.

Modify the schema for the \bar{A} -construction in (13) on p. 6 by encoding the operator–variable dependency as a Probe–Goal relationship. Provide the trees for before and after feature valuation.

1.3.3. Basic hierarchical relations

Our syntactic operations will be sensitive to the following structural notions:



- dominance
- sisterhood
- c-command

EXERCISE 2.

Assuming that *wh*-questions do involve a Probe–Goal relationship, demonstrate the rôle of c-command in establishing this relation.

EXERCISE 3.

Assuming that your lexicon/numeration contains {railway, D, station, miss, v, John, who, T, C_[+wh]}, provide a syntactic derivation for *Who did John miss at the railway station?* You will need to supply these lexical items with all the relevant features.

EXERCISE 4.

Just as you did in the previous exercise, draw a tree depicting the derivation of *What do you think John said his girlfriend should wear?*, this time providing a numeration yourselves.

1.4. Semantics

1.4.1. Formal preliminaries

The version of semantics we will be making use of is known as *formal truth conditional semantics*, according to which the meaning of a sentence is its *truth conditions*; we will also need to supplement this semantics with a *model* M that consists of a *domain* (also known as *universe*) and an *interpretation function* the combination of the two notions is often notated as $\llbracket \cdot \rrbracket^M$, which is the notation that we too shall be using.

- (24) $\llbracket \text{I always wear a tie} \rrbracket^M = 1$ iff I always wear a tie in M
read: *I always wear a tie.* is true w.r.t. a model M if and only if I always wear a tie in M

1.4.1.1. Set theory

Notion	Notation	Example
set	$\{\dots\}$	$A = \{1, 3, 5, 7\}; B = \{x : x \text{ is blue}\}$
ordered set/tuple	$\langle \dots \rangle$	
element/member of a set	\in	$1 \in \{1, 3, 5, 7\}; \text{John} \in \{x : x \text{ is human}\}$
(proper) subset	$\subseteq (\subset)$	$\{x : x \text{ is a cat}\} \subseteq \{y : y \text{ is a mammal}\}$
(proper) superset	$\supseteq (\supset)$	$\{x : x \text{ is a mammal}\} \supseteq \{y : y \text{ is a cat}\}$
union	\cup	$\{1, 3, 5\} \cup \{2, 4, 6\} = \{1, 2, 3, 4, 5, 6\}$
intersection	\cap	$\{1, 3, 5\} \cap \{3, 5, 7\} = \{3, 5\}$
set of sets	$\{\{\dots\}\}$	$\{\{w : \text{John walks in } w\}, \{w' : \text{John doesn't walk in } w'\}\}$
empty set	\emptyset	$\{1, 3, 5\} \cap \{2, 4, 6\} = \emptyset$

1.4.1.2. Propositional logic

- truth values: True (1) and False (0)

(25) John is walking = 1 iff John is walking and 0 otherwise

- negation: \neg (read: *it is not the case that*)

(26) John is not walking

- conjunction: \wedge

(27) John is walking and Bill is reading.

- disjunction: \vee

(28) John is walking or John is drinking whisky.

- implication: \rightarrow

(29) If John is walking then Bill is reading.

- entailment: \Rightarrow ¹

¹Corresponds to the subset/superset relation.

- (30) a. John is reading a book \Rightarrow John is reading.
 b. John is reading a book \nRightarrow John is reading.

1.4.1.3. Predicate logic

- constants:

- (31) a. $\llbracket \text{John} \rrbracket = j$
 b. $\llbracket \text{walk} \rrbracket = W$
 c. $\llbracket \text{John is walking} \rrbracket = W(j)$
 d. $\llbracket \text{John is walking and Bill is smoking} \rrbracket = W(j) \wedge S(b)$

- variables

- (32) a. x
 b. P

- one-place predicate (also property, also set of elements)

- (33) a. $\llbracket \text{walk} \rrbracket = \{x : x \text{ walks}\}$
 b. $\llbracket \text{cat} \rrbracket = \{y : y \text{ is a cat}\}$
 c. $\llbracket \text{expensive suit} \rrbracket = \{z : E(z) \wedge S(z)\}$

- n-place predicate (also relation, also a set of ordered tuples)

- (34) a. $\llbracket \text{like} \rrbracket = \{\langle x, y \rangle : y \text{ likes } x\}$
 b. $\llbracket \text{send} \rrbracket = \{\langle x, y, z \rangle : x \text{ sends } y \text{ to } z\}$

- quantifiers (\forall, \exists)

- (35) a. $\llbracket \text{Some student is reading} \rrbracket = \exists x[x \text{ is a student} \wedge x \text{ is reading}]$
 b. $\llbracket \text{Everybody lies} \rrbracket = \forall y[y \text{ is human} \rightarrow y \text{ lies}]$

1.4.1.4. Functions, Lambdas and Type theory

- (36) $f(x) = x^2$, where f is the function, x is the argument and x^2 the value of the function when applied to the argument.

- (37) $\lambda x. x^2$ reads *the smallest function that maps every x to x^2*

- $\langle e \rangle$ — the type of entities/individuals

- $\langle e, t \rangle$ — the type of sets of entities/individuals
- $\langle et, t \rangle$ — the type of sets of sets of entities/individuals; generalised quantifiers

1.4.1.5. Possible worlds, situations and sentence meanings

- possible world (w, w', w'', w''', w_7)
 - situation (s, s', s'', s''', s_7)
 - proposition (p, q, p', q')
- (38) The meaning of an expression is its *truth conditions*, i.e. the state of affairs in the world that makes this expression true.
- (39) *The Principle of Compositionality*
The meaning of a complex expression is a function of the meaning of its parts and of their mode of composition
- (40) object language vs metalanguage
- (41) the interpretation function that we've seen above maps object language expressions to expressions of the meta language
- (42) *Modes of Composition* (based on those formulated in Heim & Kratzer 1998)
- Function(al) Application**
If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then for any assignment g , α is in the domain of $\llbracket \cdot \rrbracket^g$ if both β and γ are, and β is a function whose domain contains γ . In that case, $\llbracket \alpha \rrbracket^g = \llbracket \beta \rrbracket^g(\llbracket \gamma \rrbracket^g)$.
 - Predicate Modification/Conjunction**
If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment g , α is in the domain of $\llbracket \cdot \rrbracket^g$ if both β and γ are, and $\llbracket \beta \rrbracket^g$ and $\llbracket \gamma \rrbracket^g$ are of a set type (e.g. $\langle e, t \rangle$). In that case, $\llbracket \alpha \rrbracket^g = \lambda x. \llbracket \beta \rrbracket^g(x) = 1 \wedge \llbracket \gamma \rrbracket^g(x) = 1$.²
 - Predicate Abstraction**
For all indices i and assignments g , $\llbracket \lambda_i \alpha \rrbracket^g = \lambda x. \llbracket \alpha \rrbracket^{g^{x/i}}$.

The following exercises are from a handout by Radek Šimík on the semantics of questions.

²In set talk, Predicate Modification corresponds to set intersection: $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket \cap \llbracket \gamma \rrbracket$

EXERCISE 5.

Provide metalanguage expressions for the following object language terms: *Mary*, *student*, *bigger than*, *know*. In other words, “feed” these object language expressions to the interpretation function $\llbracket \cdot \rrbracket$ and provide the value for the function. In the case of predicates, please provide both the set notation and the λ -notation.

EXERCISE 6.

Convert set notation to λ -notation:

- (43) a. $\{x : x \text{ is a laptop}\}$
 b. $\{\langle x, y \rangle : x \text{ is taller than } y\}$
 c. $\{\langle x, y, z \rangle : z \text{ gave } x \text{ to } y\}$

EXERCISE 7.

Convert λ -notation to set notation:

- (44) a. $\lambda z[\text{Mary likes to read } z]$
 b. $\lambda x \lambda y[\text{saw}'(y, x)]$
 c. $\lambda w.[\text{George W. Bush was never elected President in } w]$

EXERCISE 8.

Reduce the following λ -terms:

- (45) a. $\lambda x[x \text{ spoke with } p](k)$
 b. $\lambda P[P(m)](\lambda x[\text{sleep}'(x)])$

This is more or less all we need to know at this point. Obviously we’ll be picking up more semantic bits as the course unfolds. If you still feel uncomfortable with the formalism, you’re welcome to consult chapters 1 and 2 of [Heim & Kratzer 1998](#), an excellent intro to formal semantics. If interested, do ask me for a copy of the relevant chapters.

2

Phrasal movement in English and Dutch

2.1. Pesetsky (to appear) on phrasal movement

Although Pesetsky's paper is by no means restricted to \bar{A} -movement, we'll be leaving aside most of what he says about A-movement and *tough*-movement as well as all of the phonology stuff. We will, however, note one important dissimilarity between A- and \bar{A} -movement as far as semantic hierarchical β -properties are concerned.

2.1.1. Preliminaries

Pesetsky begins with the following definition of syntactic movement:

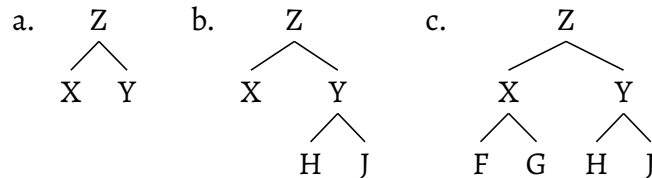
- (1) **A phrase X has undergone movement if...**
 - a. **the multidominance property:**
... X occupies (at least) two syntactic positions α , β ; such that...
 - b. **the c-command property:** ... α c-commands β .

Before something can be moved, however, it must have a way of actually appearing in the structure. Following the basic insight of Chomsky's (1995) Minimalist Programme, he takes this way to be Merge.

- (2) Merge, the operation combining syntactic objects into bigger syntactic objects
 - a. recursion
 - b. iteration
 - c. derivation

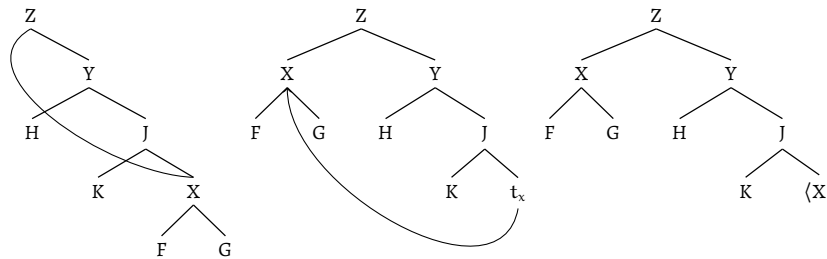
Can you define (a),
(b) and (c)?

(3) **Non-movement instances of Merge (*External Merge*)**



Don't let the beastly appearance of the leftmost scare you—for our purposes it is completely identical to the more standard way of representing movement used in the trees on the right.

(4) **Phrasal movement as an instance of Merge for a second time (*Internal Merge*) yielding the *multidominance* property**



(5) **Phrasal movement as a response to featural needs of a head H—yielding the *c-command* property**

Internal Merge of X with a projection of H occurs only when H has featural needs that are satisfied by:

- Agree between unvalued features of H and corresponding features of X (where c-command is a precondition for Agree); and
- Merge of X as specifier of H (satisfying an EPP of H).

(6) **Diagnostic manual for movement of X from β to α**

- Check X for β -properties**
For each property that we expect of an X-like element in β , does X show that property?
- Check X for α -properties**
For each property that we expect of an X-like element in α , does X show that property?
- Check X for $\alpha\beta$ -properties**
For each negative answer to (6a) or (6b), can the negative answer be attributed to one of the following factors?

Interactions between α -properties and β -properties, such as:

- (i) resolution of a conflict between α -properties and β -properties that masks one or the other, or
- (ii) non-resolvability of conflict between α -properties and β -properties, resulting in otherwise surprising judgments of unacceptability; or

Specific properties of Internal Merge itself, such as:

- (iii) the precondition to Internal Merge stated in (5).

2.1.2. Working with the β and α parts of the diagnostic manual: syntax-internal and semantically relevant hierarchical properties

2.1.2.1. Syntactically relevant β -properties

- (7) **Selectional properties satisfied by β -position**
 - a. Mary placed *her shoes* under the bed.
 - b. *Mary placed _____ under the bed.
 - c. I wonder [_{CP} [*whose shoes*] _{α} Mary placed ____ _{β} under the bed].
- (8) **Obligatoriness of overt subject satisfied by β -position**
 - a. I wonder [if *this child* should leave the room]
 - b. *I wonder [if ____ should leave the room]
 - c. I wonder [[*which child*] _{α} Bill thinks [____ _{β} should leave the room]]
- (9) [*Kakomu studentu*] _{α} vy xotite [čtoby ja pomog ____ _{β}]
which-DAT student-DAT you want that-SJN I help-SJN [SJN = subjunctive]

2.1.2.2. Semantically relevant β -properties

- (10) **Principle C as a test for c-command**
 - a. **Pronoun c-commands DP**
*He_i will probably mention my proof that John_i deserved to share the prize.
 - b. **No c-command between pronoun and DP**
His_i lawyer will probably mention my proof that John_i deserved to share the prize.
John_i will probably mention my proof that he_i deserved to share the prize.
- (11) **Principle C effects diagnose a β -position for *wh*-phrase**
 - a. **Pronoun c-commands DP within β -position of the *wh*-phrase**

- *[Whose proof that John_i deserved to share the prize]_α do you think he_i will mention ____β?
- *[Whose proof that John_i deserved to share the prize]_α does he_i think [____β is relevant to the discussion]?
- b. **No c-command between pronoun and DP within β-position of the wh-phrase**
- [Whose proof that John_i deserved to share the prize]_α do you think his_i lawyer will mention ____β?
- [Whose proof that John_i deserved to share the prize]_α do you think [____β will impress him_i]?

(12) **Principle A as a test for c-command**

- a. Mary liked these photos of herself best.
- b. *Mary's brother liked these photos of herself best.

(13) **Principle A effects diagnose a β-position for wh-phrase**

- a. [Which photos of herself]_α did Bill hear that Mary liked ____β best?
- b. *[Which photos of herself]_α did Bill hear that Mary's brother liked ____β best?

2.1.2.3. Syntax-internal α-properties





(14) **Selectional properties correlated with embedding predicate satisfied by α-position**

- a. I wondered [whose shoes_α Mary placed ____β under the bed].
- b. *I wondered [(that) Mary placed her shoes_β under the bed].
- c. *I wondered [(that) Mary placed which shoes_β under the bed].
- d. We were curious [which photos_α Mary would like ____β best].
- e. *We were curious [(that) Mary would like these photos_β best].
- f. *We were curious [(that) Mary would like which photos_β best].

(15) **Selectional properties of C diagnose an α-position as specifier of CP when there is no distinct β-position: reason questions**

- a. Mary asked [how come John said she had placed these shoes under the bed].
(Mary's question concerns the reasons for John's statement.)
- b. Mary asked [why_α John said [she had placed these shoes under the bed] ____β]
- b'. Mary asked [why_α John said [she had placed these shoes under the bed ____β]]
(Mary's question concerns the reasons for her actions, according to John.)

(= a)

- (16) **English Free Relatives:**
Selectional properties of higher predicate diagnose an α -position as specifier of CP (and the selectional properties of lower predicate diagnose a β -position)
- a. Mary placed [whatever _{α} we handed her __ _{β}] under her bed.
 - b. Mary put her shoes [where _{α} the other hikers had put their boots __ _{β}]
 - c. She vowed to become [however rich _{α} you have to be __ _{β} (to get into that club)].
 - cf. *Mary placed [however rich _{α} you have to be __ _{β}] under her bed.
 *Mary put her shoes [whatever _{α} we handed her __ _{β}], etc.
- (17) **α -position blocks other hierarchy-sensitive processes**
- a. *Who can we discuss [why this happened to __]?

 - b. *Who can we discuss [how come this happened to __]?

- (18) **The effect in (17) is indeed hierarchy-sensitive**
 Who can we discuss [why this happened __] with __?



2.1.2.4. Semantically relevant α -properties

- (19) **Locality condition on reflexive binding in English**
- Sue_i thinks that John_j admires himself_j/*herself_i.
 - Bill_i heard that Mary_j liked pictures of herself_j/*himself_i best.
 - John_i liked [Mary_j's pictures of herself_j/*himself_i].
- (20) **Locality component of Principle A diagnoses an α -position for *wh*-phrase...**
- John_i wondered [which pictures of himself_i] _{α} Sue had heard that Mary liked — _{β} best.

Examples like (21a–b) are thus key components of the argument that (20) supports an α -position as specifier of CP for the *wh*-phrase:

- (21) ... and Principle A remains active in such examples
- a. John_i heard that Sue_j had wondered [which pictures of herself_j/*himself_i]_α
Mary liked ___β best. [cf. (19b)]
- b. John_i wondered [which actress_j’s pictures of herself_j/*himself_i]_α Mary
liked ___β best. [cf. (19c)]

Lebeaux (1998) and Late Merge

- (22) **Principle C effects targeting β -position disappear for a full NP within a modifier**

- a. [[Which proof] _{α} that John_i likes] do you think he_i will mention _{β} ?
- b. [[Which picture] _{α} near John_i] did the interviewer ask him_i to describe _{β} ?

2.1.2.5. Explaining absent hierarchical α - and β -properties

- (23) **No case attraction in Russian: irresolvable conflict**

- a. Maša pomogla komu ja pomog
M.-NOM helped who-DAT I helped ('help' requires DAT)
- b. *Maša pomogla kogo ja ljubil
M.-NOM helped who-ACC I loved ('love' requires ACC)

2.1.3. Working with the $\alpha\beta$ part of the diagnostic manual

"In all likelihood, however, if the construction under investigation instantiates phrasal movement, some of X's properties cannot be attributed solely to its β -position or to its α -position—but instead reflect some property of the syntactic space between the two positions. Observations of this sort, which our diagnostic manual called " $\alpha\beta$ -properties", also diagnose phrasal movement. . ."

2.1.3.1. The effect of domination interveners as a hierarchical $\alpha\beta$ -property of phrasal movement

See chapter 2 of the lecture notes.

2.1.3.2. The effect of c-command interveners as a hierarchical $\alpha\beta$ -property of phrasal movement

A less lengthy but still rich history of investigation has been devoted to c-command interveners. In the domain of *wh*-movement, the best known case is the so-called *Superiority Effect* (Chomsky 1973), illustrated by English contrasts like those in (24). The bold-faced elements are the interveners that block *wh*-movement from β to α by virtue of c-commanding the moving element's β -position (while being c-commanded by its α -position):

- (24) C-command interveners: Superiority effects for A-bar movement
- a. He wondered [who _{α} _{β} had read what].

- b. *He wondered [what_α who had read _____β].
- c. He wondered [who_α we might persuade _____β to read what].
- d. ??He wondered [what_α we might persuade who to read _____β].

2.2. Pesetsky's diagnostic manual and \bar{A} -movement in Dutch

2.2.1. Embedded question

Selectional properties satisfied by the β -position

- (25) *Hij vraagt wiens moeder Jan uitgenodigd heeft.*
 He asks whose mother John invited has
 'He asks whose mother John has invited.'
- a. **Jan heeft ____ uitgenodigd.*
 John has ____ invited
 - b. *Jan heeft jou moeder uitgenodigd.*
 John has your mother invited

A cautionary note: Languages vary in their behaviour with respect to binding theory. Therefore, before using the binding principles to identify the β -properties of a construction C in language L, make sure that they are actually operative in that language.

Dutch and the binding principles

(26) Principle A

- a. *Gijs zag zichzelf // *hem // *zich in de spiegel.*
 Gijs saw SE-self // him // SE in the mirror
- b. *Gijs gaf zichzelf // *hem // *zich een boek.*
 Gijs gave SE-self // him // SE a book
- c. **Gijs denkt dat wij zichzelf in de spiegel hebben gezien.*
 Gijs thinks that we SE-self in the mirror have seen

(26a–b) show that anaphors of the *zichzelf* kind can be bound in a particular local domain; (26c), on the other hand, demonstrate that they can't be bound by an antecedent outside this local domain.

(27) Principle C

- a. *Hij₁ zag Gijs₁ in de spiegel.*
 He saw Gijs in the mirror

- (‘He₁ saw Gijs₁ in the mirror.’) – bad in English
- b. *Hij₁ denkt dat wij de broer van Gijs₁ hebben gezien.*
 He thinks that we the brother of Gijs have seen
 (‘He₁ thinks that we saw Gijs₁’s brother.’) – bad in English

What matters for Principle C is that a full noun phrase (like a definite description, or a proper name) must not be c-commanded by a potential binder. If both (27a–b) are bad in Dutch, we can conclude that Principle C is operative in it, just like it is in English.

Principle C and the β -position

Hij c-commands *Jan* when the *wh*-expression is in the β -position:

- (28) *Ik weet [wiens mening over Jan] _{α} hij nooit gaat ____ _{β} vergeten.*
 I know whose opinion about John he never goes forget
 ‘I know whose opinion of John he’s never going to forget.’

What’s the judgement?

The possessive pronoun inside the DP *zijn advocaat* ‘his lawyer’ does not c-command the proper name *John* when the *wh*-expression is in the β -position:

- (29) *Ik weet [wiens mening over Jan] _{α} zijn advocaat nooit gaat ____ _{β} vergeten.*
 I know whose opinion about John his lawyer never goes forget
 ‘I know whose opinion of John he’s never going to forget.’

What’s the judgement?

Principle A and the β -position

- (30) *Ik weet niet [welke verhalen over zichzelf] _{α} Jan denkt dat jij hebt ____ _{β} gehoord.*
 I know not which stories about himself John thinks that you have heard
 ‘I don’t know which stories about himself John thinks that you have heard.’
- (31) *Ik weet niet [welke verhalen over zichzelf] _{α} jij denkt dat Jan heeft ____ _{β} gehoord.*
 I know not which stories about himself you think that John has heard
 ‘I don’t know which stories about himself you think that John has heard.’

What’s the judgement?

Is there a contrast in judgements between this sentence and the preceding one?

Diagnosing the α -position

This should be relatively easy, as the examples from English all involve an embedded question. To see if embedded questions in Dutch behave, in the relevant respects, like their English counterparts, just translate Pesetsky's examples into Dutch.

The space between α and β

- (32) Are there island effects?
- a. *coördinate structure constraint*
*Jan vraagt welk boek zijn moeder De Standaard en ____ heeft
John asks which book his mother The Standard and ____ has
gekocht.
bought
 - b. *complex noun phrase constraint*
*Jij weet niet welk meisje Jaap hoorde het verhaal dat hij ____ had
You know not which girl Jaap heard the story that he ____ had
gekust.
kissed
(*You don't know which girl Jaap heard the story that he had kissed.)
 - c. *adjunct island*
*Ik heb geen idee wat Elske vertrok nadat zij ____ had gezegd.
I have no idea what Elske left after she ____ had said
- (33) Are there superiority effects?
- a. *Ik vraag me af wie wat heeft gezien.*
I wonder who what has seen
 - b. ??*Ik vraag me af wat wie heeft gezien.*
I wonder what who has seen

If we see no Superiority effects, might there be an independent reason we may not be seeing them?

2.2.2. Topicalisation

- (34) *Jan dacht ik dat Piet zei dat hij gezien had.*
John thought I that Pete said that he seen had
'John, I thought Pete said he saw.'
(Zwart 1993: 257)

Diagnosing the β -position

- (35) Selectional requirements of the embedded verb

Hij had Jan gezien
He had John seen
**Hij had ____ gezien*
he had ____ seen

- (36) Semantic β -properties

- a. *Principle C*
- b. *Principle A*

Diagnosing the α -position

Locality

- (37) **Jan vertelde Piet het verhaal dat hij ____ verslagen had.*
John told Pete the story that he ____ beaten had
'John, Pete told the story that he had beaten him.' (Zwart 1993: 257)

2.2.3. Relativisation

- (38) *Ik lees het boek dat Jan gisteren heeft gekocht.*
I read the book that John yesterday has bought
'I'm reading the book that John bought yesterday.'

2.3. Lebeaux (1998), reconstruction and the Y-model

\bar{A} -movement in a syntax that is simply Merge.

3

Islands and phases

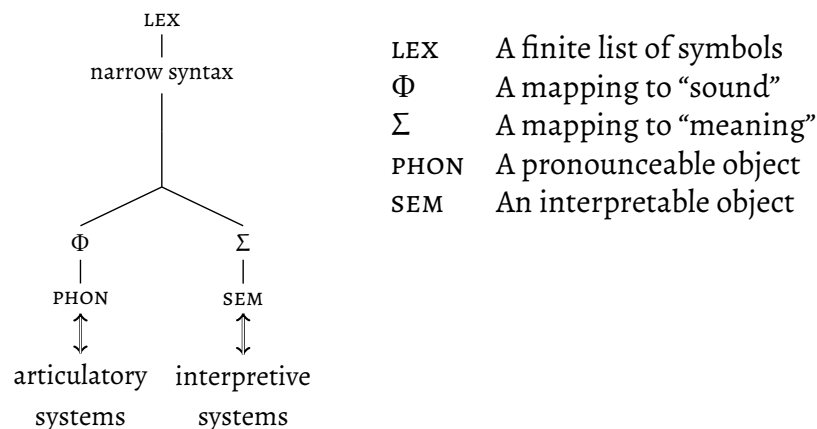
3.1. Setting the stage

3.1.1. Our theory of grammar so far

- (1) Syntax is simply *Merge*.
- (2) Because of (1), you could, in principle, Merge anything with anything.

Let's look again at the Y-model:

- (3) The Y-model of grammar

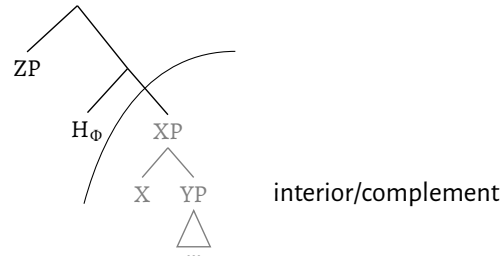


When looking at the diagram above, a natural question might arise: *When does the structure get shipped to the interfaces for phonological and semantic interpretation?* And maybe another one: *Why at that particular point?*

Before either of these questions can be tackled, I think it will be beneficial for us to go back to the definition of the movement operation that we've been using so far: for us, syntactic movement was nothing more than *Merge*, albeit internal. A further question, therefore, is whether the properties of \bar{A} -movement that we've come to know follow naturally from this simple definition of movement as internal merge.

3.1.2. Phase theory

- (4) Phases are cyclic domains in current minimalist theorising: syntactic structures get spelled out in chunks, rather than in their entirety.
- (5) Anatomy of a phase (extremely simplified)



- (6) *Phase Impenetrability Condition (PIC)*
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations. (Chomsky 2001)

If we want something out of a phase's complement before it becomes opaque, we must move it out of there before the next higher phase head is merged into the structure. In order for this to happen, the element being evacuated must move to the phase edge, which is always a possibility because every lexical item has an *Edge Feature*.

- (7) The *Edge Feature* on a head H is a feature that triggers movement to the specifier of H. Edge Features are undeletable.

3.2. Müller (2010) on islands and phases

3.2.1. Basic machinery

- (8) *Condition on Extraction Domain (CED)*
 - a. Movement must not cross a barrier.

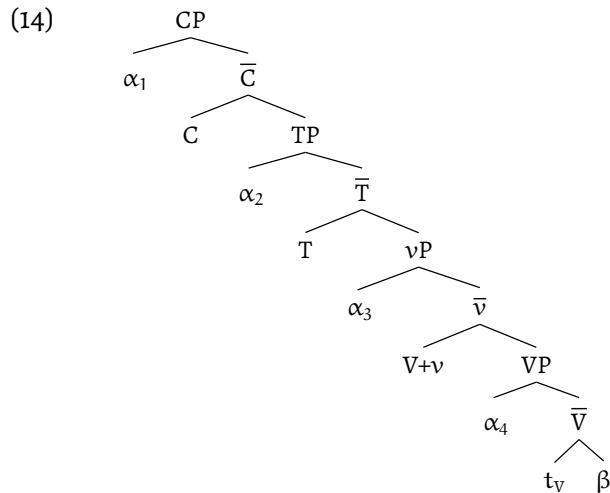
- b. An XP is a barrier iff it is not a complement. (Huang 1982)
- (9) *Structure building features* [$\bullet F \bullet$]
Features that trigger External and Internal Merge (subcategorisation/selectional and edge features).
- (10) *Probe features* [$*F*$]
Features that trigger Agree operations.
- (11) *Last Resort*
a. Every syntactic operation must discharge either [$\bullet F \bullet$] or [$*F*$].
b. Only features at the top of a feature list are accessible.
- (12) *Condition on Extraction Domain* (new version; to be derived from the PIC)
a. Movement must not cross a barrier.
b. α is a barrier if the operation that has merged α in a phase Γ is the final operation in α . (Müller 2010: 38)
- (13) *Edge Feature Condition* (EFC)
An edge feature [$\bullet X \bullet$] can be assigned to the head γ of a phase only if (a) and (b) hold:
a. γ has not yet discharged all its structure-building or probe features.
b. [$\bullet X \bullet$] ends up on top of γ 's list of structure-building features.

3.2.2. Deriving the CED

Here are the four basic elements of Müller's proposal:

- All syntactic operations are driven by formal features.
- These features are ordered on lexical items.
- All phrases, rather than just v^*P and CP (and also DP), are phases and hence subject to the PIC.
- Edge features that trigger intermediate movement steps can be added only as long as the phase head is still active.

Let's begin with the specifiers and the reasons that those are barriers, to use the 1980s term. In doing so we'll be making use of the very same (simplified) version of clause structure as Müller does.



According to Müller, “specifiers are barriers because of the PIC: there is no way to carry out an intermediate movement step from a last-merged specifier to the specifier of the minimal phase above it.” In actual fact, however, we shall see that this last statement doesn’t quite cut it.

EXERCISE 9 (Specifiers).

Now, using the reasoning and machinery above, let’s see what makes (15) different from (16), and how the Subject Island follows from the PIC.

(15) [_{DP₁} Who] did the reporters expect [_{CP} that the principal would fire t₁]
?

(16) * [_{DP₁} Who] did [_{CP} that Mary was going out with t₁] bother you?

Let us observe at once that Müller’s (2010) approach would run into serious trouble if we were to come up with an example clearly demonstrating that in principle, one *could* be able to extract from a(ny) specifier—something that Müller predicts can’t happen.

Yet there is crosslinguistic data bearing directly on the issue that demonstrates that under certain conditions, extraction out of specifiers is possible, cf. the following example from Spanish:

- (17) $[_{CP} \text{De qué conferenciantes}_i \text{ C te } \text{parece que } [_{TP} \text{T me}_z \text{ van a } \text{imprimir}_v [_{v^*P} [\text{las propuestas } t_i] v^* t_z t_v]]]?$
 of what speakers you.DAT seems that me go to
 impress the proposals
 ‘Which speakers does it seem to you that the proposals by will impress me?’ (Boeckx 2012: 67)

To make the data in (17) compatible with Müller’s analysis, further non-trivial assumptions must be made designed specifically to distinguish between moved specifiers and those remaining *in situ*: only extractions from the latter seem acceptable in Spanish.

To be able to extend this approach to adjuncts, to which the CED also applies, Müller has to commit himself to the cartographic view of adjunction, whereby adjunction simply doesn’t exist, being replaced by a number of distinct functional projections, each of which is responsible for introducing adjunct of various flavours (Cinque 1999). The treatment of adjuncts is therefore entirely identical to the one that specifiers receive simply because adjunct *are* specifiers.

EXERCISE 10 (Adjuncts).

Derive the ungrammaticality of (18):

- (18) $*[_{DP_1} \text{Who}] \text{ did you get jealous } [_{CP} \text{because I talked to } t_1] ?$

Again, as we’ve just seen for the specifier case, any grammatical sentence involving extraction from an adjunct should prove lethal for Müller’s (2010) analysis.

EXERCISE 11 (Adjuncts).

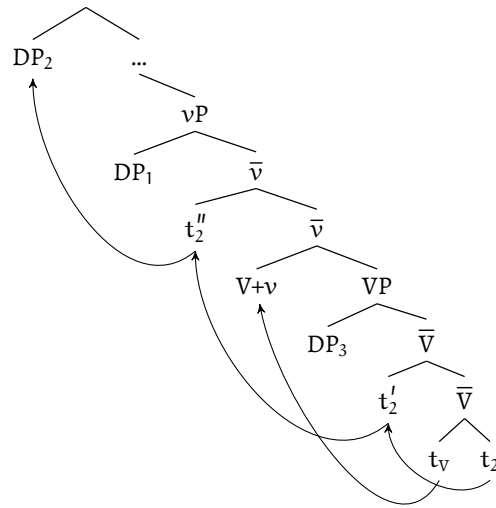
Demonstrate that the grammaticality of (19), taken from Truswell 2007, cannot be accounted for on the Müller view without additional assumptions/stipulations.

- (19) What₁ did John drive Mary crazy [trying to fix t_1]?

What about complements? Apparently those can but do not have to be opaque for the application of syntactic operations.

Müller’s (2010) perspective on successive cyclicity:

(20)



3.2.3. Evaluation

3.2.3.1. Empirical problems

The first problem with Müller's (2010) theory is that it fails to derive the well-known observation regarding the asymmetry in island status between the Subject Condition and the Adjunct Condition: recall that unlike adjuncts, subjects in certain languages qualified as appropriate domains for extraction (see Stepanov 2007 for typological evidence from Hungarian, Russian, Japanese, Navajo and Turkish, as well as some discussion).

Other problems include the possibility to extract out of adjuncts after all, undervivable on Müller's view.

3.2.3.2. Conceptual problems

All syntactic operations are feature-driven

This view is only compelling in that it provides "motivation" for features involved: structure-building features and probe features. This runs against a number of proposals, first of all by Chomsky, that Merge *always* comes for free—it is never driven by any formal requirement.

Features are ordered

Not only are formal features ordered on lexical items, they are organised into several distinct "stacks". Whilst not utterly bonkers, this assumption should ideally

derive from some deeper principle; at the very least, it should have some motivation besides just being crucial for the proposal.

What this means is that in addition to motivating the features themselves, feature *lists* must be motivated as well. As is clear from the paper, Müller does neither (his attempt to motivate the ordering requirement by resorting to the ordering of arguments based on the ordering of θ -rôles doesn't count, as it's no less stipulative).

Edge Features

First, Müller's (2010) EFC (Edge Feature Condition) is virtually identical to the fourth basic assumption he introduces.

Second, Müller's (2010) view of EFs violates Inclusiveness (the requirement that nothing may be added to the derivation on top of what's provided by the lexicon/numeration).

Third, consider the following passage from the article:

An important assumption that I would like to put forward here is that the assignment of the required edge features to X does not proceed in an unconstrained way; rather, there is a fixed order of edge feature insertion which follows a feature hierarchy that mirrors the typical hierarchy in phrase structures:

$[\bullet\Sigma\bullet] \gg [\bullet D\bullet] \gg [\bullet\text{top}\bullet] \gg [\bullet wh\bullet]$.

What this assumption does is, amongst other things, complicate the notion of edge feature to the extent that it becomes category-specific:¹ there's a distinct edge feature for PPs that is different from the edge feature on *v*, which in turn is different from edge features on *T*, *C* and whatever other functional projections we might have.

A further downside to this move is the effect that the order of functional projections is stipulated *twice* in the system: once in postulating a functional sequence and once more by imposing an order in which the different structure-building features come into the derivation.

Lastly, Müller seems to have an entirely different view on the properties of EFs than originally proposed by Chomsky (see §1.2). According to Chomsky, these properties of EFs that are absent from other formal features are

- (21) a. EFs do not involve Match (or Probe–Goal relations)

¹Although it does seem that Müller is introducing a different complication: he proposes that there are two 'flavours' to edge features, *inherent* and *non-inherent* EFs.

- b. EFs do not involve checking/valuation
- c. EFs do not delete
- d. EFs do not provide any interface instructions

It is fairly obvious that EFs must be deletable in principle is a crucial part of Müller's (2010) proposal but again this doesn't seem to be enough to modify the already existing notion so drastically.

All phrases are phases

- predicting many more intermediate landing sites than usual
- unclear whether this extension is even properly motivated: to see this we should probably go back to the discussion of this issue by Chomsky:

Problems arise if phases are associated with every operation of Merge—e.g., with VP. One reason is that at VP, information is not available as to whether the complement of V will be spelled out in situ or raised by Internal Merge, or what its structural Case will ultimately be (so that crash at both interfaces is inevitable). (Chomsky 2007: 17–18)

What's the rôle of the PIC?

Most importantly, it is not quite obvious what is the rôle of the PIC in Müller's (2010) proposal: the unavailability of extraction from specifiers and adjuncts only follows from the additional assumptions that the author makes, completely independently of the PIC. Here's why.²

Recall the structure of a simple transitive verb phrase (which basically consists of a verb and its two arguments), illustrated in (22) below:

(22) $\Gamma = [_{v^*P} [\alpha \dots \beta \dots] v^* [_{VP} V \lambda]]$, where α is the subject and λ the direct object

In order to be able to extract from α , which is a specifier of v^* , a phase head, this phase head must have an EF, which can't be added because v^* hasn't got any structure-building features left, hence is inert. But what is the rôle of the PIC in this? What we're trying to rule out is the structure involving the extraction of β :

(23) $\Gamma = [_{v^*P} \beta [_{v^*P} [\alpha \dots t_\beta \dots] v^* [_{VP} V \lambda]]]$ UNDERIVABLE!

Now, there doesn't seem to be any difference with respect to the PIC between (23) and (24):

²I'm borrowing this argument from Boeckx 2012.

(24) $[_{TP} T [_{v^*P} [_{\alpha} \dots \beta \dots] v^* [_{VP} V \lambda]]]$

Although upon the merger of T, also a phase head, v's complement is spelled out/transferred thus becoming opaque, α is still available for further operations. Since T still is active (it hasn't received anything in its specifier yet), it should be perfectly capable of getting an EF that would attract β from within α . And once β has reached Spec,TP, it will again be visible to higher heads possessing EFs. It appears, therefore, that either the PIC has no say at all in the unavailability of either (23) or (24) as legitimate derivational options or it must be supplemented by another principle responsible for ruling out the derivation just outlined. Either way, Müller doesn't deliver on his promises.

3.2.4. Summary

- *What does the author set out to do? Formulate the aims of their paper.*
Derive the CED from the PIC.
- *Why does the author believe this is important?*
To remove the locality condition from the definition of *Merge*
- *Can you summarise, in a few sentences, the author's proposal?*
The proposal builds on 4 assumptions:
 - All syntactic operations are driven by formal features.
 - These features are ordered on lexical items.
 - All phrases, rather than just v^*P and CP (and also DP), are phases and hence subject to the PIC.
 - Edge features that trigger intermediate movement steps can be added only as long as the phase head is still active.
- *How does the proposal relate to, and improve on, previous work on the same topic?*
- *In your opinion, does the author deliver on their promises? Does the proposal solve the problem stated at the beginning?*
No: the author fails to reduce CED effects to the PIC (see below).
- *Does the author name any potential counterexamples or problems for their proposal?*
 - The availability of inserting Edge Features at any point in the derivation violates the Inclusiveness Condition.

- The approach has nothing to say about the crosslinguistic asymmetries in the islandhood status of adjuncts and subjects/specifiers.
- *In addition to the above, what would you name as additional weak points of the proposal?*
 - Contrary to the author’s claim, the CED effects don’t follow from the PIC in any natural way, deriving instead from the four additional assumptions required for the proposal to work.
 - Not only are structure-building features and probe features ordered on a single lexical item, they are further split into two distinct “stacks”: one containing exclusively structure-building features, and the other consisting solely of probe features.
 - Müller’s edge features are only very distantly related to the original edge features proposed by Chomsky.
 - Identification of phrases and phases defeats the whole purpose of introducing phases in the first place: none of the arguments, metaphorical or otherwise, for vP and CP being phases, could possibly be extended to the other phrasal nodes.
 - Identification of phrases and phases predicts there being many more intermediate landing sites for movement, many of which are undiagnosable using the standard criteria.
 - Because Müller’s (2010) approach is perceivably syntactico-centric in that it takes islands to constrain syntactic derivations, it faces all the problems that such models face when confronted with instances of *island circumvention* (Boeckx 2008).
- *If you were the author, what would you do to improve the paper?*

4

Wh-in situ

4.1. Leftovers from last week: freezing and melting

4.1.1. The four assumptions: a recap

To remind you of the machinery we'll be using to derive the freezing and melting effects, here are the four basic elements of Müller's proposal:

- All syntactic operations are driven by formal features ($[\bullet F \bullet]$ or $[*F*]$).
- These features are ordered on lexical items ($[\bullet F_1 \bullet] \gg [\bullet F_2 \bullet] \gg [\bullet F_3 \bullet]$).
- All phrases, rather than just vP and CP (and also DP), are phases and hence subject to the PIC.
- Edge features $[\bullet X \bullet]$ that trigger intermediate movement steps can be added only as long as the phase head is still active.

4.1.2. Freezing effects

- (1) *The Freezing Generalization* (Müller 2010: 56)
A trace t may not be included in a moved XP (i.e., an XP that binds a trace) if the antecedent of t c-commands XP.

From an empirical point of view, what we want to derive is the contrast between (2a) and (2b), and similarly that between (3a–b) and (3c).

- (2) a. Who₁ do you think that he will talk $[_{PP_2}$ to t_1]?
b. *Who₁ do you think that $[_{PP_2}$ to t_1] he will talk t_2 ?

What's missing from Müller's (2010) article, as far as I can see, is a grammatical example of PP-topicalisation in English. Let's fill in this lacuna here:

- (3) I think that to my mother, he will talk.

Both the English and German examples illustrate the same combination of properties; the only difference between the two cases concerns the category of the topicalised constituent, PP for English and VP for German. For our purposes the distinction is irrelevant; what matters is that some form of topicalisation should be taking place that is "bleeding" subsequent *wh*-movement.

- (4) a. *Ich denke* [_{VP₂} *das Buch gelesen*] *hat keiner* *t*₂.
 I think the book read has no one
 'I think no one read the book.' [VP-topicalization]
 b. [_{DP₁} *Was*] *denkst du* [_{CP} *t*₁ *hat keiner* [_{VP₂} *t*₁ *gelesen*]]?
 What think you has no one read
 'What do you think no one read?' [wh-extraction]
 c. * [_{DP₁} *Was*] *denkst du* [_{VP₂} *t*₁ *gelesen*] *hat keiner* *t*₂?
 What think you read has no one
 ('What do you think no one read?') [combination of (a) and (b)]

Now, how does Müller (2010) derive this? It seems to me that all he can offer is speculation based on several ancillary assumptions that he is forced to make.

First, we should be able to derive the pre-*wh*-movement structure involving PP-topicalization, which, following Müller, is triggered by a [\bullet top \bullet] feature located on some head H somewhere in the left periphery of the embedded clause.

- (5) [_{PP₂} to whom] H_[\bullet top \bullet] he will talk *t*₂?

What we need now is a way to prevent H getting an extra edge feature that would trigger extraction from the moved PP. Considering that [\bullet F_i \bullet] corresponds to [\bullet top \bullet], then [\bullet F_j \bullet] will be [\bullet wh \bullet]. The F_i-element ZP₂ is the topicalised PP, and the F_j-element WP₁ is the interrogative expression in the abstract representation below *who*.

- (6) [_X [_{ZP₂} WP₁ [_Z ... Z]] X_[*F*]]

The [\bullet wh \bullet] cannot be assigned to the head now because of the assumed *Restrictions on multiple edge feature assignment*

4.1.3. Melting effects

(7) *Melting* (Müller 2010: 61)

A specifier α of a phase γ that is normally (i.e., if it is last-merged in its projection) an island for extraction should “melt” – that is, cease to be a barrier when some β becomes an outer specifier of γ by movement to a higher position within the same phase.

We now want to derive the contrast between (8a) and (8b).

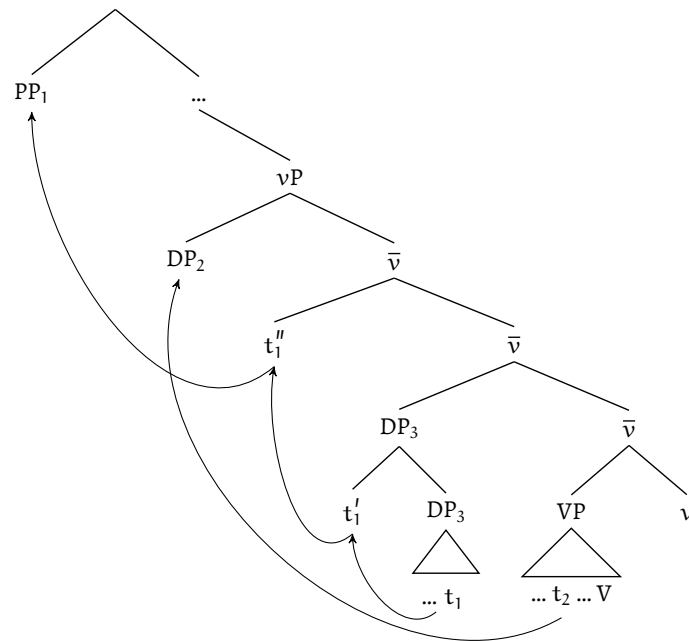
- (8) a. **Über wen hat das Buch den Fritz beeindruckt?*
About whom has the book.NOM Fritz.ACC impressed
b. *Über wen hat den Fritz das Buch beeindruckt?*
About whom has Fritz.ACC the book.NOM impressed
‘A book about whom impressed Fritz?’

Given the feature list in (9), we can derive the structure involving a “melted” barrier as illustrated in (10).

- (9) $v_{[\bullet D \bullet]} \gg [\bullet D \bullet] \gg [\bullet \Sigma \bullet]$
a. $[\bullet D \bullet]$ is discharged when DP_2 *den Fritz* is merged as DO
b. $[\bullet D \bullet]$ is discharged when DP_3 *das Buch über wen* is merged as Su
c. $[\bullet \Sigma \bullet]$ ensures that v is still active
→ an $[\bullet X \bullet]$ can be inserted now
d. $[\bullet X \bullet]$ is discharged when the PP *über wen* moves out of DP_3 to $[\text{Spec}, vP]$
e. $[\bullet \Sigma \bullet]$ is discharged when DP_2 scrambles to $[\text{Spec}, vP]$

Observe that before leaving DP_3 for good, the PP must first pass through $[\text{Spec}, DP_3]$, for reasons not entirely clear to me: if all movement must be triggered by a feature, what feature is this first step triggered by?

(10)



Rounding up the discussion of Müller 2010, it appears that the account he proposes fares no better with respect to the CED than any previous GB-era analysis.

4.2. *Wh*-movement and *wh*-in situ

Recall that for languages like English and Dutch, we typically analyse *wh*-questions as involving overt movement of the *wh*-element to the left periphery of the root (i.e. matrix) clause.

- (11) a. Why do you think he's wearing a bow tie?
 b. *Wie denk jij dat Marie gezien heeft?*
 Who think you that Marie seen has
 'Who do you think Marie's seen?' [Dutch]

Whilst this is true of simple cases like (11a–b) above, which only contain one question word per sentence, we can also normally form structures questioning the identity of more than one individual/object/reason etc.

- (12) a. Who saw whom?
 b. What moves where when in which language? (the title of Norvin)

Richards' 1997 PhD thesis)

Observe that in both questions in (12) only *one* question word appears at the left periphery (or in the specifier of an interrogative C), whereas the other one(s) remains in its base position. From now on we shall refer to such elements that appear not to have moved as *in situ*.

Two questions should arise at this point:

1. Do the *in-situ* phrases also move?
2. If they don't move, how is the right semantics achieved?

The late Tanya Reinhart attempts to tackle both of these questions in her 1998 paper. She answers to the first question in the negative, and proposes an additional formal mechanism, *choice functions*, to answer the second one.

4.3. Reinhart (1998) on the interpretation of *wh*-in situ

Reinhart (1998) doesn't care about how *wh*-questions are interpreted in those languages that don't seem to be using *wh*-movement; her main concern are multiple *wh*-questions in English. Which is why we too are going to put aside languages like Chinese and Japanese for the moment and concentrate on English instead. That way we'll be able to get to the bottom of the proposal and see if it's extendable to other languages.

Here's our customary list of questions that need answering before we can claim that we understand Reinhart's (1998) proposal.

- What does the author set out to do? Formulate the aims of their paper.
- Why does the author believe this is important?
- Do you understand the formalism?
- Can you summarise, in a few sentences, the author's proposal?
- How does the proposal relate to, and improve on, previous work on the same topic?
- In your opinion, does the author deliver on their promises? Does the proposal solve the problem stated at the beginning?
- Does the author name any potential counterexamples or problems for their proposal?

- In addition to the above, what would you name as additional weak points of the proposal?
- If you were the author, what would you do to improve the paper?

(13) *The Donald Duck Problem*

Q: Who will be offended if we invite which philosopher?

A: Lucy will be offended if we invite Donald Duck

According to Reinhart, earlier non-movement proposals (i.e. those involving un-selective binding and absorption) made a seriously bad prediction, viz. that the answer above should qualify as a possible answer to the question, which it doesn't.

4.3.1. Notation and terminology

(14) *Scope* can be informally defined as follows: if an expression α is in the scope of an expression β , then α is semantically interpreted before β .

In syntactic terms, we'll be thinking of scope as correlating with c-command:

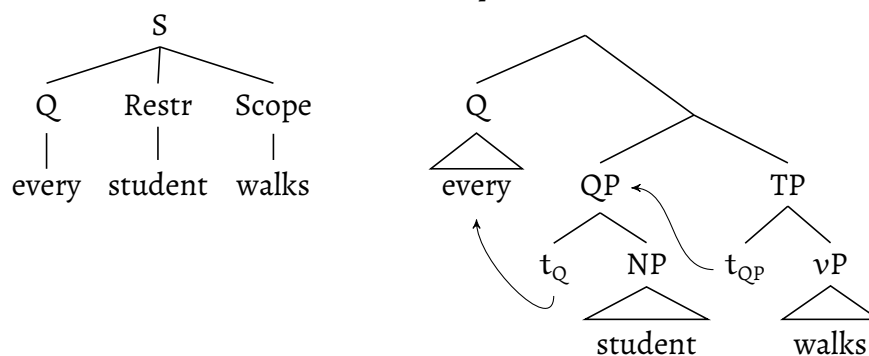
(15) α has scope over β iff α c-commands β

(16) Structures of the type “operator–restrictor–(nuclear) scope” stem from the characterisation of quantifiers as establishing a relation between two properties/sets of individuals

- a. $\llbracket \text{Every student walks} \rrbracket = \llbracket \text{every} \rrbracket(\llbracket \text{student} \rrbracket)(\llbracket \text{walks} \rrbracket)$
 $= \lambda P. \lambda Q. \forall x [P(x) \rightarrow Q(x)] (\lambda y [\text{student}'(y)]) (\lambda z [\text{walks}'(z)])$
 $= \lambda Q. \forall x [\lambda y [\text{student}'(y)](x) \rightarrow Q(x)] (\lambda z [\text{walks}'(z)])$
 $= \forall x [\text{student}'(x) \rightarrow \lambda z [\text{walks}'(z)](x)]$
 $= \forall x [\text{student}'(x) \rightarrow \text{walks}'(x)]$

In our case the relation between the elements of the set of all students and the set of all walkers is one of implication (“if–then”).

b.



In somewhat different yet functionally analogous terms the restrictor corresponds to the presupposition.

EXERCISE 12.

Characterise the following sentences in terms of determiner–restriction–nuclear scope

- (17) Which woman were you talking about?
- (18) The man who loves Mary has just left.

- (19) a. *Extension* is the semantic value of an expression that is not contingent on the circumstance (world/event/situation) of evaluation.
b. *Intension* is the semantic value of an expression that crucially relies, or is contingent, on the circumstance of evaluation.
- (20) The “up operator” $^{\wedge}$ is a somewhat outdated way of signalling intensionalisation, which basically corresponds to predicate abstraction over a possible world variable:

$$^{\wedge}\text{walk}'(j) = \lambda w[\text{walk}'(j)(w)]$$
- (21) The “down operator” $^{\vee}$ does the opposite compared to (20): it “lowers” the intensional semantic type to its extensional variant, effectively getting rid of the world variable and bringing us back to the circumstance/world of evaluation (i.e. the world we’re speaking in):

$$^{\vee}[\lambda w \lambda x[\text{walk}'(w)(x)]] = \lambda x[\text{walk}'(x)]$$

Now, to understand the Donald Duck problem, you need to have some very basic understanding of how conditional sentences are interpreted semantically. The easiest and by far the most popular way of representing the meaning of *if*-clauses is via quantification over possible worlds.

- (22) $\llbracket \text{if Mary comes} \rrbracket = \lambda q. \forall w' [w' \in A(w_0) \ \& \ \text{come}'(m)(w') \rightarrow q(w')]$

Reinhart also uses some rather substandard notation for propositions – she contracts them as *P*, our notation for properties of individuals. During this course, as already stated during the first session, our way of referring to propositions will be via the *lowercase* letters *p* and *q*.

- (23) Which European country has a queen?

- a. $\{p : (\exists x) (\text{European country}(x) \ \& \ p = \lambda w[x \text{ has a queen in } w] \ \& \ p = 1)\}$
- b. $\{\text{England has a queen; Holland has a queen}\}$

4.3.2. Choice functions and *wh*-in situ

- (24) $\exists f(\text{Ch}(f)) \ \& \ (\forall z) (\text{lady}'(z) \rightarrow z \text{ read } f(\text{book}'))$
- (25) Which lady *t* read which book?
 - a. For which $\langle x, f \rangle$ is it the case that $(\text{lady}'(x))$ and $(x \text{ read } f(\text{book}'))$?
 - b. $\{p : (\exists \langle x, f \rangle) (\text{Ch}(f) \ \& \ \text{lady}'(x) \ \& \ p = \lambda w[x \text{ read } f(\text{book}') \text{ in } w] \ \& \ p = 1)\}$
- (26) Who will be offended if we invite which philosopher?
 - a. For which $\langle x, f \rangle$ is it the case that if we invite $f(\text{philosopher}')$, *x* will be offended?
 - b. $\{p : (\exists \langle x, f \rangle) (\text{Ch}(f) \ \& \ p = \lambda w[(\text{we invite } f(\text{philosopher}')) \rightarrow (x \text{ will be offended})] \ \& \ p = 1)\}$

Now, here comes the million-dollar question: in the description of the proposition in (26b) above, where do we stick the world variables? We do, in fact, need *two* of them: one that is abstracted over by the λw , and the other one that is quantifier over by the universal $\forall w'$, a move that is necessary to capture the semantics of the conditional *if*-clause.

4.3.2.1. Extensionality

- (27) The definedness condition on choice functions:
 $G = \{f : \forall P[\forall P \neq \emptyset \rightarrow f(P) \in \forall P]\}$, where P is of type $\langle s, \langle e, t \rangle \rangle$
G is the set of all functions f such that for all P of type $\langle s, \langle e, t \rangle \rangle$, if the extension of P is not empty, then the value of f when applied to P is taken from the extension of P
- (28) Who will be offended if we invite which philosopher?
 $\lambda p[\exists x. \exists f \in G \ \& \ p = \lambda w[\forall w'[\text{invite}'(w')(\text{we}, f(\text{philosopher}')) \rightarrow \text{angry}'(w')(x)]] \ \& \ p = 1]$

I think we should be sceptical about conditions like (27) above, for the very simple reason that it's nothing more than a dirty trick to save the choice-function analysis. The fact that the restrictor of the *in-situ wh*-phrase is interpreted with respect to the *actual* world doesn't follow from the choice-function formalism itself

(or anything else, in fact) but has to be added by stipulation. This assumption, although not utterly insane, is no better than Müller's (2010) assumption that features on lexical items should be ordered.

4.3.2.2. Island effects

- (29) a. *Who fainted when you behaved how?
b. Who fainted when you behaved what way?

Reinhart argues, following some of the earlier work on the semantics of adverbial *wh*-phrases like *how*, that these cannot possibly be interpreted as choice functions *selecting an individual from a set* (they're higher-order functions themselves).

Observe now that if there were a language that could allow adverbial *wh*-expressions to be interpreted *in situ*, Reinhart's (1998) account would need to be revised.

The remaining issues that Reinhart discusses in her paper are either only indirectly connected with *wh*-in situ or not at all, which is why I choose not to discuss them here.

4.3.3. Summary of Reinhart's paper

- *Wh*-items left unmoved are interpreted as existentially quantified choice functions over individuals.
- This permits them to remain unmoved with their restrictor being interpreted with respect to the actual world rather than lower down in the conditional clause.
- Certain island effects that arise with adverbials but not with nominals are due to the fact that adverbials can't be restated as choice functions over individuals.

5

Question particles

To be added

6

Relative clauses

6.1. Feeble ground

6.1.1. Scope

(1) Every man loves some woman.

- a. Every man x is such that :: there is a woman y such that : x loves y . $[\forall > \exists]$
- b. There is a woman y such that :: every man x is such that : x loves y . $[\exists > \forall]$

The reading in (1a) is true of any heterosexual man who is in love (i.e. all men love different women), whilst the one that (1b) has is much more specific: it is only true in a scenario where there is one particular woman whom every man loves.

- Imagine that our model contains two men, John and Bill. It also contains two women, Mary and Sue. In this model, John loves Mary and Bill loves Sue. This is the situation corresponding to the reading in (1a). The second reading is clearly absent from here, since for neither Mary or Sue is it the case that she's loved by both John and Bill.
- Imagine now that our model again contains two men, John and Bill, and two women, Mary and Sue. This time, however, John is in love with Mary and Bill too is in love with Mary, and nobody's in love with the poor Sue. This scenario corresponds to the reading in (1b): Mary is the woman that every man (i.e. John and Bill) loves.

(2) A linguist read every book.

- a. There is a linguist x such that :: every book y is such that : x read y .

- b. Every book y is such that $::$ there is a linguist x such that $:$ x read y .

EXERCISE 13.

Give two distinct situations that allow us to tease out the two different readings that the sentence in (2) may have. Devise the situations in such a way that they obligatorily make the other reading false.

Data from Bhatt (2002)

Last week it seemed to me that there were comprehension problems regarding the argument from scope that Bhatt (2002) took to speak in favour of the HRA of relative clauses. The data ran as follows:

- (3) a. No linguist would read the many books Gina will need for vet school.
Possible reading: *need* > *many*
b. I am worried about the 25 people likely to come to dinner tomorrow.
Possible reading: *likely* > 25

There was no trouble understanding the argument itself, since syntactically, it is fairly straightforward, assuming that the judgements indeed are as Bhatt said they were. Rather, the difficulty lay in actually understanding the judgements themselves.

Let us paraphrase the available readings that (3a–b) provide us with, abstracting away from the third scopal element (i.e. the DP *no linguist*) and concentrating on the meaning of the relative clause, which we'll modify slightly.

- (4) Gina will need 3 books for vet school.
a. It is required that $::$ there are 3 books x such that $:$ Gina reads x for vet school.
b. There are 3 books x such that $::$ it is required that $:$ Gina reads x for vet school.

Similarly with the dinner invitees:

- (5) 25 people are likely to come to dinner tomorrow.
a. There are 25 people who are likely to come to dinner tomorrow.
b. It is likely that there will be 25 people coming to dinner tomorrow.

EXERCISE 14.

Provide situations highlighting each of the relevant readings of (4) and (5), just as we did for the scopally ambiguous sentences involving quantifiers.

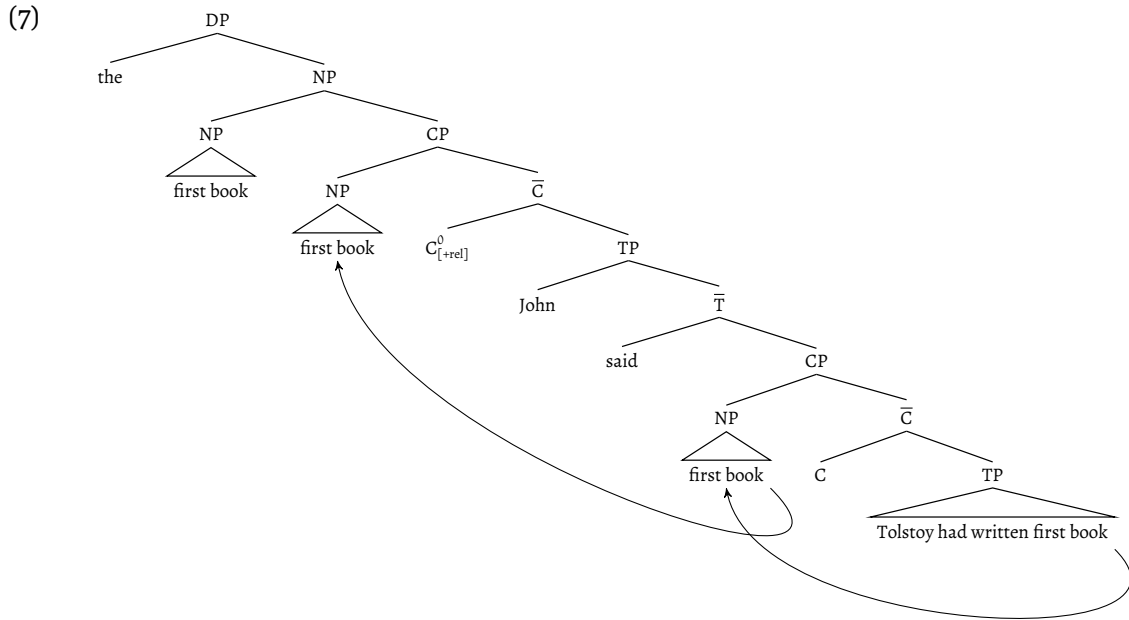
6.1.2. The raising vs. the matching analysis and the low reading

The second argument of Bhatt's that we found difficult to grasp concerned the alleged impossibility of deriving the low reading on the matching analysis. Recall that in Bhatt's own examples the low reading is concerned with the order of writing, whereas the high reading is about the order of saying.¹

The matching analysis will assign the relative clause in (6) a syntax along the lines of (7), where the internal heads undergoes a two-step movement to the specifier of the relative complementizer leaving copies in the base and intermediate positions:

(6) the first book John said Tolstoy had written

¹Those of you who failed to understand Bhatt's argument against the matching analysis will be glad to know that you were not the only ones to do so: here's an acknowledgement from a reply to Bhatt's paper by Hulsey & Sauerland, themselves the proponents of the matching analysis: 'Bhatt claims that this ambiguity can be understood as a scope ambiguity on the raising analysis, and furthermore that the matching analysis predicts a wrong interpretation. We, however, couldn't understand Bhatt's argumentation for these points.'



The crucial point, as far as I can see, is that the external head *first book* is in some way different from its internal counterpart, although they look exactly the same on the surface.

The scenario that Bhatt cites is as follows: John has made several claims as to what was Tolstoy's first book. At one time he said it was *Anna Karenina*, at another that it was *War and Peace*.² The denotation of the relative clause (without the external head and the determiner) will then include both *Anna Karenina* and *War and Peace*. Under these circumstances one can't say *the first book John said Tolstoy had written* for the very reason that in the model, there is no unique book that Tolstoy had written, according to John. This, according to Bhatt, follows naturally from the raising analysis.

The matching analysis, on the other hand, Bhatt takes to be in trouble precisely for the reason that the external and the internal heads aren't identical: because the external head originates outside the relative clause, it separates the determiner (i.e. *the*) from the relative CP. The relative CP, on the other hand, combines with the external head by intersective modification, yielding us whatever book is the first. It can then combine with the determiner quite felicitously, predicting the whole DP to be compatible with the scenario indicated, contrary to fact.

²*War and Peace* is actually not a single book but a novel consisting of 4 separate volumes published consecutively rather than all together.

6.2. Evaluation of Bhatt 2002

I'm including here the list of weak spots in Bhatt's analysis that we went over last week, and add some more of them, which we didn't have time to discuss.

- Bhatt's solution to the unbounded possessor extraction problem amounts to adopting *both* the matching and raising analysis of relative clauses, which isn't very good.
 - The problem of projecting movement doesn't receive a fully worked out solution.
 - It is unclear as to what motivates the *second* step of movement of the external head out of the relative CP.
 - Animate relative pronouns (i.e. *who*) cannot take NPs as complements (*the man [_{CP} [_{DP} *who* [_{NP} man]] came yesterday)). Whilst this argument is rather weak for languages like English and Dutch, where relative pronouns and *wh*-words aren't identical, it is harder to reconcile with those languages where relative pronouns *are* morphologically identical to *wh*-words (e.g. Estonian).
 - There is a further issue which arises in languages with overt case morphology, unsurprisingly to do with Case:
- (8) *Film on pühendatud kõigile sõpradele, kes meie perel külas käinud.*
 Film.NOM is dedicated all.ALL friends.ALL who.NOM our family.AD visited
 'The film is dedicated to all the friends who have visited our family.' [Estonian; internet]
- Further, the raising analysis routinely violates the CED (more specifically, the freezing part of the generalization), cf. (9a) with (9b), both from [Salzmann \(2006: 18\)](#):
- (9) a. *Who do you think [_{CP} *t*₂ that [_{DP} pictures of ₂]₁ were painted ₁] ?
 b. the [_{XP} [book₂] [_X X⁰ [_{CP} [_{DP} *Op/which* ₂]₁ C⁰ [John likes ₁]]]]
- [Salzmann \(2006\)](#) cites cases of what he calls *obligatory non-reconstruction*:

(10) John **pulled the [strings]** that __ got Bill the job.

Salzmann observes that for the idiom interpretation of *pull the strings* to be available, *strings* mustn't reconstruct into the relative clause internal position.

7

Non-movement dependencies

7.1. \bar{A} -dependencies and \bar{A} -movement: does one entail the other?

We have already discussed several distinct kinds of \bar{A} -dependencies in the first half of the term. What was argued to unify them was a special kind of movement operation often referred to as \bar{A} -movement, with its own set of distinctive identifying properties.

- It usually leaves a gap
- It obeys locality constraints (islands)
- It proceeds in small steps, and always via specifier positions (i.e. it's successive-cyclic)

All of the papers we've discussed so far took it for granted that the above properties could be taken as evidence of \bar{A} -movement, viz. they identified \bar{A} -dependencies with \bar{A} -movement in the sense that the former entailed the latter: whenever we were dealing with a \bar{A} -dependency, the dependency was always taken to have arisen as the result of movement.

Today we're going to discuss one of the two papers whose authors disagree with the conventionalized view outlined in the previous paragraph and claim that \bar{A} -dependencies can sometimes arise without movement taking place.

7.2. [Adger & Ramchand \(2005\)](#) on Scottish Gaelic

[Adger & Ramchand's \(2005\)](#) has several intertwined goals and therefore makes several interrelated claims.

1. Apparent *wh*-dependencies can arise from either movement or base generation.
2. The crucial diagnostics are identity effects.
3. Parametric variation arises because of the different ways syntactico-semantic features are bundled on lexical items.

Adger & Ramchand begin by introducing the reader to the phenomena in the preceding section, argued to diagnose \bar{A} -movement, and dismissing all of them as inconclusive and unable to discriminate between the movement- and the base-generation strategy of creating an \bar{A} -dependency.

- **Presence of a gap:** inconclusive because in addition to traces we normally postulate null pronouns (*pro* and *PRO*) as being present in the grammar.
- **Locality effects:** inconclusive given our current conceptions of grammar because (i) there is no difference with respect to locality between internal and external merge accompanied by Agree and (ii) internal merge is “parasitic” on Agree.

Instead, they claim that we should rely on what they call *identity effects*, a very natural suggestion, given the fact that we mostly view syntactic movement as involving copies of the same constituent realised in multiple positions. We shall return to this particular diagnostic in a separate subsection.

7.2.1. Questions and relatives in Scottish Gaelic

The main focus of Adger & Ramchand’s (2005) paper is on relative clauses, although the authors begin their discussion by considering *wh*-questions. For ease of exposition we shall follow the exact same order.

Scottish Gaelic (pronounced [ˈe l k]), a VSO language spoken mostly in Scotland, forms embedded clauses and relative clauses using distinct complementizers, with *wh*-questions obligatorily making use of the relative complementizer *an* (illustrated using a relative clause in (1b)) rather than any other one (not the interrogative complementizer in (1a), for example).

- (1) a. *An robh thu sgith?*
 C-Q be-PAST you tired
 ‘Were you tired?’

- b. *am program a bha thu ag èisdeachd ris*
 the programme C-REL be-PAST you listening to
 ‘the programme you were listening to’

Wh-questions are very different from polar (=yes/no) questions in obligatorily exploiting the *a*-complementizer instead of the regular interrogative *an*-complementizer, which is simply ungrammatical (2a):

- (2) a. **Cò an robh sgith?*
 Who C-Q be-PAST tired
 b. *Cò a bha sgith?*
 Who C-REL be-PAST tired
 ‘Who was tired?’

Adger & Ramchand (2005) propose to account for this similarity between relative clauses and *wh*-questions, as well as cleft sentences, by taking the relative clause as the structural core of the other constructions.

On this view, both clefts and *wh*-questions in Scottish Gaelic correspond to biclausal *copular* clauses (i.e. clauses whose predicate is the copula).¹

Adger & Ramchand’s (2005) proposal about the structure of Scottish Gaelic *wh*-interrogatives can be schematized as in (3):

- (3) *copula [wh-phrase] [relative clause]*
 Ø ‘*dè am program*’ ‘*a bha thu ag èisdeachd ris*’
 ‘Which programme has the property that you were listening to it?’

The copula and the *wh*-phrase form the predicate of the copular sentence, with the relative clause (probably) functioning as the subject, although this seems to me to be the exact opposite reading than the one indicated in the paraphrase above.

7.2.2. Motivation: (Non)Identity effects

An important insight of Adger & Ramchand’s (2005) article, which I think is generally correct despite being shared only by an insignificant minority of formal syntacticians, is their scepticism regarding syntactic islands being considered the main diagnostic of syntactic \bar{A} -movement. Their reason to distrust islands is the fundamental incompatibility of islandhood with our current assumptions

¹They are biclausal because in addition to the matrix clause with the copula as the main predicate we have a relative clause in the position of either the subject or the predicate, depending on the particular analysis, which the authors, sadly, do not provide.

about the architecture of the language faculty.

One might object that all of this is rather silly and we can still use some phenomenon as a diagnostic even though we're not entirely certain what's behind the phenomenon itself. I would, however, like to quote Pesetsky at this point: "A "diagnostic" is just an established finding that helps one interpret new findings, and the only difference between an "argument for ϕ " and a "diagnostic for ϕ " is confidence." The whole point of Adger & Ramchand's paper is to downgrade the status of locality from that of diagnostic to that of argument.

Under the copy theory of movement, there is empirical content to the distinction between movement and Agree: if movement involves copying (...), then the *same* element is located in more than one place within the hierarchical structure. However, if the dependency is constructed via Agree, then two *distinct* elements enter into the relation. (Adger & Ramchand 2005: 167)

The relevant identity can take either one of two possible shapes: (i) morpho-syntactic identity (satisfaction of selectional requirements) and (ii) semantic identity.

7.2.2.1. Morphosyntactic identity

• If \bar{A} -dependencies are movement, then it should be possible to put the moved element back into the base position. The idea is that the mover should be morpho-syntactically compatible with being in the trace position.

- (4) a. *Dè an seòrsa tidsear [a tha annad]?*
what the sort teacher C-REL is in+you
'What sort of teacher are you?'
b. **Tha tidsear math annad.*
is teacher good in+you
'(You are a good teacher.)'
- (5) Definiteness agreement between P and its complement
a. *Chuir thu am peann anns a' bhocsa.*
put-PAST you the pen in-DEF the box-DAT
'You put the pen in the box.'
b. *Dè am bocsa a chuir thu am peann ann/*anns?*
which the box C-REL put-PAST you the pen in-3SG/*in-DEF
'Which box did you put the pen in?'
- (6) Case marking

- a. *Dè a' chraobh a bha thu a'geàrradh?*
which the tree-NOM C-REL be-PAST you cutting
- b. **Dè na craoibhe a bha thu a'geàrradh?*
which the tree-GEN C-REL be-PAST you cutting
'Which tree were you cutting?'
- (7) Idiom interpretation²
- a. *Bidh e a'toirt sop às gach seid.*
be-FUT he taking wisp from each bundle
'He's not a very concentrated or focused person'
- b. *'S ann às gach seid a bhitheas e a'toirt sop.*
it's from each bundle C-REL be-FUT-REL he taking wisp
**'He tries his hand at everything'*
✓*'It's from every bundle that he has taken a wisp.'*

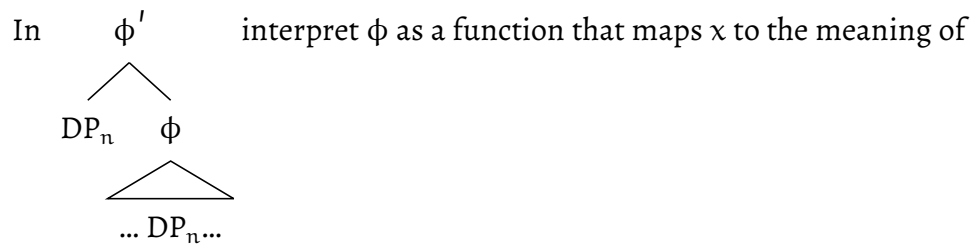
7.2.2.2. Semantic identity

Semantic identity here is another name for the by-now-familiar *reconstruction effects*, which, according to Adger & Ramchand, are absent from Scottish Gaelic *wh*-questions.

- (8) a. *Cheannaich e an dealbh de dh'Iain an dè.*
bought he the picture of Iain yesterday
'He_{*1/2} bought the picture of Iain₁ yesterday'
- b. *[Dè an dealbh de dh'Iain] a cheannaich e an dè?*
what the picture of Iain C-REL bought he yesterday
'Which picture of Iain₁ did he_{1/2} buy yesterday?'

7.2.3. Proposal: Base generation and Agree

- (9) Trace Conversion³



²WISP, n. a thin, delicate piece of hair/grass etc.

A few wisps of hay still clung to her skirt. <http://dictionary.cambridge.org/dictionary/british/wisp>

$\phi[x/n]$.

$\phi[x/n]$ is the result of replacing the head of every constituent bearing the index n in ϕ with the head the_x , whose interpretation, $\llbracket the_x \rrbracket$, is: $\lambda P : P(x). x$

Why don't [Adger & Ramchand](#) like TC? Can you think of any other reason why TC is a suboptimal rule to have in the grammar?

7.2.3.1. General framework

- feature checking is feature valuation
- there are no purely uninterpretable features: the features either are already interpretable by the interface (i.e. valued) or must be valued in order to become interpretable
- only features *with* semantic motivation are allowed
- feature valuation takes place under Agree (=Probe–Goal relation)
- Agree is constrained by the Phase Impenetrability Condition

7.2.3.2. The mechanics

Phasal heads like C come equipped with an operator feature $[\Lambda]$ that the semantics interface interprets as a λ -abstract. In addition to the Λ -feature, [Adger & Ramchand](#) introduce a feature $[ID:]$, which stands for the position abstracted over—a variable. This $[ID:]$ feature can take at least two values, ϕ and dep .

- A feature interpreted as predicate abstraction, $[\Lambda]$
- A feature interpreted as a variable, $[ID]$
 - $[ID:dep]$: identification of the pronoun takes place via the assignment function determined by a syntactic operator (such as that bearing a Λ -feature)
 - $[ID:\phi]$: identification takes place directly by an assignment function determined context and consistent with the ϕ -features.

The syntax-to-semantics mapping proceeds as indicated in (10):

³This explanation of TC is due to Kyle Johnson's Seoul lectures on the syntax and semantics of (mostly A-)movement.

$$(10) \quad [\wedge \dots ID] \rightarrow \lambda x \dots x$$

The relativising complementiser is taken to bear an interpretable \wedge -feature. As this λ -operator must semantically bind the right variable, the relativiser must also bear an interpretable $[ID : \text{dep}]$ feature, which will syntactically value the matching but unvalued ID-feature on *pro* thus creating the desired dependency.⁴

- (11) a. $[C, \wedge, ID:\text{dep}] \dots \text{pro}[D, ID:]$ (before feature valuation)
 b. $[C, \wedge, ID:\text{dep}] \dots \text{pro}[D, ID:\text{dep}]$ (after feature valuation)
 c. $\lambda x \dots x$ (semantic interpretation)

7.2.3.3. Different complementisers, different features

- (12) a. *an duine* $a_{[C, \wedge, ID:\text{DEF}]}$ *bhuaileas* *e*
 the man C-REL strike-FUT he
 b. **an duine gum* $_{[C]}$ *buail* *e*
 the man C strik-FUT he
 ‘the man that he will hit’

7.2.3.4. Island sensitivity

For Adger & Ramchand islandhood follows from the Phase Impenetrability Condition, although this implementation doesn’t seem to have been fully elaborated in their paper.

7.2.4. Crosslinguistic variation

7.2.4.1. Merge Languages

These are languages (like Scottish Gaelic) that, on Adger & Ramchand’s view, utilize the base-generation strategy.

- São Tomense creole
- Welsh

⁴The first feature in the list, C, is a so-called *categorial* feature, which, as the name suggests, indicates the category of the element it appears on, in our case the complementizer.

lambda abstraction (26). Once again, I make use of an intensional version of this rule.

(25) **Lambda adjunction**

If α and β are sisters and β is dominated by α (i.e. β has moved), Λ_i is (in a countercyclic fashion) adjoined to α , such that i equals the index of the trace (lower occurrence) of β .

(26) **Intensional lambda abstraction**

Let γ be a complex syntactic expression, composed of α and Λ_i . If α maps to $\lambda w[A(w)]$, an expression of type $\langle s, \tau \rangle$, then γ maps to $\lambda w \lambda x[A(w)(x)]$, an expression of type $\langle s, \langle e, \tau \rangle \rangle$, and everything that γ dominates is interpreted with respect to the assignment function $g[x/i]$, which is just like g except that it maps i to x .

(Šimík 2011: 16)

The crucial word in the definition of the syntactic rule is *countercyclically*. But we know that syntactic operations in a derivational model of grammar proceed *cyclically*! This is a problem which many people consider trivial.

Adger & Ramchand, on the other hand, propose a uniform mechanism of creating λ -abstracts—the Λ -feature. Importantly, it doesn't matter if there is movement going on or not: because the features are never inserted in the first place, no cyclicity is violated.

7.2.5.2. Analysis of *wh*-questions and clefts

The proposed analysis is not explicit enough, although the authors appeal to the proposal in their earlier work. More precisely, I see a conflict between the subject-predicate split in the proposed structure and the paraphrase of that structure that is supposed to reflect its semantic interpretation.

7.2.5.3. Presuppositional vs. non-presuppositional questions

Although the details of Adger & Ramchand's (2005) proposal are never made explicit, I think we can take the structure of Scottish Gaelic *wh*-questions to be similar to that of English clefts or pseudoclefts.

- | | | | |
|------|----|------------------------------------|-------------------------------|
| (14) | a. | What did John buy? | [regular <i>wh</i> -question] |
| | b. | What was it that John bought? | [cleft] |
| | c. | ??What was what(ever) John bought? | [pseudocleft] |

We know, however, that cleft questions and regular questions have one very prominent semantic difference: presuppositionality.

- (15) A: What did John buy?
B: John didn't buy anything.
- (16) A: What was it that John bought?
B: #John didn't buy anything.

A significant flaw of the paper, to my mind, is that the authors fail to discuss this crucial piece of evidence.

7.2.5.4. Null copula

One other, maybe very insignificant, problem that I see with [Adger & Ramchand's \(2005\)](#) analysis is the postulation of a separate unpronounced copula on top of those that have an overt phonological exponent. The authors do discuss the possibility of a deletion process erasing the copula, but I find this discussion far from convincing.

8

Focus

8.1. Introduction: focus-related phenomena

This session provides the relevant background to reading and understanding the paper for our next week's meeting, Sigrid Beck's *Intervention effects follow from focus interpretation*, to be presented by Jeanine. Feel free to omit the appendix, we won't discuss it.

8.1.1. A couple of definitions

- (1) *Information structure*
The study of how speakers structure sentences (and utterances) to convey new information and how it relates to the old information from preceding discourse.
- (2) *Topic*
(Broadly) Old information
- (3) *Focus*
(Broadly) New information

Languages differ in how they express these notions and relations (lexically, morphologically, prosodically, syntactically or in tandem).

- (4) *English*
 - a. A boy entered the room.
 - b. The boy entered the room.
- (5) *Russian*

- a. *V komnatu vošol mal'čik.*
in room entered boy
'A boy entered the room.'
- b. *Mal'čik vošol v komnatu.*
boy entered in room
'The boy entered the room.'

8.1.2. Question–answer congruence

- (6) Q1: Does Robert drink Scotch or rye?
Q2: Who drinks rye?
- (7) A1: Robert drinks RYE.
A2: ROBERT drinks rye.

You will notice that A1 and A2 are identical in terms of their surface structure except for focus. The distinction, however, is huge: neither reply can be used as an answer to the other question in (6). This pattern led the Swedish linguist Mats Rooth to make the following generalization:

- (8) The position of focus in an answer correlates with the questioned position in *wh*-questions and the position of disjoined alternatives in alternative questions.

(Rooth 1996)

Discussion point: With the observation above in mind, which is the more plausible claim to make: (i) A1 and A2 are the same sentence, or (ii) A1 and A2 are two different sentences?

Depending on what your thoughts are on the issue raised in the discussion point, you can come up with a number of ways of representing focus in the grammar.

Summary: Focus plays an important rôle for question–answer congruence (it is, however, not the only factor to do so).

8.1.3. Focusing adverbs *only, even, also*

Consider (9), taken from a classic paper by the American linguist Larry Horn:

- (9) John introduced only Bill to Sue.
Presupposition: John introduced Bill to Sue
Assertion: John introduced Bill to Sue; he did not introduce anyone else to Sue

(Horn 1969)

Focusing adverbs like *only* can, however, adjoin to bigger constituents than are prosodically focused:

(10) John only introduced BILL to Sue.

(11) John only introduced Bill to SUE.

Exercise: Provide evidence that (10) and (11) have distinct truth conditions by constructing a scenario in which one is true and the other is false.

Summary: Focus plays an crucial rôle in determining truth conditions of a sentence as well as its presupposition.

We've seen two very different aspects that there are to focus: on the one hand, it interacts with *pragmatics*, and on the other hand it is involved in compositional interpretation.

Discussion point: How does this relate to the Y-model of grammar we've been using throughout this course? Where would you put focus in it?


8.2. Association with focus


In this section we'll cover the basics of the semantic theory of association with focus proposed by Mats Rooth in a series of works (Rooth 1985, 1992, 1996), which attempts to capture both the compositional semantic and discourse-pragmatic aspects of focus.

8.2.1. Alternatives and semantic values

According to Rooth, every expression of natural language can have two semantic values, an *ordinary* semantic value and a *focus* semantic value. We're already familiar with the former:

(12) *Individuals*

a. $\llbracket \text{Bart} \rrbracket^o =$ 

b. $\llbracket \text{Lisa} \rrbracket^o =$ 

c. $\llbracket \text{Homer} \rrbracket^o =$ 

(13) *Predicates*

a. $\llbracket \text{walk} \rrbracket^o = \{x : x \text{ walks}\} \text{ or } \lambda x. \text{walk}'(x)$

$$b. \quad \llbracket \text{love} \rrbracket^o = \{ \langle x, y \rangle : x \text{ loves } y \} \text{ or } \lambda x \lambda y. \mathbf{love}'(x, y)$$

Now, what of the other semantic value? Rooth proposes that the focus semantic value of an expression be represented in terms of *alternatives* of the same type. The focus value of the individuals in (12) is then a set of alternatives to the relevant individual:

(14) *Individuals*

$$\llbracket \text{Bart} \rrbracket^f = \llbracket \text{Lisa} \rrbracket^f = \llbracket \text{Maggie} \rrbracket^f = \left\{ \begin{array}{c} \text{Bart} \\ \text{Lisa} \\ \text{Maggie} \end{array} \right\}$$

The focus semantic value of a one-place predicate P will then be a set of one-place predicates (the type requirement) that is an alternative to P:

$$(15) \quad \llbracket \text{walk} \rrbracket^f = \left\{ \begin{array}{l} \lambda x. \mathbf{walk}'(x) \\ \lambda x. \mathbf{sleep}'(x) \\ \lambda x. \mathbf{cry}'(x) \end{array} \right\}$$

Similarly for two-place predicates:

$$(16) \quad \llbracket \text{love} \rrbracket^f = \left\{ \begin{array}{l} \langle x, y \rangle : x \text{ loves } y \\ \langle x, y \rangle : x \text{ hates } y \\ \langle x, y \rangle : x \text{ sees } y \\ \langle x, y \rangle : x \text{ teases } y \end{array} \right\}$$

This is already enough to give us a handle on the rôle of focus in QAC: the ordinary semantic value of the question must be a (proper) subset of the focus semantic value of the answer:

$$(17) \quad \llbracket Q \rrbracket^o \subseteq \llbracket A \rrbracket^f$$

Exercise: To check if this is true, let's compute the semantic values of a variant of the question and answer pair in (6) and (7), given the following lexical entries:

(18) Q: Does Robert drink Scotch or rye?

A: Robert drinks RYE.

(19) a. $\llbracket \text{Robert} \rrbracket = \text{Robert}$

b. $\llbracket \text{drink} \rrbracket = \lambda x \lambda y. \mathbf{drink}'(x, y)$

c. $\llbracket \text{rye} \rrbracket = \text{rye}^1$

To be able to compute the denotation of the yes/no-question, let's adopt the view that the meaning of a question is the set of all of its true answers:

$$(20) \quad \llbracket \text{Does Robert drink Scotch or rye?} \rrbracket = \left\{ \begin{array}{l} \text{Robert drinks rye} \\ \text{Robert drinks Scotch} \end{array} \right\}$$

In order to calculate the denotation of the answer containing a focus-marked constituent we shall need a way of composing ordinary semantic values with focus semantic values, since the regular functional application will not be sufficient.

This special rule, often referred to as *Pointwise Function Application*, derives the focus semantic value of expressions like *drink* RYE, where only a subpart is focus-marked, by taking each of the elements of the focus semantic value of each sub-constituent and applying them pointwise by regular FA.

$$(21) \quad \llbracket \text{drinks RYE} \rrbracket^f = \llbracket \text{drinks} \rrbracket^f (\llbracket \text{RYE} \rrbracket^f) = \left\{ \begin{array}{l} \{x \mid x \text{ drinks rye}\} \\ \{x \mid x \text{ drinks Scotch}\} \\ \{x \mid x \text{ drinks bourbon}\} \end{array} \right\}$$

The resulting expression will produce a set of properties that vary in the identity of the internal argument/direct object, $\{\mathbf{drink}'(x) \mid x \in D_e\}$, since it's only this noun phrase that has a focus semantic value distinct from its ordinary semantic value.²

Finally, we can combine this expression (i.e. the denotation of the VP) with the subject, *Robert*:

$$(22) \quad \llbracket \text{Robert drinks RYE} \rrbracket^f = \left\{ \begin{array}{l} \text{Robert drinks rye} \\ \text{Robert drinks Scotch} \\ \text{Robert drinks bourbon} \end{array} \right\}$$

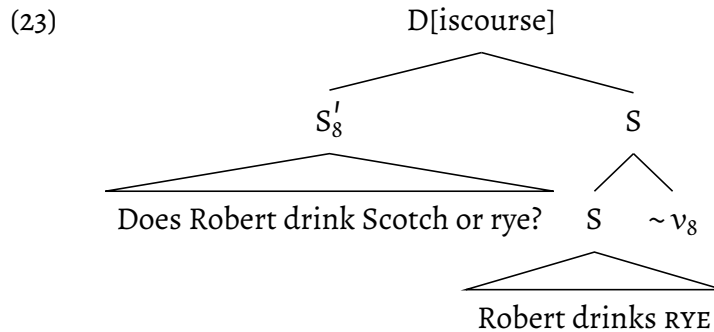
It appears, then, that our condition on the QAC is satisfied: the set of propositions that corresponds to the ordinary semantic value of the question (20) is a subset of the set corresponding to the focus semantic value of the answer (22).

This has all been rather informal to aid comprehension; Beck's (2006) paper, on the other hand, is significantly more technical. It is for this reason that we're about to discuss the very same concepts in some greater technical detail.

¹This is, strictly speaking, a very wrong denotation, but we'll have to make do with it here for the sake of exposition. **Question:** Can you think of a reason for this being a wrong meaning for *rye*?

²Once again, I've indicated the semantic type of the object as being *e*, despite *rye* clearly not being an entity. This is for our convenience only.

We can now schematically represent our mini-discourse as a tree-like structure:



In the next section we'll learn how trees like (23) are to be read and what they are understood to denote.

8.2.2. Focus-sensitive operators

Focus-sensitive operators include a range of natural language expressions (possibly covert), some of which we've already seen (focusing adverbs like *only*, *even* or *also*), as well as the generalized “squiggle” operator $\lceil \sim \rceil$.

In addition to the operators, Rooth introduces a dedicated contextually determined variable (C for “context” or v_8 in our tree above), takes as its value an alternative set. In our example, *Does Robert drink rye?* already is a set (of propositions), and v_8 is anaphorically related to it, as can be seen from the coindexing.

- (24) Where ϕ is a syntactic phrase and C is a syntactically covert semantic variable, $\phi \sim C$ introduces the presupposition that C is a subset of $\llbracket \phi \rrbracket^f$ containing $\llbracket \phi \rrbracket^o$ and at least one other element.

(Rooth 1996: 279)

The operator $\lceil \sim \rceil$ defined above doesn't determine the interpretation of the variable C uniquely, but it does constrain it. It basically says that whenever you have a sentence with something focused in it, it's presupposed that there is some relevant set of alternatives in the context – they should be there for some independent reason.

Let's see if everything adds up:

- We have a sentence, *Robert drinks RYE*, where
- RYE is focused, and
- it is presupposed that the context contains at least one alternative, *Robert drinks Scotch*

- for the independent reason that that alternative is provided by the question

Finally, let's discuss a sentence containing *only*:

- (25) Only PAVEL has read Rooth 1992.
- $[_S \text{ only}(C) [_S [_S \text{ PAVEL has read Rooth 1992 }] \sim C]]$
 - $\llbracket \text{only} \rrbracket = \lambda C \lambda p \forall q [(q \in C \ \& \ q = 1) \leftrightarrow q = p]$

We'll now use the two principles, (24) and (25), to see if the meaning comes out right.

- *only* takes 2 arguments: a free variable (C) and a proposition
- the value of C is determined contextually to include Pavel, Fenna, Eline, Mathea, Charlotte, Gerda and Jeanine
- the focus value of the given sentence will be some set of propositions of the form "x has read Rooth 1992"
- this set will include the proposition *Pavel has read Rooth 1992*

Summary: What all of these focus-sensitive operators have in common, according to Rooth, is that they all operate on both the ordinary and focus semantic values. The output of the application of such operators must be the ordinary semantic value, whilst the focus semantic value remains in the presupposition.

8.3. Information structure and syntax

Finally, let us go back to the relation between information structure and syntax, and review a number of possible ways of implementing notions like *focus* in the grammar.

- Null hypothesis in a modular system of grammar (like Minimalism):
- (26)
- Information structure notions are pragmatic notions.
 - Pragmatics and syntax are separate modules.
 - _____
 - Syntax has no access to information-structural notions.
- Under this view the explanatory burden and the burden of evidence is on those theories that postulate the presence in narrow syntax of syntactic features, categories like *topic*, *focus etc.* or operations triggered by those features on those categories.

- Many, if not most of, syntactic theories currently on the market just *presuppose* that focus and topic are narrow-syntactically encoded, without providing any justification for that view.
- Because of this, most of the solutions in terms of FocP, Top*P, like we've seen in the case of [Uribe-Etxebarria 2002](#), just amount to a restatement of the problem.

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