

Syntactic Theory 2

Week 1: Government and Binding Review

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1 Introduction

- **The big picture:** Knowledge of language permits us to generate and understand an infinite array of expressions, i.e., sound-meaning pairs:
 - (1) a. The aardvark nibbled on the pineapple.
b. The aardvark was expected to nibble on the pineapple by the orangutan.
c. The aardvark seemed to have decided to nibble on the pineapple.
- Additionally, our knowledge of language prohibits certain expressions from being assigned to certain interpretations:
 - (2) a. John_i expected Bob_j to like himself_{*i/j}
b. When_i did Mary wonder t_i whether Bob arrived ($*t_i$)?
c. Tom_i is eager t_i to please ($*t_i$).
d. The goose_i is ready (t_i) to eat (t_i).
- Part of this linguistic knowledge is hypothesized to be innate, given the **poverty of the stimulus**.
 - (3) a. Will_i Jane t_i eat the sandwich?
b. Will_i the girl t_i eat the sandwich?
c. Will_i the girls that ($*t_i$) arrive on time t_i eat the sandwich?
- Finally, there are patterns that systematically occur across languages that feature similar formal properties:
 - (4) a. Who_i did you meet t_i ?
b. Who_i did Roy say that Mary thinks that Tom likes t_i ?
 - (5) a. $*\text{Who}_i$ did you see the man that loves t_i ?

- b. *A quién_i viste a-l hombre que quiere *t_i*?
 ACC who see.2.SG.PST ACC-DEF man that loves
 intended: 'Who did you see the man that loves?' (Spanish)
- c. *tumi kake_i sei manuṣṭi-ke dekhecho je *t_i* pochondo kore
 you who COR man-CL-ACC saw that like V
 intended: 'Who did you see the man that loves?' (Bangla)

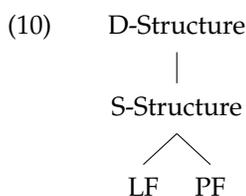
- ... and there are patterns across constructions within the same language:

- (6) a. Who_i did you say that the man loves *t_i*?
 b. *Who_i did you wonder whether the man loves *t_i*?
- (7) a. I know the man_i that you said that Mark likes *t_i*
 b. *I know the man_i that you wondered whether Mark likes *t_i*
- (8) a. John is taller than_i I said that Mary is *t_i*
 b. *John is taller than_i I wondered whether Mary is *t_i*
- (9) a. Sweet_i though you said that Tom is *t_i*, nobody seems to like him.
 b. *Sweet_i though you wondered whether Tom is *t_i*, nobody seems to like him.

- To account for these facts, we posit **Universal Grammar**, a genetically pre-determined “meta-theory” of grammars that govern language acquisition, which in turn governs the range of languages that we observe across the world. Universal Grammar delimits the basic shape of grammars, and provides a small set of relations with specified formal properties.

2 A sketch of GB architecture

- In Government and Binding is that a sentence consists of 4 connected representations, and that there are sets of constraints that rule out certain 4-tuples. An unacceptable sentence may be bad for a variety of reasons, and different “modules” of the grammar apply to different parts of the representation.
- The four representations are the D-Structure representation, the S-Structure representation, the LF representation, and the PF representation. D-S, S-S, and LF are sometimes referred to as the “narrow syntax”, and D-S and S-S are sometimes referred to as the “overt syntax”.



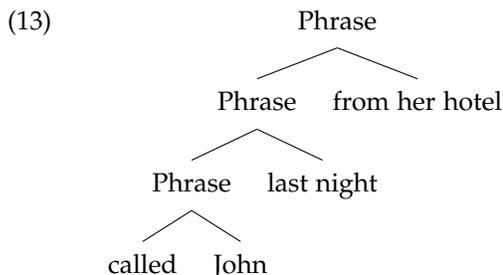
- **D-Structure:** This is the interface between the syntactic representation and the **lexicon** – the part of the grammar that contains all the words of our language, including their

idiosyncratic properties (selectional restrictions, gender, verb class...). Theta Theory and X-bar Theory apply here. Traditionally, the (pre-D-Structure) lexicon is taken to be the domain of all (derivational) morphological operations as well. Rejecting D-Structure in Minimalism means rethinking our theory of Morphology.

- **S-Structure:** This is an “internal interface”. S-Structure is the “output” of applying movement operations to D-Structure. At S-Structure, many grammatical constraints apply, including Case Theory, Binding Theory, Subjacency, and Control. After S-Structure, the derivation splits in two. Operations that have no semantic effect but change the phonology of the sentence are on the branch to PF after S-Structure, whereas operations that have a semantic effect but are silent occur on the branch to LF after S-Structure. S-Structure in this way is the “splitting point” of the derivation. Since it’s an internal interface, we will spend a lot of time picking on S-Structure.
- **Logical Form (LF):** This is the interface between the syntax and the semantics. Additional movements and semantically-relevant operations apply by this level. However, since syntactic operations that occur after S-Structure on this branch do not feed into PF, these operations are all “covert” or “invisible” – i.e., they have no phonological realization.
- **Phonetic Form (PF):** This is the interface between the syntax and the phonology. Additional movements and morphological operations apply at this level. All operations that occur on the branch from S-Structure to PF are independent of the semantics. This is where ellipsis and (some?) morphological operations take place.
- In Minimalism, we will eventually abandon D-Structure and S-Structure. Instead, we will try to re-assign the work that D-Structure and S-Structure do to PF and LF, and to the syntactic derivation itself.

3 X-Bar Theory

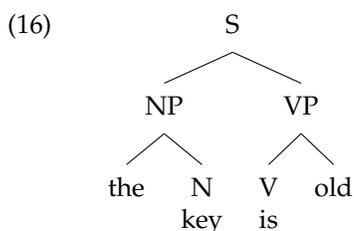
- One of the big facts about language is that words/morphemes (= lexical items) form units, which we call **phrases**:
 - (11) The man [called John last night from his hotel], and the woman ...
 - a. *... did so *e* Tom today from the police station (*e* = call)
 - b. ... did so *e* today from the police station (*e* = call John)
 - c. ... did so *e* from the police station (*e* = call John last night)
 - d. ... did so *e* too (*e* = call John last night from his hotel)
 - (12)
 - a. *Called, the man did *t* John last night from his hotel.
 - b. Called John, the man did *t* last night from his hotel.
 - c. Caled John last night, the man did *t* from his hotel.
 - d. Called John last night from his hotel, the man did *t*.



- Each phrase appears to have a privileged lexical item that determines its (morpho-)syntactic properties, this is called the **head**:

- (14) a. The **key** is old.
 b. The **keys are** old.

- (15) a. The **key** to the cabinet **is** old.
 b. The **keys** to the cabinet **are** old.



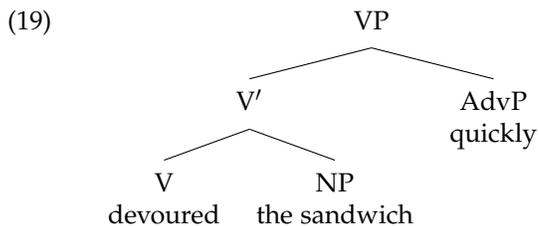
- The head of a phrase may place constraints on what other phrases appear next to it, a phenomenon called **selection**. The selected-for phrase is called the **complement**:

- (17) a. John [_{VP} ate (the sandwich)]
 b. John [_{VP} dined *(the sandwich)]
 c. John [_{VP} devoured (*the sandwich)]

- Additionally, complements must be adjacent to the head that selects for them:

- (18) a. John [_{VP} devoured the sandwich quickly]
 b. *John [_{VP} devoured quickly the sandwich]

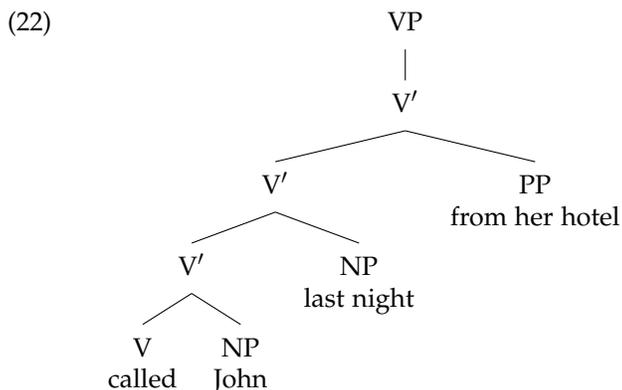
- For this reason, we say that the head and its complement form a constituent to the exclusion of other material in the phrase, which we call the “bar-level” – e.g., a verb and its complement form a *V'*, pronounced “V-bar”:



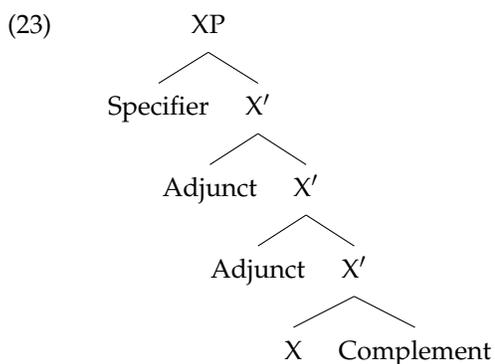
- (20) a. [NP the prince [PP of England] [PP from France]]
 b. *[NP the prince [PP from France] [PP of England]]

- (21) a. [NP the prince [PP from France] [CP that is tall]]
 b. [NP the prince [CP that is tall] [PP from France]]

- Additional “optional” material – **adjuncts** – appears outside of the smallest bar-level. A phrase may contain multiple adjuncts, by recursing on the bar-level:



- There is also a privileged position below the **maximal projection** and the highest bar level that we call the **specifier**.
- X-bar Theory is the theory that there is a universal template for phrases:



- X ranges over a set of **lexical** categories (N, V, Adj, Adv, ...) and a set of **functional** categories (C, T, D, ...)

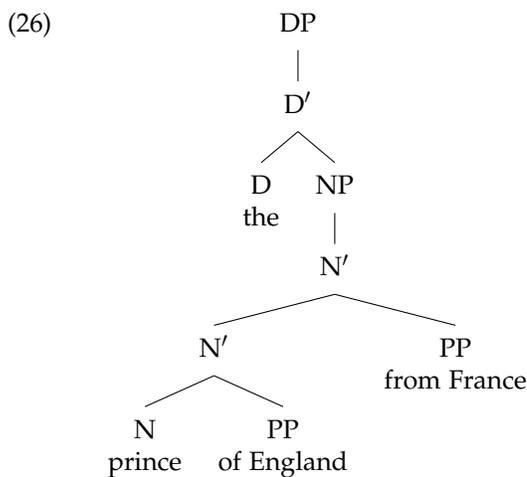
- We take clauses to consist of a CP and a TP, with the predicate in a VP:

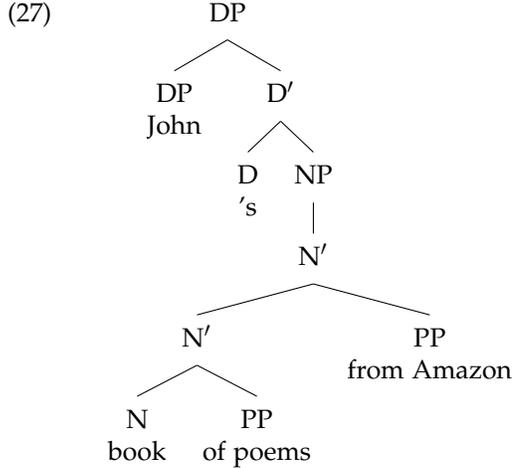
- (24)
- John knows [CP that [TP Mary [VP is nice]]]
 - *John knows [CP that [TP Mary to [VP be nice]]]
 - *John knows [CP for [TP Mary [VP to be nice]]]
 - *John knows [CP for [TP Mary [VP is nice]]]

- (25)
- John wishes [CP that [TP Mary [VP is nice]]]
 - *John wishes [CP that [TP Mary to [VP be nice]]]
 - John wishes [CP for [TP Mary to [VP be nice]]]
 - *John wishes [CP for [TP Mary to [VP is nice]]]

- *know* selects for the complementizer *that*, *wish* either selects for *that* or *for*. The complementizer *that* can only select for a finite T⁰, yielding a finite verb (see section on V-movement), but *for* must select for a non-finite T⁰, *to*.

- We take nominals to be DPs, with the D-head being either a determiner (*the*) or the possessive morpheme (*'s*):





- Under the DP hypothesis, we think of pronouns (*he, she...*) as intransitive determiners, articles (*the, a*) as obligatorily transitive determiners, and demonstratives (*that, this*) as optionally transitive determiners
- In some languages, the head precedes the complement ($X' \rightarrow X$ Complement) whereas in others, the head follows the complement ($X' \rightarrow$ Complement X) – this is the **head directionality parameter**; languages can be either **head-initial** (English, mostly) or **head-final** (Japanese, mostly)
- Head-initial languages:

- (28) a. [CP did_i [TP John *t_i* [VP go [PP to [DP the [NP store]]]]]] ?
 b. [CP hal [TP Aḥmad [VP dhahaba [PP ilā- [DP al- [NP muxzan]]]]] ?
 Q Ahmad go.3.SG.M.PST to the store
 ‘Did Ahmad go to the store?’ (Modern Standard Arabic)

- (29) a. [CP kyā [TP Rām [VP [PP [DP [NP dukān]] -ko] jātā] hai]
 Q Ram store LOC go.IMP 3.PST
 ‘Does Ram go to the store??’
 b. [CP [TP Tarō-ga [VP [PP [DP [NP omise]] -ni] i] -tta] -ka]?
 Taro-NOM store LOC go PST Q
 ‘Did Taro go to the store?’ (Japanese)

- Questions: why do complements appear in the minimal X' ? Why must there be a single complement and specifier, but there may be multiple adjuncts? Why binary branching? Why can't a node have multiple mothers, or why do VPs always have to have Vs? Why does the head-directionality parameter order heads and complements, but not specifiers and X' ? We'll address these issues in Minimalism.

4 Theta Theory

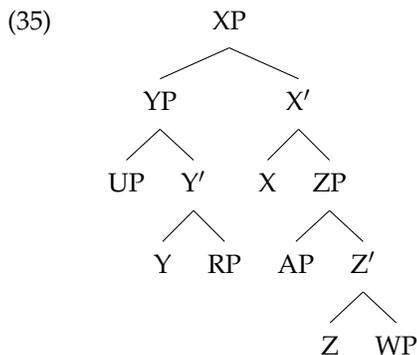
- D-Structure encodes the thematic structure of the sentence – the “who-did-what-to-whom” part of the semantics.

- (30) a. John arrived
b. *John Mary arrived
c. *John arrived Mary
- (31) a. John gave a book to Mary
b. John gave Mary a book
c. *John gave
d. ?*John gave Mary
e. ?*John gave a book
- (32) a. John ate (a pizza)
b. John dined *(a pizza)
c. John devoured (*a pizza)

- Verbs (and some nouns and prepositions) assign *theta roles* to specific positions.
- **Theta Criterion:** Every DP must receive a theta role; every theta-role must be assigned to a DP
- Theta roles are assigned under **government**:

- (33) α governs β iff:
a. α **m-commands** β
b. there is no barrier γ that governs β
- (34) α **m-commands** β iff
a. α does not dominate β
b. β does not dominate α
c. the maximal projection of α dominates β

- X governs: YP , ZP , and AP if **Z is not a barrier**. This notion of “barrier” will be clarified soon; for now, assume that all phrases are barriers. Thus, a head governs its specifier and complement.

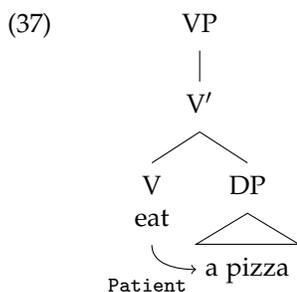


- We need a notion like government because we don't want verbs assigning theta roles too far away –

- (36)
- *John told that Roger really likes Bob Mary
intended: 'John told Mary that Roger really likes Bob'
 - *John Bob hopes that it will arrive on time
intended: 'Bob hopes that John will arrive on time'

- We assume that the verb assigns the Theme or Patient theta-role to its complement:

(37) $\langle \text{eat}, V, [_ DP], \text{THEME} \rangle$



- We also need the subject to be constrained by the verb – some verbs (like *rain*) do not assign any theta roles...

- (38)
- *The water is raining.
 - It is raining.

- ... and verbs like *seem* do not assign a subject theta role (more later in the Movement section)...

- (39)
- It seems to be raining
 - John_i seems t_i to eat too many cookies
 - It seems that John eats too many cookies

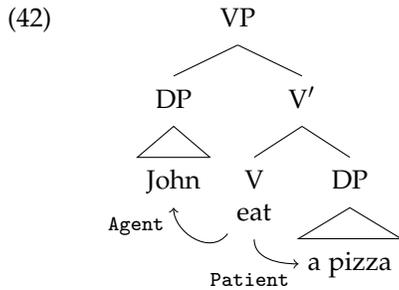
- Subjects appear in Spec,TP, because they precede adverbial materials and auxiliaries located in T⁰:

(40) [CP [TP John [T' will [VP surely eat many cookies]]]]

- Thus, we posit that subjects base-generate in Spec,VP, and move to Spec,TP (Why? Case! See the Case section for more information):

(41) [CP [TP John_i [T' will [VP t_i surely eat many cookies]]]]

(42) ⟨eat, V, [DP _ DP], AGENT, THEME ⟩



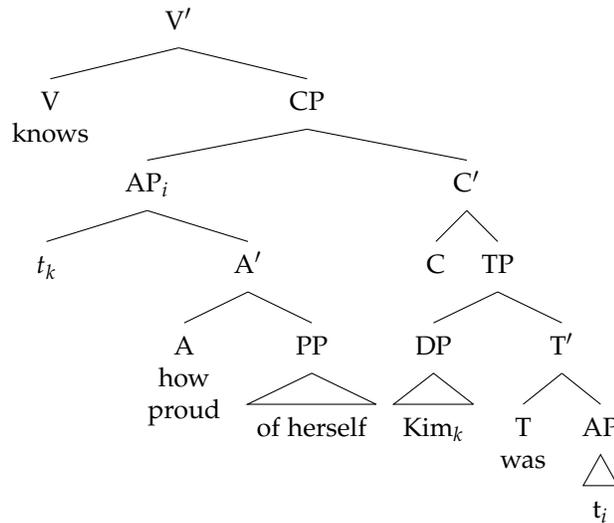
- This is called the **predicate-internal subject hypothesis**, or PISH.

(43) a. Jenna_j knows [CP [DP which pictures of herself_{i/k}] [TP Kim_k likes t_i]]
 b. Jenna_j knows [CP [AP how proud of herself_{*j/k}] [TP Kim_k was t_i]]

- Suppose that anaphors can be bound either in their surface position, or in their base position. This explains why *herself* in (43-a) may be bound by the matrix clause subject *Jenna* or by the embedded subject *Kim*.
- If so, then why can't *herself* in (43-b) be bound by the matrix subject *Jenna*? Let's look at the structure:

(44) a. D-Structure:
 [CP [TP Jenna [VP knows [CP C [TP was [AP Kim [A' how proud [PP of herself]]]]]]]]]]

b. Jenna ...



- The binding domain in this sentence will now be the AP, because the closest SUBJECT is t_k , the trace of *Kim*. If we did not have PISH, then the closest SUBJECT would be *Jenna*, and we would predict that the binding domain would be the entire clause, meaning *herself* can be bound by *Kim*. Thus, we need PISH in order to explain why the binding domains are different between raised DPs and raised predicates! (see the binding section for review)
- A leading idea is that theta-roles are assigned to specific positions across verbs and across languages:

(45) **Universal Theta Assignment Hypothesis (UTAH):** Theta-roles are assigned in the same position across languages/constructions (Baker 1988)

- This means that there is no language with a verb “shmeat”, where *The hamburger shmeats John* means the same thing as English *John eats the hamburger*.
- Lastly, intransitives come in two kinds – verbs in which the subject plays an agentive role in the event (*sing*), and verbs in which the subject is semantically the patient (*fall, break*):

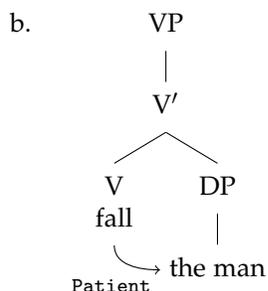
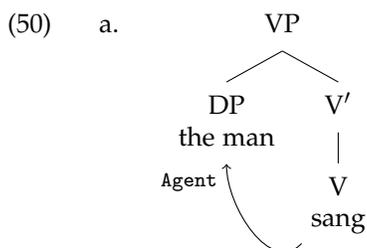
- (46) a. The man sang
 b. The man sang a song
 c. The man sang himself sore
 d. *The woman sang the man (intended: ‘The woman made the man sing’)

- (47) a. The baby fell
 b. *The baby fell a fall
 c. *The baby fell himself sore
 d. The woman falled the baby (* in English; okay in many other languages)

- (48) a. The diamond broke
 b. The mam broke the diamond

- (49) a. La femme a chant-é
 The woman has sang-PTCP.3SG.M
 'The woman has sung' (French)
- b. La femme est tomb-ée
 The woman is fall-PTCP.3SG.F
 'The woman has fallen' (French)

- Verbs like *sing* are called **unergative verbs**, because the subject acts like a prototypical subject in receiving the Agent theta-role. Verbs like *fall* and *break* are called **unaccusative verbs**, because the subject is proposed to underlyingly be an object, i.e., receive the Patient theta-role.



5 Case Theory

- The Theta Criterion restricts DPs to appear in particular positions. However, there are positions where a thematic role seems to be assigned that a DP *cannot* occur in. Why?¹

- (51) a. It's surprising (for us) for Pat to sleep so much
 b. *It's surprising (for us) Pat to sleep so much
 c. Pat was seen.
 d. *It was seen Pat.
 e. Pat fell.
 f. *It fell Pat.
 g. John wants Pat to win.
 h. *John wants that Pat to win.

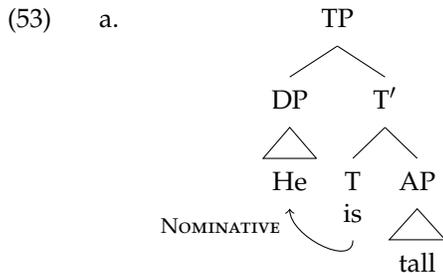
¹Section largely based on Haegeman 1994

- i. John asked the time / what time it is.
- j. John wondered *the time / what time it is.

- Case Theory, attributed to a letter that Jean-Roger Vergnaud sent Howard Lasnik and Noam Chomsky before the publication of their 1977 paper *Filters and Control*, noticed that the morphological shape of DPs is tied to particular syntactic positions. He argued that DPs must appear in these positions to receive Case.

- (52)
- a. It's surprising (for us) for her to sleep so much.
 - b. *It's surprising (for us) for she to sleep so much.
 - c. John believes him to win.
 - d. *John believes he to win.
 - e. Pat's sleeping habit is becoming a problem.
 - f. *Pat sleeping habit is becoming a problem.

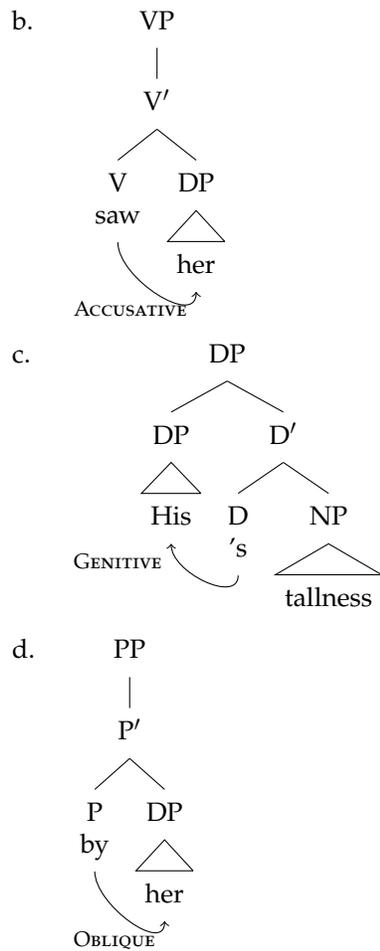
- **Case Filter:** Each DP (with phonetic content) must be assigned an (abstract) Case²
- The intuition is that DPs in the subject position (Spec,TP) of a **finite clause** receive Nominative Case, DPs in the object position (complement of VP) receive Accusative Case. By extension, DPs in the object of a preposition receive Accusative and/or Oblique Case, and possessor DPs receive Genitive Case. Languages differ superficially in whether the Case is realized morphologically (like Latin, Russian, etc.) or is not morphologically realized (most of English, Chinese varieties, etc.)



²Chomsky & Lasnik (1977) had proposed a quite baroque filter that intended to capture the facts that the Case Filter captured:

- (i) * $[\alpha$ NP to VP] unless α is adjacent to and in the domain of Verb or *for* ([-N])

Yikes!



- However, why should some Cases be assigned to specifier positions, and other cases to complements? We can unify these apparently heterogeneous class of positions by suggesting that case assignment takes place under **government**, which we defined earlier. On this view, finite T, V, P, and D assign Nominative, Accusative, Oblique and Genitive Case, respectively.

- (54) α governs β iff:
- α **m-commands** β
 - there is no barrier γ that governs β
- (55) α **m-commands** β iff
- α does not dominate β
 - β does not dominate α
 - the maximal projection of α dominates β

- Thus, the following sentences are ungrammatical, because the DP is not governed by a Case-assigner:

- (56) a. *It's surprising (for us) [_{CP} [_{TP} Pat to sleep so much]]
 b. *John wants [_{CP} that [_{TP} Pat to win]]

- We need to assume that in these sentences the matrix predicates (*surprising*, *wants*) cannot govern *Pat*, because CP is a barrier to government (it **blocks** government). Additionally, non-finite T (*to*) is not a Case assigner. Thus, the Case filter is violated because *Pat* is sheltered from Case assignment in both sentences.
- However, these sentences have grammatical analogs with *for*:

- (57) a. It's surprising [_{CP} for [_{TP} Pat/her to sleep so much]]
 b. John wants [_{CP} for [_{TP} Pat/her to win]]

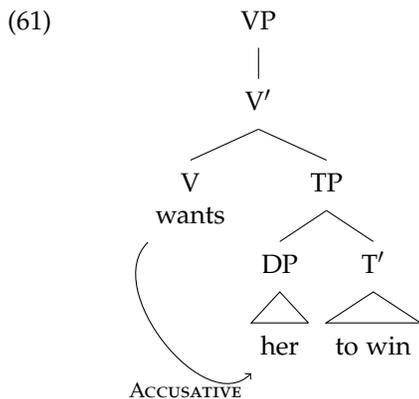
- We can postulate that the C *for* is a Case assigner. However, we must now postulate that *for* can govern into the specifier of TP, i.e., TP is not a barrier. Here's the revised definition of government:

- (58) α governs β iff:
 a. α **m-commands** β
 b. there is no barrier γ that governs β
 c. Every XP is a barrier, except for TP

- With this complication to government, we can also explain another set of facts. Suppose that some verbs do not select for CPs, but they select directly for TPs. If TPs are not barriers, then the matrix V can assign accusative Case through the TP to the embedded subject:

- (59) a. John [_{VP} wants [_{DP} her]]
 (i) John [_{VP} wants [_{TP} her to win]]
 (ii) *John [_{VP} wants [_{CP} that [_{TP} her/she to win]]]
 (iii) John [_{VP} saw [_{DP} her]]
 (iv) John [_{VP} saw [_{TP} her arrive]]
 (v) *John [_{VP} saw [_{CP} that [_{TP} she to arrive]]]

- (60) a. *John [_{VP} hoped [_{DP} her]]
 b. *John [_{VP} hoped [_{TP} her to win]]
 c. John [_{VP} hoped [_{CP} for [_{TP} her to win]]]



- A verb assigning case to the embedded clause subject is called **Exceptional Case Marking**, and is perhaps one of the nicest outcomes of the government analysis of Case.
- Case Theory postulates that only certain lexical heads – finite T, V, D, and P – assign Case. Conspicuously, N and A are absent. This explains why we see prepositions pop up in certain nominalizations or complex adjective constructions. Otherwise, a DP will find itself without Case:

- (62)
- [_{TP} The vikings T [_{VP} invaded England]]
 - *[_{DP} The vikings' D [_{NP} invasion England]]
 - [_{DP} The vikings' D [_{NP} invasion [_{PP} of England]]]

- (63)
- *[_{TP} The vikings were [_{AP} proud their ships]]
 - [_{TP} The vikings were [_{AP} proud [_{PP} of their ships]]]

- On this view, we can think of *of* as being a “dummy” preposition, inserted solely to license the DP that receives its theta role from the adjective/preposition. That is, *invasion* and *proud* assign the theta role to *England* and *their ships* respectively, but the *of* assigns Oblique Case in both contexts.
- If DPs need Case, what about CPs that arguments to the verb? Do CPs receive Case? They can appear in the canonical Accusative position:

- (64)
- Jay [_{VP} believes [_{CP} that May is nice]]
 - May [_{VP} thinks [_{CP} that Jay is hungry]]

- However, we see that adjectives – which we just established do not assign Case – may take a CP as its argument: Alternatively, the CP may rise to the subject position:

- (65) It is unlikely [_{CP} that John will win]

- If we assume that the CP in (65) is a complement to the verb, then it must be that CPs do not need Case, since adjectives do not assign Case (by hypothesis). For this reason, they may remain in the complement position of a passive verb:

- (66) a. John believes [_{CP} that Mary will arrive]
 b. It is believed [_{CP} that Mary will arrive]

- Furthermore, we find that CPs may in fact *resist* Case (cf. Stowell 1981):

- (67) a. John is proud *(of) himself
 b. John is proud *(of) [_{CP} that he won]

- With Case Theory and Theta Theory in our repertoire, we can provide a better analysis of unergative/unaccusatives phenomena, and passives
- Recall that unergative and unaccusatives look similar at S-Structure/PF, even though they have different D-Structures, according to UTAH:

- (68) a. [_{TP} [_{VP} John arrived]]] → [_{TP} John_i [_{VP} t_i arrived]]
 b. [_{TP} [_{VP} fell John]]] → [_{TP} John_i [_{VP} fell t_i]]

- Why do the patients in the unaccusative structures raise to Spec,TP? For that matter, why don't subjects remain in Spec,VP in unergatives or with transitives? With Case Theory, we argue that these DPs must raise to be assigned Nominative Case, otherwise they are ungrammatical.
- Similarly, let's examine the Passive:

- (69) a. [_{TP} was [_{VP} eaten the pizza]]] → [_{TP} the pizza_i was [_{VP} was eaten t_i]]

- Traditionally, the passive is analyzed as suppression of the Accusative Case. The theme must move to Spec,TP to receive Nominative Case, otherwise the sentence will violate the Case Filter. Notice that we must also suppose that the Agent theta role is suppressed in the passive, otherwise this sentence would violate the Theta-Criterion.³
- Notice that the passive has three ingredients here:
 - a. *by*-phrase
 - b. Passive morphology (*be...-en*)
 - c. DP movement (for Case)

- Thus, there is no "passive operation" in GB, which is consistent with the "do what you want, then we'll see if you broke the law" approach to GB. This is a good thing. We observe that these three things are in fact independent:⁴

³The *by* phrase is a bit more mysterious. We might just have to say that there is a preposition in English *by* that assigns the agent theta role. However, that doesn't seem quite right – the theta role of the *by* phrase seems to be colored by the semantics of the verb – e.g., we can say *The US is bordered by Canada*. Here, we don't want to say that *Canada* receives the agent theta role.

⁴Examples taken from Howard Lasnik's Case and Passivization handout, LING 610 Syntactic Theory 1, Fall 2010)

<i>by</i> -phrase	<i>be-en</i>	DP-movement	Example
✓	✓	✓	John was arrested by the police
✗	✓	✓	John was arrested
✓	✓	✗	It was proven that 2 + 2 = 4 by John
✗	✓	✗	It was proven that 2 + 2 = 4
✗	✗	✓	John fell down
✓	✗	✗	The destruction of Rome by the barbarians
✓	✗	✓	Rome's destruction by the barbarians
✗	✗	✗	The police arrested John

- A further complication: how tightly linked are morphological case and abstract Case? To examine this, we need to distinguish **structural case** and **inherent case**. Structural Case is Case that's tied to a specific position – such as Nominative (and possibly Genitive in DPs like *the city's destruction*, in which *the city* is the theme of the destruction event). Inherent Case is Case that's specific to a lexical item, and is prototypically assigned under Theta Role assignment. Prepositions typically assign inherent Case, and verbs can assign Inherent Case to some of their object:s

- (70) a. Hans hat [_{VP} mich gesehen]
Hans has me.ACC seen
'Hans saw me' (German)
- b. Hans hat [_{VP} mir geholfen]
Hans has me.DAT helped
'Hans has helped me' (German)

- Structural Case seems to be assigned at/before S-Structure, as observed in the cases⁵ of unaccusatives and passives. However, inherent Case survives in passivization. This implies that inherent Case is assigned earlier, presumably D-Structure.

- (71) a. Sie sieht ihn.
She.ACC sees him.ACC
'She sees him' (German)
- b. Er wird gesehen.
He.NOM was seen
'He was seen'
- c. *Ihn wird gesehen.
He.ACC was seen.
intended: 'He was seen'
- (72) a. Sie hilft ihm.
She.NOM helps him.DAT
'She helps him'
- b. *Er wird geholfen
He.NOM was helped
intended: 'He was helped'

⁵Pun intended.

- c. Ihm wird geholfen
He.DAT was helped
'He was helped'

- This demonstrates that Accusative case is suppressed (or “absorbed”) – it says nothing about Dative Case. Additionally, Nominative Case doesn’t “overwrite” inherent Case when the DP moves to Spec,TP.

5.1 EPP

- In the previous section, we spent a lot of time trying to explain why DPs move to Spec,TP in finite clauses. However, English seems to have an additional property that requires this position to be filled anyway:

- (73) a. *(It) rained
b. *(It) seems unlikely for John to win.

- What’s that *it* doing there? Descriptively, English seems to require an overt XP in the Spec,TP position, even if it is not thematically related to the verb. When there is no external theta-role to assign, we either move a DP to Spec,TP (unaccusatives, passives), or a CP. Alternatively, we can use an expletive *it*, which we are forced to conclude is exempt from the Theta Criterion – perhaps because it’s inserted after D-Structure. This requirement is formalized as the EPP:

- **Extended Projection Principle (EPP):** Spec,TP must be filled.
- But wait – this is surely redundant. DPs must move to Spec,TP to receive Nominative Case in finite clauses. Could we postulate an **Inverse Case Filter**?

- (74) a. **Case Filter:** Each DP (with phonetic content) must be assigned an (abstract) Case
b. **Inverse Case Filter:** Each (abstract) Case must be assigned to a DP

- Unfortunately, the Inverse Case Filter is problematic, at least within GB. The EPP requires that **all** subject positions be filled, including non-finite Spec,TP. The Case Filter only works to get a DP in Spec,TP if that T is finite and that DP hasn’t received its Case yet.
- In (75), we see that *Ernie* can bind the anaphor *himself*. This means that at some point in the derivation *Ernie* is local to *himself*, i.e., is in its binding domain. However, there is no reason for *Ernie* to move to the intermediate Spec,TP, since *to* is by hypothesis not a Case-assigner. So, *Ernie* seems to stop at this intermediate site for no other reason than to satisfy the EPP, before it proceeds onto the matrix Spec,TP to receive Nominative Case.

- (75) [_{TP} Ernie_i seems to Dustin_j [_{TP} *t*_i to appear to himself_{i/*j} [_{TP} to be hungry]]]]⁶

⁶See McFadden (2003) for further discussion, as well as Bošković (2002)

- Similarly, *wanna* contraction cannot take place with A' movement, but can take place over PRO:

(76) a. Who_i did you want [_{TP} t_i to [_{VP} come]] \nrightarrow Who did you wanna come?
 b. John will want [_{TP} PRO_i to [_{VP} come]] \rightarrow John will wanna come

- Plus, if we do not bifurcate morphological case from abstract case, then passives with quirky case are problematic. That is, in (72-c), repeated below, where does the Nominative Case get assigned? On the ICF, this is a problem.

(77) Ihm wird geholfen
 He.DAT was helped
 'He was helped'

- Lastly, if CPs resist Case, then Nominative is going un-assigned even in sentences like:

(78) [_{CP} That John is hungry] isn't surprising

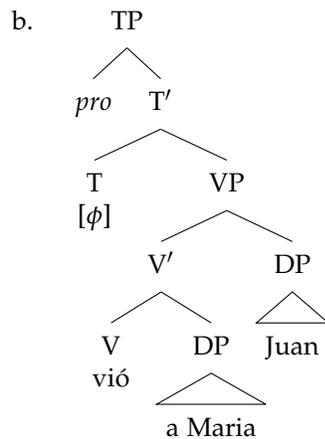
- However, in Minimalism, people have revived the Inverse Case Filter as a superior alternative to keeping the EPP and the Case Filter, despite these challenges. This involves a better analysis of cyclicity and *wanna*-contraction, the former of which we will address. A rarer tactic is to reduce everything to the EPP – or potentially several EPPs (Marantz 1991; Chomsky 1995; Lasnik 2001). This problem still remains.

- Some languages appear to not have the EPP:

(79) a. Llueve
 rains
 'It rains' (Spanish)
 b. Llegó ayer
 arrived yesterday
 'She/he arrived yesterday' (Spanish)
 c. Parece que está durmiendo
 seems that is sleeping
 'It seems that she/he is sleeping' (Spanish)
 d. Se cayó el hombre
 SE fell the man
 'The man fell down' (Spanish)

- However, Rizzi (1982) argues that these languages satisfy the EPP by having rich inflection which licenses a null pronominal *pro* in Spec,TP:

(80) a. Vio a María Juan
 Saw Acc Mary John
 'John saw Mary'



6 Binding

- Part of knowing our language is knowing the proper distribution of certain DPs:

- (81)
- Bob_i said that John's_j dad_k likes himself_{*i/*j/*k}
 - Bob_i said that John's_j dad_k likes him_{i/j/*k}
 - He_i said that his_j dad_k likes John_{*i/j/*k}

- We will slowly piece together our binding theory, first by examining the distribution of anaphors, then pronouns, then R-expressions

6.1 Principles A, B, and C

- First, let's examine **anaphors**. Anaphors are words who are required to pick up their semantic value from inside the clause – *himself*, *herself*, *each other*, and so on.

- (82) Bob's_i dad_j likes himself_{*i/j/*k}

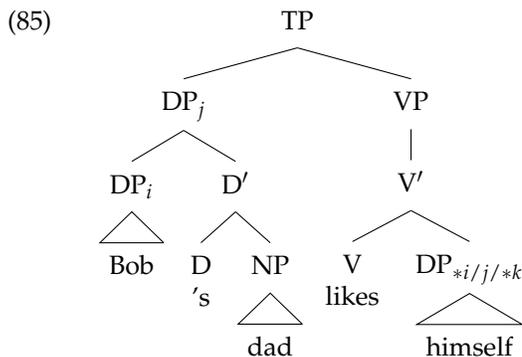
- An antecedent must **bind** an anaphor in order for it to be grammatical:

- (83) α **binds** β iff:

- α and β are co-indexed
- α c-commands β

- (84) α **c-commands** β iff:

- α does not dominate β
- β does not dominate α
- the minimal phrase dominating α also dominates β



- We conclude that the antecedent of an anaphor must **bind** it – i.e., must c-command it
- There is also a locality condition on anaphora:

(86) John_i said that Bob's_i dad_j likes himself_{*i/j/*k/*l}

- We might suspect that anaphors must be bound by their *closest* antecedent. However, that does not seem quite right:

(87) John_i told Bob_j about himself_{i/j}

- Instead, we will suppose that there are **binding domains**, or a syntactic configuration that an antecedent of an anaphor must be in. Thus, our definition of Principle A is as follows.

(88) **Principle A:** An anaphor must be bound by its antecedent in its binding domain.

- What is the binding domain of an anaphor, then? One obvious solution is to propose that the minimal clause (TP) containing the anaphor is the binding domain – that is, in (86), *John* cannot bind *himself* because *John* is in the main clause, but *himself* is in the embedded clause.
- The first problem with this is that DPs can be binding domains as well:

(89) Tom_i didn't like Mike's_j pictures of himself_{*i/j}

- Here, the DP *Mike's pictures of himself* seems to be the binding domain of *himself*. So, perhaps a binding domain is the minimal clause or minimal DP that contains the anaphor?
- This also does not quite work – anaphors in DPs that do not contain a possessor may be bound by the subject of the clause:

(90) Tom_i didn't like the pictures of himself_i

- Thus, it seems that a TP can be a Binding Domain, but a DP can be too – as long as it has a possessor. One way to capture these facts is to update the definition of Binding Domain as such:

(91) **Binding Domain:** A binding domain of α is the minimal TP or DP that contains α and a phrase in a specifier

- We can now explain the contrast between (89) and (90) as following from the difference in the filled Spec,DP
- However, this does not quite work, because anaphors can be bound from outside of their minimal clause:

(92) Liam_i convinced [_{TP} himself_i to go to Mars]

- Here, the binding domain of *himself* ought to be the embedded TP, because this TP contains a specifier (*himself*). Thus, we predict that this sentence should be ungrammatical, because *himself* lacks an antecedent within this TP, contrary to fact.
- To fix this, we will change our definition of binding domain to be the **governing category**:
- On this analysis, the binding domain of *himself* in ?? is the matrix TP, because this contains a governor (*convinced*), a subject *himself*. The embedded TP is does not contain a governor of *himself*.

(93) **Governing Category:** The governing category of α is the minimal TP or DP that contains α and a governor of α

- Typically, anaphors and pronouns are in complementary distribution:

(94) a. Bob_i said that John's_j dad_k likes himself_{*i/*j/k/*l}
 b. Bob_i said that John's_j dad_k likes himself_{i/j/*k/l}

- Here, *himself* must refer to the embedded subject *John's dad*; but *him* must refer to any other DP except for *John's dad* –

(95) **Principle B:** A pronoun must be free in its binding domain.

- Lastly, R-expressions (regular referential DPs that are not anaphors or pronouns) must not be coreferential with anything that c-command them. Importantly, this seems to make no reference to binding domain:

(96) a. *He_i said that John's_j dad likes Tom_i
 b. Bob said that his_i dad like Tom_j
 c. *Bob said that he_i likes Tom_i

(97) **Principle C:** An R-expression must be free

6.2 Outstanding issues in Binding Theory

- The complementary distribution between anaphors and pronouns breaks down in some cases:

- (98) a. The man_i pulled the blanket towards him(self)_i
 b. The farmers_{s_i} wanted to drive [DP each other's_i/their_i tractors]

- In both of these cases, the antecedent is outside the governing category. This predicts that the binding relation between the antecedent and the pronoun is fine by Principle B. Why then can the anaphors be bound (*himself, each other's*) without violating Principle A? Apparently, binding domains for anaphors are able to go “up” another governing category to get bound. This is a very unsatisfying conclusion.
- Principles B and C may appear to be violated in particular semantico-pragmatic contexts. This too raises problems for classical Binding Theory (cf. Reinhart 1983).

- (99) a. I know what Anna & Bill have in common – she adores him_i passionately, and he_i adores him_i too!
 b. Only Mary_i likes Mary_i

- Indices are syntactic objects in GB – the indices that are applied to traces, pronouns, and R-expressions are syntactically “the same”. The differences that are observed in the semantics between these different configurations is determined at the syntax-semantics interface
- For one thing, indexation with an anaphor and indexation between a quantifier and a pronoun receive very different semantics:

- (100) a. John's_i dad likes him_i
 b. Semantics: John's dad likes John

- (101) a. Every boy_i's dad likes him_i
 b. Semantics: For all boys x , x 's dad likes x
 c. Semantics: *For all boys x , x 's dad likes every boy x

- Additional problems are raised by plurals, as pointed on by Lasnik (1981):

- (102) a. *We like me.
 b. We think [CP that I will win]
 c. *I like me.
 d. I think [CP that I will win]

- If (102-a) is a Principle B violation, then we need to claim that the reference of *we* and *me* is the same. That doesn't seem right. Instead, Principle B seems to require *disjointedness* of reference.

- (103) a. They like him. (okay only if *him* is not included in the reference of *they*)
 b. They think [CP that he will win] (no restrictio)

- So, should our definition of binding be changed to be about disjointedness / non-disjointedness? Probably not – Principle A seems to require total overlap:

- (104) They like themselves. (okay only if *they* and *themselves* refer to the same plurality)

- Other issues arise in the more careful study of plurals under binding theory. The problem is that indexation is insufficient for noting the different kinds of meanings that we observe in binding relations.
- In Minimalism, there are attempts to completely reconfigure Binding Theory to have a less stipulative notion of binding domain and to abolish indices as a syntactic formative. Additionally, some work argues that Binding Theory can in some ways be reduced to other modules of the grammar, such as Movement or Agreement.

7 Movement

- One of the properties of human language is *displacement* – a phrase appears in one position in the sentence but receives its semantic interpretation in another place.

(105) $[_{DP} \text{Tommy and Tammy}]_i$ were believed by themselves_i $[_{TP} \text{to } [_{VP} \text{have been seen at the scene of the crime}]]$.

- Here, the DP *Tommy and Tammy* seems to trigger agreement in the main clause, serve as a binder for *themselves* in the main clause, and receive Nominative Case in the main clause. However, it receives its Theme theta role from the most deeply embedded verb *seen*.
- In the mapping from D-Structure to S-Structure, there is an operation called **Move α** . The α is supposed to range over all possible phrases – this is contrast to pre-GB theories which included operations called *Move NP* and *Move WH*.
- We distinguish three different kinds of movement – **A-Movement**, **A'-Movement**, and **Head Movement**.
- The major theoretical construct that we will use to describe the property of movement dependencies is the **trace**. Traces are intended to be silent DPs that contain the syntactic category of the moved constituent. They are typically represented as *t*, and less frequently, [*e*]. They are indexed with their antecedent as well

7.1 A-Movement

- A-movement (A = argument) is a kind of movement relation that moves a DP into a Case position (prototypically):

(106) $[_{CP} [_{TP} [_{VP} \text{was pet the puppy }]]] \rightarrow [_{CP} \text{the puppy}_i [_{TP} [_{VP} \text{was pet } t_i]]]$

- A-movement is highly restricted. First, A-movement may not “skip over” a relevant position in the sentence:

(107) $*[_{CP} \text{the puppy}_i [_{TP} [_{VP} \text{was said } [_{CP} \text{that } [_{TP} \text{John } [_{VP} \text{wanted } [_{TP} \text{to pet } t_i]]]]]]]]$

- Interestingly, the range of positions that block A-movement isn't very clear. For instance, experiencer obliques do not block raising to subject. Even within the class of A-movement, there are subdivisions:

(108) The puppy_i appears to Mary to have been pet *t_i*

- Additionally, not all A-movements are possible:

(109) a. *John_i was written *t_i* by Mary
 b. *John_i was resembled *t_i*
 c. ?John_i was bought *t_i* a cake

- A-movement is a "one-and-done" affair – DPs raised to an A-position for Case will remain in that position (**freezing**)

(110) a. *John_i seems (that) *t'_i* will be likely *t_i* to win
 b. *Jane_i is likely *t'_i* will be seen *t_i* at the party

- ... but recall that a DP will pass through a Spec,TP position if it does not receive Case there:

(111) John_i seems [_{TP} *t'_i* to be likely to himself_i [_{TP} *t_i* to win]

- Furthermore, A-movement may feed A'-movement, but A'-movement may not feed A-movement ("**ban on improper movement**")

(112) a. Who_i did John say *t'_i* seems *t_i* to be nice?
 b. *Who_i was asked by John *t'_i* *t_i* went to the party.

- To account for these facts, GB theorists have proposed that A-traces are actually anaphors, and thus subject to Principle A:

(113) a. John_i expects [_{TP} himself_i to win]
 b. John_i is expected [_{TP} *t_i* to win]

(114) a. John_i saw himself_i
 b. John_i was seen *t_i*

(115) a. *John_i said that Mary will like himself_i
 b. *John_i was said that Mary will like *t_i*

(116) a. *John_i was believed himself_i went to the party
 b. *John_i was believed *t_i* went to the party

- A-movement feeds binding:

(117) John_i seems to himself_i [_{TP} *t_i* to be nice]

- A-movement cannot “reconstruct” – i.e., the moved XP cannot “move back” for the purposes of binding. The following sentence is bad because it is a Principle C violation. However, if *he* were able to move back into the *t* position, then it would no longer c-command *John*, satisfying Principle C. But, alas, it does not.

(118) *He_i seems to John_i [_{TP} *t*_i to be nice]

- A-movement cannot license “parasitic gaps”:

(119) *The article was read *t*_i without reviewing *e*_i

7.2 Raising and Control

- Perhaps one of the more interesting findings is the distinction between raising and control. Let’s examine these two sentences:

(120) a. Ernie wants to be napping.
b. Ernie seems to be napping.

- In (120-a), Ernie is both the agent of the wanting event, and the agent of the napping event. That means at D-Structure, *Ernie* must somehow receive a theta role from both of these predicates.
- In (120-b), Ernie is not receiving a theta role from *seem* – there is no sense in which Ernie is seeming. Instead, *Ernie* is receiving the agent theta role from *nap* alone.
- In GB, D-Structure is the configuration in which DPs are in their “starting” position, and it’s also the level at which the Theta Criterion applies. That makes (120-a) a paradox – *Ernie* cannot move from the embedded clause to the matrix clause to receive a second theta role, because theta role assignment precedes movement. For that reason, GB theorists postulate a special silent pronoun called PRO, which in this case must be obligatorily bound:

(121) [_{TP} Ernie_i wants [_{TP} PRO_i to be napping]]

- In this structure, *Ernie* receives the agent theta role of *want*, and PRO receives the agent theta role of *nap*. These two are obligatorily coindexed, yielding the result that Ernie is both wanter and napper.
- Conversely, with matrix predicates like *seem*, Ernie starts downstairs, and then must move to the matrix clause in order to receive Nominative Case – these are called **raising predicates**:

(122) [_{TP} seems [_{TP} Ernie to be napping]] → [_{TP} Ernie seems [_{TP} *t*_i to be napping]]

- Essentially, D-Structure and Theta Criterion commits us to the view that the subject of raising predicates is only there at S-Structure, and that the subject of a control verb must be there at D-Structure:

- (123) a. Ernie wants to nap.
b. *It wants that Ernie naps. (Theta Criterion violation)
- (124) a. Ernie seems to be napping.
b. It seems that Ernie is napping.
- (125) a. The doctor wants to examine the patient \neq The patient wants to be examined by the doctor
b. The doctor seems to examine the patient = The patient seems to be examined by the doctor
- Idioms are assumed to be constituents at D-Structure, so we predict that idioms will not “survive” control structures, but can raising structures:
- (126) a. The shit wanted to hit the fan.
b. The shit seemed to hit the fan.
- So, what kind of creature is PRO? It seems to only appear in ungoverned Spec,TP positions–
- (127) a. John expects [_{CP} [_{TP} PRO_i to win]]
b. It is illegal [_{CP} [_{TP} PRO_{ARB} to park here]]
c. [_{CP} [_{TP} PRO_{ARB} Stuying syntax]] is great
- (128) a. *John believes [_{TP} PRO_i to win] (cf. *John_i believes himself_i to win*)
b. It is okay for PRO_{ARB} to park here (cf. *It is okay for us to park here*)
c. [_{CP} That [_{TP} PRO_i study syntax]] is great (cf. *That we study syntax is great*)
d. *It was eaten PRO_{ARB}
- Chomsky’s solution to this is to argue that PRO is both an anaphor (because in some contexts it must be bound), and also a pronoun (because in some contexts it freely refers). Thus, it must obey both Principle A and Principle B – it must be both bound in its governing category and free in its governing category. How can that be possible? Easy – if PRO is ungoverned, then it has no governing category, and thus it vacuously satisfies Principles A and B. Sneaky, eh?
 - PRO has some other properties that are still poorly understood. Different constructions place different demands on the interpretation of PRO – subject control predicates require that their subject controls PRO, and object control predicates require that their object controls PRO:
- (129) a. John_i promised Mary_j [_{TP} PRO_{i/*j} to win the election]
b. John_i persuaded Mary_j [_{TP} PRO_{*i/j} to win the election]
- Similarly, the semantics of control are quite peculiar. For one thing, Control requires a *de se* interpretation. That is, *The candidate want PRO to win* not only implies that the candidate wants herself to win, but is aware of the fact that it is she herself that she wants to win.

- (130) A candidate for an election is drunk in her hotel room after a long campaign. She is watching a debate on TV, and is very impressed by this candidate's performance. She's so impressed, in fact, that she wants this candidate that she's watching to win the election. However, she fails to realize that the candidate she's watching is actually herself.
- The candidate_i wants her_i to win
 - #The candidate_i wants PRO_i to win

- Additionally, as before, the indexation system seems insufficient for characterizing the semantics of PRO:

- (131) a. John_i wants [TP PRO to gather at noon]
 b. The committee wants [TP PRO to meet at noon]

- In Minimalism, a variant of GB Control Theory still persists, cf. Landau (2015). However, there is a popular approach that attempts to reduce PRO to Movement, since D-Structure is no longer a part of the theory, cf. Hornstein (1999). This has received mixed results, and the issues of subject vs. object control, de se interpretations, the raising vs. control diagnostics, and plural predication are still problematic for this approach.

7.3 Head Movement

- Consider the following alternation:

- (132) a. John will see Mary
 b. Will_i John *t_i* see Mary?

- In English, polar question formation is encoded by an auxiliary raising to the C⁰ position:

- (133) [CP C⁰+will_i [TP John *t_i* [VP see Mary]]]?

- Verb-movement is observed in various languages. For instance, verbs raise to T⁰ in French, but tense morphology lowers to the verb in English:

- (134) a. Jean embrass_i-e souvent *t_i* Marie.
 John hug frequently Mary
 'John frequently hugs Mary'
 b. John *t_i* frequently hug-s_i Mary

- Tense lowering onto the verb is sometimes called **affix hopping**; affix hopping can be disrupted by negation, and T-to-C movement "bleeds" affix hopping. In the contexts, **do-insertion** takes place.

- (135) a. John *t_i* eat-s pomegranates.
 b. John do-es-n't eat pomegranates.
 c. Do-es-C⁰ John *t_i* eat pomegranates?

- *Do*-insertion is a rare phenomenon, but is observed in a few other languages, e.g. Korean:

- (136) a. Chelswu-ka chayk-ul ilk-ess-ta
Chelswu-NOM book-ACC read-PST-DECL
'Chelswu read a book'
- b. Chelswu-ka chayk-ul ilk-ci ani ha-ess-ta
Chelswu-NOM book-ACC read-CI NEG do-PST-DECL
'Chelswu didn't read a book' (Korean)⁷

- T^0 to C^0 movement for question formation is observed in French. However, since *V* raises to *T* in French, the whole V^0 - T^0 complex raises:

- (137) a. Tu embrasses_i souvent *t_i* Marie.
You hug frequently Mary
'You hug Mary frequently'
- b. Embrasses_j-tu *t_j* souvent *t_i* Marie?
Hug-you frequently Mary
'Do you hug Mary frequently?'

- In English, auxiliaries raise to T^0 , and as predicted, will raise to C^0 in question-formation:

- (138) a. You have_i *t_i* eaten popcorn
b. Have_j you *t_j* *t_i* eaten popcorn?

- Like *A*-movement, Head Movement is extremely restricted – a head may only move to the nearest head. That is, there are no languages like French or English where the verb skips over *T* and raises straight to *C*:

- (139) *Have_i you do-es eaten popcorn?

- **Head Movement Constraint:** A head may not skip over an intervening head (Travis 1984)

7.4 *A'*-Movement

- When linguists think of "movement", they almost always mean "*A'*-movement". *A'*-movement is phrasal movement that targets the left edge of a clause, usually Spec,CP, for reasons that are not necessarily associated with Case. *A'*-movement comes in many "flavors":

- (140) a. Who_i did you say that Mary saw *t_i*? *wh*-movement
b. The man OP_i that you said that Mary saw *t_i* is named Fred. relativization
c. THE MAN_i, Mary said that she saw *t_i*, (...but THE WOMAN she didn't.) topicalization
d. Smart OP_i though you said Mary seemed *t_i*, ... adj.-*though* movement
e. The book OP_i is too hard to read *t_i* *tough*-movement

⁷Hagstrom (1996)

- A' movement permits reconstruction in some cases:

(141) It is unknown [_{DP} which pictures of himself_j]_i John_j liked *t_i* best
- A' movement licenses parasitic gaps:

(142) What_i did you file *t_i* without reading *e_i*?
- A' movement, unlike A-movement, does not feed binding:

(143) *Who_i does it seem to himself_i to *t_i* like Mary?
- In fact, A' movement is sensitive to “crossover effects” – typically, you cannot move over a coreferential DP, in the general case:

(144) **Weak Crossover:**

 - ?*Who_i does his_i mother loves *t_i*?
 - ?*The man_i that his_i mother loves *t_i* is named Ted

(145) **Strong Crossover:**

 - *Who_i does he_i love *t_i*
 - The man_i that he_i loves *t_i* is named Ted.
- Strong Crossover is sometimes analogized with Principle C – thus, A-traces are like anaphors, and A'-traces are like R-expressions. However, this only explains Strong Crossover – Weak Crossover requires another explanation.
- Lasnik & Stowell (1991) observe that not all A' movement is sensitive to weak crossover effects, a phenomenon they call “weakest crossover”. This still remains a bit of a puzzle:

(146) John_i was hard OP_i for his_i wife to love *t_i*
- Of course, these are not the only constraints on A' movement...

7.5 Islands

- A' movement is unbounded in the general case:

(147) a. Who_i did you say that Mary thought that Bill liked *t_i*?

 - The man OP_i that you said that Mary thought that Bill liked *t_i* is named Ted.
 - Smart OP_i though you said that Mary thought that Bill was *t_i*, he couldn't solve the problem.
- However, there are a handful of configurations that A'-movement cannot cross, called **islands**:

- (148)
- a. **Relative clause islands:**
*Who_i did Dale comfort the woman [_{CP} that saw *t_i*]
 - b. **Complex NP islands:**
*Who_i did Dale hear the rumor [_{CP} that Leo scared *t_i*]
 - c. **Definite NP islands:**
*Who_i did Dale doubt [_{CP} Lucy's rumor about *t_i*]
 - d. **Whether-islands:**
*Who_i did Dale wonder [_{CP} whether Bob frightened *t_i*]?
 - e. **Wh-Islands:**
*Who_i did Dale wonder [_{CP} who saw *t_i* behind Laura's bed]?
 - f. **Subject Islands:**
*Who_i did the fact that [_{CP} Sarah saw *t_i*] surprise Dale?
 - g. **Adjunct Islands:**
*What_i did Dale ruminate [_{CP} while Harry examined *t_i*]?
 - h. **Coordinate Structure Constraint:** *Who_i did [_{VP} Dale suspect *t_i*] and [_{VP} Harry interrogate Leland]?
 - i. **Factive islands:**
*Why_i did Dale remember that Ben was suspicious *t_i* ?
 - j. **Negative islands:**
*Why_i did Dale say that nobody seemed innocent *t_i*?
 - k. **Left-branch islands:**
*How scary_i did Dale see *t_i* of a man?

- Islands are very stable across languages, and children appear to demonstrate knowledge of them quite early in development (de Villiers, Roper, & Vainikka 1990) – for this reason, islands are in many ways the champion case of UG, and therefore are quite controversial in debates with anti-generativists in language acquisition and sentence processing!
- It is worth noting that island violations can be “remedied” in a few contexts – however, these three remedies are still problems for syntactic theory:

- (149) **Parasitic Gaps:**
- a. *What did you file the article without reading *t_i*?
 - b. What did you file *t_i* without reading *e_i*? (it is unclear whether this latter empty category is a trace or something else)
- (150) **Across-The-Board Movement (ATB; only for Coordinate Structure Constraint violations)**
- a. *Who_i did John see *t_i* and Mary like Bob?
 - b. *Who_i did John see Bob and Mary like *t_i*?
 - c. Who_i did John see *t_i* and Mary like *t_i*?
- (151) **Resumptive Pronouns** (the status of RPs is quite controversial in the world's languages!)
- a. *This is the man OP_i that I don't know who_j *t_i* likes *t_j*
 - b. ?This is the man OP_i that I don't know who_j he_i likes *t_j*

- Rizzi (1982) argues that the bounding nodes are subject to variation. In Italian, the bounding nodes are CP and DP. This means that extraction from subjects and from *whether* and *wh*-complements are fine:

- (158) a. [DP Questo autore_i [CP di cui [TP so [CP che [TP il primo
this author by whom I.know that the first book is been published
[DP libro *t_i* è]]]]] stato pubblicato recentemente . . .
recently
'This author who_i I know that the first book by *t_i* was published recently'
- b. [DP Tuo fratello_i [CP a cui [TP mi domando [CP che storie_j [TP
Your brother to whom myself I.wonder what stories
abbiano raccontato *t_j t_i*]]]]] era molto preoccupato
had told was very worried
'Your brother who I wonder what stores were told to was very worried'

- Subjacency has a few kinks in the system, that lead to Chomsky's 1986 book *Barriers*, which was elaborated on by Lasnik & Saito's 1992 book *Move α*. In a major way, these books were the last great work in Government and Binding before the shift to Minimalism. However, I will not present the problems that they were solving, and instead I will leave some of the difficulties of subjacency for the homework.
- However, subjacency is insufficient for explaining all the constraints on movement. For that reason, we need the ECP

7.5.2 ECP

- The ECP is one of the best and worst parts of GB.⁹
- Let's revisit the following example:

(159) *John_i is illegal [CP *t'* [TP *t* to park here]]

- This does not violate subjacency, and it may satisfy Principle A vacuously as *t* and *t'* *prime* lack a governing category. So, what's wrong?

(160) **Empty Category Principle (ECP)**, first pass: A trace must be governed

- The ECP is extended to account for subject/object asymmetries, like the **that-trace effect**:

- (161) a. *Who_i do you think [CP that [TP *t* solved the problem]]?
b. Which problem_i do you think [CP that [TP John solved *t_i*]]?

(162) **ECP**, second pass: A trace must be properly governed.

- a. α properly governs β iff α governs β and α is a lexical category (N, V, A, P)

⁹This section is based off of Howard Lasnik's handouts 'The ECP' and 'An Early Minimalist Approach to Certain ECP Effects', LING 610, Fall 2010

- The *that* in (161-a) is not lexical, and therefore *t* is not properly governed.
- But, we're not done:

- (163) a. *Who_i do you think [_{CP} t'_i that [_{TP} t solved the problem]]?
 b. Who_i do you think [_{CP} t'_i C [_{TP} t solved the problem]]?

- We need to explain why the overt C *that* induces a violation, but not the null C:

(164) ECP, third pass: A trace must be properly governed.

(165) α properly governs β iff:

- a. α governs β and α is lexical (= **lexical government**), OR
 b. α binds β and β is 0-subjacent to α (i.e., there is another trace or antecedent with no bounding nodes in between) (= **antecedent government**)

- This isn't really an explanation, notice – we have to presume that *that* somehow blocks antecedent government, but null C does not. So, there is an embedded stipulation.
- ECP buys us adjunct/argument asymmetries for free:

- (166) a. ?Which car_i did you leave [_{CP} before Mary fixed t_i] – *Subjacency
 b. **How_i did you leave [_{CP} before Mary fixed the car t_i] – *ECP ; *Subjacency

- An outstanding problem – why don't we get "*that*-trace effects" with adjuncts? They should violate the ECP, by the logic used above:

(167) Why_i did you say that [_{CP} Mary left t_i]?

- Chomsky (1986) and Lasnik & Saito (2002) provide interesting solutions to this puzzle, but it requires completely revising the theory of subjacency, barriers, and the ECP. Unfortunately, there still lies some pretty severe stipulations about the distinction between overt and null *that* and adjunct A' dependencies.

7.6 Covert Movement

- A'-movement is argued to apply after S-Structure in some languages and constructions:
- Huang (1982) argues that subjacency is an S-Structure constraint – that is, covert movement does not need to obey subjacency:

- (168) a. Ni xiangxin Lisi mai-le sheme de shuofa
 you believe Lisi buy-ASP what DE claim
 'What did you believe the claim that Lisi bought?'
 b. Ni xiang-zhidao [_{CP} Lisi weisheme mai-le sheme]
 you wonder Lisi why buy-ASP what
 'What did you wonder why Lisi bought t_i?'

- ... however, Huang (1982) claims that the ECP still applies at LF:

- (169) a. *Ni xiangxin [_{CP} Lisi weisheme likai] de shuofa
 You believe Lisi why left DE claim
 'Why did you believe the claim that Lisi left?'
 b. Ni xiang-zhidao [_{CP} Lisi weisheme mai-le sheme]
 you wonder Lisi why buy-ASP what
 *'Why did you wonder what Lisi bought t_i ?'

- Additionally, *wh-in-situ* constructions in English may display similar properties:

- (170) a. Who bought what?
 b. LF: [_{CP} who_i what_j [_{TP} t_i bought t_j]]
 c. Answers: 'John bought a pie, Mary bought apples, Sue bought tomatos...'

- This is called a **pair-list reading**. We traditionally analyze these as covert raising of the *in-situ wh*-phrase to adjoin to the Spec,CP.

- (171) a. Who did you say bought what?
 b. LF: [_{CP} who_i who_j did you say [_{CP} t_i bought t_j]]?
 c. Answers: 'I said that John bought a pie, and I said that Mary bought apples...'

- (172) We find that many constraints on overt movement also apply to covert movement, such as strong crossover:

- (173) *Who did he_j say that John saw who_i?

- Additionally, **quantifier raising** (QR) is taken to be a species of A'-movement that only occurs covertly. However, QR seems to obey a very different set of locality conditions, and thus is usually studied independently. Unlike other cases of A'-movement, this is (usually) driven by type-mismatches in semantics.

- (174) Everyone likes a girl
 a. LF: [_{CP} Everyone_i a girl_j [t_i likes t_j]]
 For each person x , there is a girl y , such that x likes y
 b. LF: [_{CP} A girl_j everyone_i [t_i likes t_j]]
 There is a girl y , such that for each person x , x likes y

- The properties of covert *wh*-questions and QR raise a number of interesting and complex issues for both syntactic theory and the theory of the syntax-semantics mapping, which we will not be able to get into detail today.

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