

SPR4106 – Syntax and semantics in formal terms

Lecture IV: Control and raising

19 February 2015

Non-finite forms without subject

- In many languages, non-finite forms can (or must) appear without an overt subject

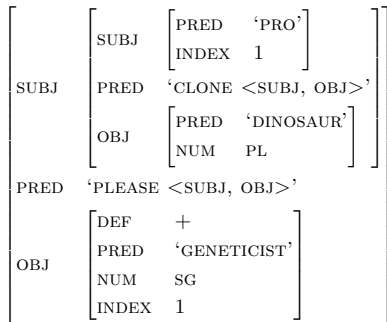
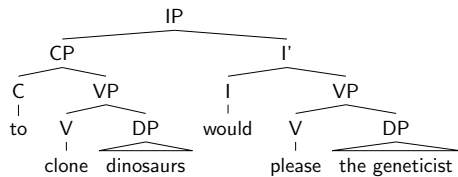
- (1)
- a. The geneticist wishes [to clone dinosaurs].
 - b. [To clone dinosaurs] would please the geneticist.
 - c. [Cloning dinosaurs] pleases the geneticist.
 - d. The geneticist tried [to clone dinosaurs].
 - e. The geneticist kept [cloning dinosaurs].
 - f. The millionaire persuaded the geneticist [to clone dinosaurs].
 - g. The geneticist seems [to clone dinosaurs].
 - h. They believed the geneticist [to clone dinosaurs].

- The bracketed constituent is clause-like
- *The geneticist* is (a possible candidate for) the subject position of these clauses
- Is there evidence for a *syntactic* subject here?

Evidence for a syntactic subject

- The verb selects for a subject
 - *John seems to rain.
 - Nothing wrong with *John* as a subject of *seems*, but *rain* wants a non-semantic subject
- The understood subject can bind a reflexive
 - To clone himself would please the geneticist even more.
- Both argument selection and binding are f-structure phenomena in LFG, so we will assume a subject at f-structure
- By contrast, there is no evidence for a c-structural subject

Coindexation at f-structure



Anaphoric control

- LFG, then, assumes an unexpressed pronoun, but does not assume that it has a position in the c-structure
- Similar “null pronouns” are found with finite verbs in other languages (prodrop)
- Bresnan (1982): Add the optional equation (\uparrow GF PRED) = ‘pro’ to the lexical entry of a verb
 - In some languages, GF can only be SUBJ
 - In some languages, only add this to verbs without a TENSE feature
- In GB terms, we assimilate *pro* and *PRO*
- This kind of control is called *anaphoric control*

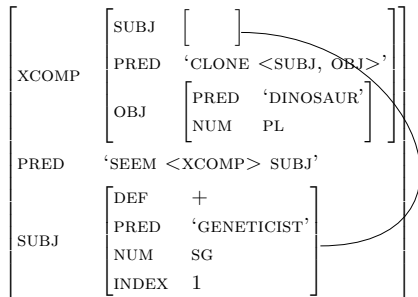
Raising: functional control

(2) The geneticist seemed to clone dinosaurs.

- What goes wrong here?

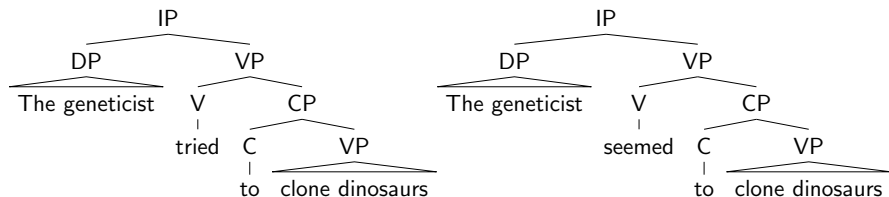
COMP	SUBJ	[PRED 'PRO' INDEX 1]
	PRED	'CLONE <SUBJ, OBJ>'
OBJ	[PRED 'DINOSAUR' NUM PL]	
	PRED	'SEEM <COMP> SUBJ'
SUBJ	[DEF + PRED 'GENETICIST' NUM SG INDEX 1]	

Introducing XCOMPs



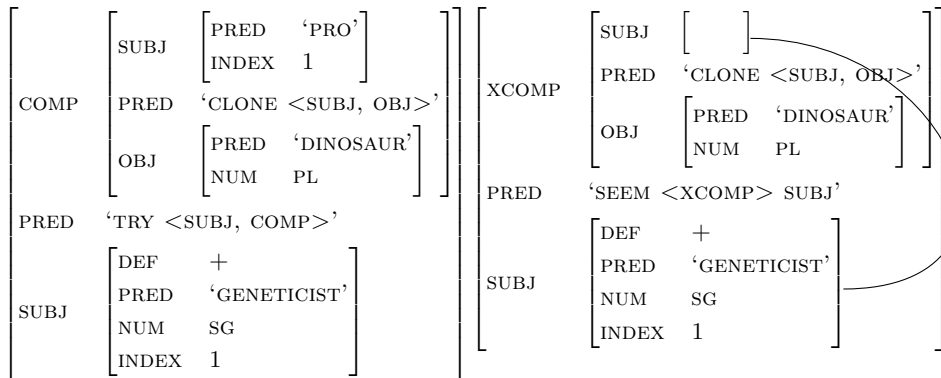
- The problem is solved with *structure sharing*
- *Open* relations (XCOMP and XADJ) share their subject with another function

Control and raising contrasted: c-structure



- Identical analyses because the c-structure facts are the same

Control and raising contrasted: f-structure



Distinguishing control and raising

- The crucial differences relate to thematicity

Idiom chunks

- John's goose seems to be cooked.
- *John's goose tried to be cooked.

Expletives

- It seems to be raining.
- *It tried to be raining.

Passives

- All the girls seem to like John. = John seems to be liked by all the girls.
- All the girls try to like John. \neq John tries to like all the girls.

Selection

- That brick seems to be cracked.
- #That brick tried to be cracked.

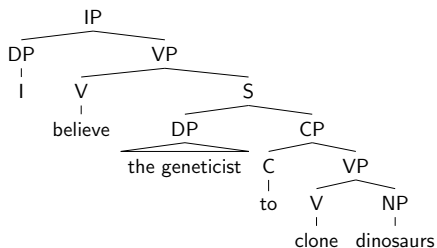
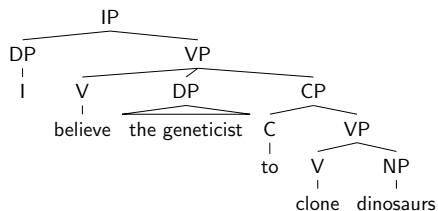
Terminology

- In LFG, *functional* and *anaphoric* control refers to two different syntactic mechanisms for ensuring referential dependency
- In general, *control* refers to a cross-clausal referential dependency where the upper position is thematic. It is also sometimes called *equi* (short for equi-NP deletion)
- In the latter use, *control* contrasts with raising, where the upper position is not thematic
- Using *equi* (as Falk does) removes the ambiguity, but is no longer very common
- In practice, no ambiguities arise if we remember that functional and anaphoric control refer to *syntactic mechanisms* that do not correspond one to one to the linguistic phenomena *raising* and *control*

Raising to object

- (3) a. I believe [the geneticist]_{DP} to clone dinosaurs.
b. I expect [the geneticist]_{DP} to clone dinosaurs.
- *the geneticist* is the subject of the infinitive and not semantically related to the main verb
- (4) a. I believe there to be dinosaur embryos in the can.
b. I believe John's goose to be cooked.
- Contrast this with a verb like *persuade*
- (5) a. *I persuaded there to be dinosaur embryos in the can.
b. #I persuaded John's goose to be cooked.

Two analyses

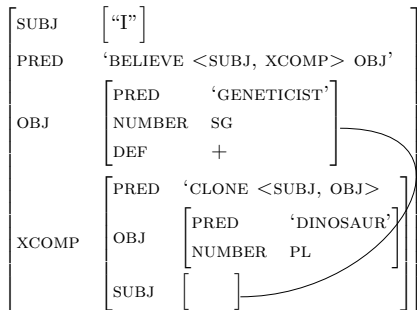
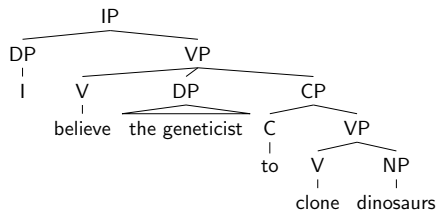


- We now know that *the geneticist* is not a thematic argument of *believe*, but is it a non-thematic one?

Arguments for raising to object

- We know there are non-thematic objects
 - I take it that velociraptors are dangerous.
 - The dinosaurs fight it out.
- Objects, but not subjects undergo Heavy NP shift
 - I believe [the geneticist who was looking for a job last year] to be cloning dinosaurs.
 - I believe to be cloning dinosaurs [the geneticist who was looking for a job last year].
 - I disapprove of [the geneticist who was looking for a job last year] cloning dinosaurs.
 - *I disapprove of cloning dinosaurs [the geneticist who was looking for a job last year] .
- Main clause adverbials
 - The chairman expected his earnings foolishly to show increases

Analysis

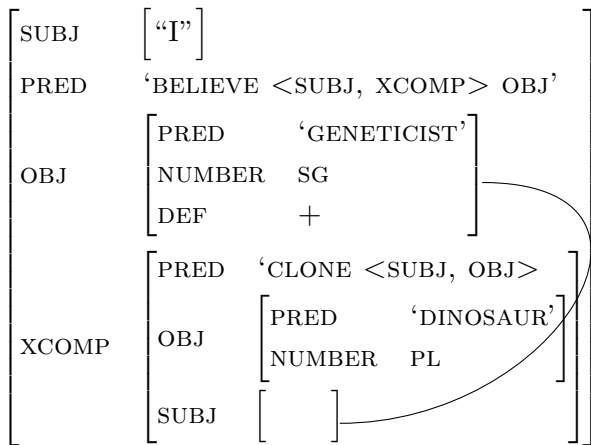


Functional control equations

- We have seen that verbs like *seem* and *believe* involve a non-thematic argument which is identified with the subject position of the embedded complement XCOMP.
- The identification is formally captured with a *functional control equation*
- $(\uparrow \text{CF}) = (\uparrow \text{XCOMP SUBJ})$
- The controller must be a core function (CF, i.e. SUBJ, OBJ, OBJ₂) because OBL_θ is essentially a grammaticalized thematic role, which cannot be non-thematic

Identifying the controller

- Do we need to specify lexically which function is the controller?



Two types of equi/control

- We have seen anaphoric control with a thematic controller and functional control with a non-thematic controller
- Anaphoric control cannot involve a non-thematic controller, as the controller would not get *any* thematic role
- However, LFG predicts that the controller in functional control can be thematic and therefore receive two thematic roles
- We therefore predict that the class of equi/control verbs should not be uniform
- Let us contrast *try* and *agree*, which both take thematic subjects:
 - #John's goose tried to be cooked.
 - #John's goose agreed to be cooked.
 - John's goose seems to be cooked.

Arguments for the distinction

- Passivization**
- It was agreed to clone dinosaurs.
 - *It was tried to clone dinosaurs.
- Split antecedence**
- The geneticist said that the paleontologist agreed to clone dinosaurs
 - The geneticist said that the paleontologist tried to clone dinosaurs
- Partial control**
- The chair agreed to gather at six.
 - #The chair tried to gather at six.
- These distinctions follow automatically if the controllee in *agree*, but not in *try*, is a pronoun-like element

More pronoun-like properties in (some) control structures

- (6)
 - a. Mary asked Peter to go to the party.
 - b. Mary asked Peter to be allowed to go to the party.
- (7)
 - a. Mary forced Peter to go to the party.
 - b. #Mary forced Peter to be allowed to go to the party.

Control and raising, vs. anaphoric/functional control

raising	control
functional control	anaphoric control

More on functional control

- An important aspect of functional control is the controller and the controllee are *identical*
- In LFG, this entails identity of all syntactic features
- This leads to interesting predictions

Icelandic quirky case

Some Icelandic verbs assign “quirky” case

(8) Drengina vantar mat.
boys.ACC lacks food.NOM
'The boys lack food.'

(9) Barnina batnadhi veikin.
children.DAT recovered from disease.NOM
'The child recovered from the disease.'

- The accepted analysis of these are that the nominative arguments are objects, and the non-nominative arguments are subjects. What should the lexical entries of the verbs look like?

Quirky case under raising

Quirky case is retained under raising:

(10) Hann telur mig (i barnaskap sínum) vanta peninga.
He believes me.ACC in foolishness his lack money.
“He believes me (in his foolishness) to lack money.”

(11) Hann telur barninu (i barnaskap sínum) hafa
He believes the children in foolishness his have
batnadh veikin.
recovered disease
“He believes the child (in his foolishness) to have recovered from
the disease”

- Do you need to modify the lexical entries of the verbs?
- How does case assignment work here?

Quirky case and control

- (12) Honum var bjargadh af fjallinu
he.DAT was rescued of mountain
'He was rescued from the mountain.'
- (13) Hann/*Honum vonast til adh verdha bjargadh af fjallinu
he.NOM/*DAT hopes to be rescued of mountain
'He hopes to be rescued from the mountain'
- (14) Ólaf langar ekki til adh vera ríkur
Olaf.ACC longs not for to NOM be rich.NOM
'Olaf doesn't want to be rich.'
- (15) Ólafi finnst gott adh vera ríkur
Olaf.DAT finds good to be rich.NOM
'Olaf finds it nice to be rich.'

Ancient Greek controlled participles

- We assume here that Ancient Greek has a flat clause structure

S → XP*
(↑(GF)) = ↓

- (16) Sōkratēs eide ton Platōna
Socrates.NOM saw the Plato.ACC
“Socrates saw Plato”

Here are lexical entries for the nominals:

Sōkratēs (↑CASE) = NOM
(↑PRED) = ‘Socrates’
Platōna (↑CASE) = ACC
(↑PRED) = ‘Plato’

- Give an appropriate lexical entry for the verb

Ancient Greek participles

- In Ancient Greek, participles can be adverbial modifiers (XADJs)

(17) exerchomenos Sōkratēs eide ton Platona
walking out.NOM Socrates.NOM saw the Plato.ACC
“As Socrates was walking out, he saw Plato”

(18) exerchomenon Sōkratēs eide ton Platona
walking out.ACC Socrates.NOM saw the Plato.ACC
“As Socrates was walking out, he saw Plato”

- How is the subject of the participle identified? How can we capture this in a lexical rule of the participle?
- Ancient Greek allows for prodrop of easily recoverable arguments. How can we capture that? Do we need to modify our participle rule?

Ancient Greek: Long distance agreement

(19) epitrepson moi [apelthonti
permit.IMP.AOR.ACT me.DAT going away.DAT.SG
thapsai ton patera]
bury.INF.AOR father.ACC.SG
'Let me first go and bury my father'

- We assume the bracketed material is a clause headed by the infinitive *thapsai*
- *apelthonti* is a participle of the kinds we saw on the previous slide
- Write an appropriate lexical entry for *epitrepson* and make sure to get the case facts right
- Draw the f-structure

Dutch cross-serial dependencies: rules and lexicon

(20) a. ... Jan Piet Marie zag helpen zwemmen.

helpen V (\uparrow PRED) = 'help <SUBJ, OBJ, XCOMP>'

(\uparrow XCOMP SUBJ) = (\uparrow OBJ)

zag V (\uparrow PRED) = 'see <SUBJ, OBJ, XCOMP>'

(\uparrow XCOMP SUBJ) = (\uparrow OBJ)

(\uparrow SUBJ NUM) = SG

zwemmen V (\uparrow PRED) = 'swim <SUBJ>'

S \rightarrow NP VP

(\uparrow SUBJ)= \downarrow \uparrow = \downarrow

VP \rightarrow NP VP \bar{V}

(\uparrow OBJ)= \downarrow (\uparrow XCOMP)= \downarrow \uparrow = \downarrow

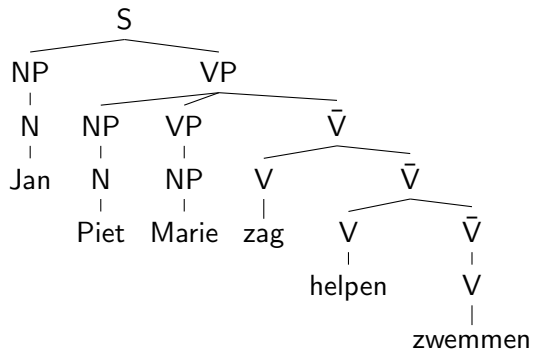
\bar{V} \rightarrow V \bar{V}

\uparrow = \downarrow (\uparrow XCOMP)= \downarrow

NP \rightarrow N

\uparrow = \downarrow

Dutch cross-serial dependencies: a tree



Dutch cross-serial dependencies: exercise

- Annotate the tree with functional equations from the rules
- Construct the f-structure
- We could generate the same strings (n NPs followed by n verbs) with a rule $VP \rightarrow NP VP V$. Draw the tree (assuming the whole sentence is a VP). What goes wrong?
- The c-structure alone cannot keep track of which noun goes with which verb. How does f-structure help?

Dutch cross-serial dependencies: f-structure

