Sentential complement structures

Within the framework of GB, it is assumed that the following verbs subcategorize for a single sentential complement:

(1)  
a. Kim said [that Sandy left].  
  (finitive)  
b. Dana preferred [for Pat to get the job].  
  (to-infinitive)  
c. Leslie wanted [Chris to go].  
d. Lee believed [Dominique to have made a mistake].  
e. René tried [PRO to win].  
f. Terry preferred [PRO to go to Florida].  
g. Tracy proved [the theorem false].  
  (small clauses)  
h. Bo considered [Lou a friend].  
i. Gerry expects [those children off the ship]  

In XTAG, a distinction is drawn between sentential complements with (1) finite verbs, sentential complements with (2) to-infinitives, and (3) small clauses.

“Ist’s eins? Sind’s zwei?” (Goethe, 1819)

Question:
What complements does the verb consider take?

(2)  
a. We consider [Kim to be an acceptable candidate].  
b. We consider [Kim an acceptable candidate].  
c. We consider [Kim quite acceptable].  
d. We consider [Kim among the most acceptable candidates].  
e. *We consider [Kim as an acceptable candidate].

Similar verbs: prove, expect, rate, count, want

- One sentential complement (small clause), where to be can be omitted
- A noun and a predicative phrase
**Small clauses - Pro and contra (1)**

**Pro:**
- Homomorphism between argument structure and complement structure (in GB: “Projection Principle”; in TAG: Elementary Tree Minimality)
- Uniformity of the subcategorized constituents:
  Instead of NP, AP, PP, IP/S, ... as possible categories of the complements, there is only one complement category.

**Small clauses - Pro and contra (2)**

**Contra:**
- Passivization (object-to-subject shift)
  (3) We considered [Kim quite acceptable].
  Kim was considered [ quite acceptable].
- Idiosyncratic restrictions on the predicative phrase
  (4) a. I consider/*expect [this Island a good vacation spot].
    I expect [that man to be stupid].
  b. I consider/*expect [this man stupid].
  c. We rate/*consider [Kim as quite acceptable]

⇒ The verb should be indifferent to the categorial status of the small clause predicate!

**Small clauses - XTAG-Analysis (1)**

XTAG uses a uniform analysis of copula, raising verbs and consider verbs.

**Small clauses - XTAG-Analysis (2)**

Exceptional Case Marking (ECM): The case of the subject of the sentential complement is assigned from the superordinate subcategorizing verb. For ECM, XTAG uses the feature ASSIGN-CASE.
small clauses - xtag-analysis (3)

- seems adjoins to VP
- ECM for nominative case

(6) Kim seems acceptable.

control verbs

control verbs establish the coreference between their subject/object and the unexpressed subject (PRO) of their sentential complement. (PRO control)

(7) a. John tried [PRO to leave]. (subject control)

b. John persuaded him [PRO to leave]. (object control)

c. *There tries [PRO to be disorder after a revolution].

⇒ Control verbs assign semantic role to the controller!

to-infinitives: controlling and raising its subject

verbs that subcategorize for to-infinitives show differing properties with respect to their semantic and syntactic influence on the subject of the to-infinitives.

- control verbs / equi verbs (try, persuade)
- raising verbs (seem, expect)

control verbs - xtag-analysis

- control feature for coindexation
- PRO tree
- object control does not involve ECM
Raising verbs

Raising verbs determine case and agreement properties of the subject of the (non-finite) sentential complement. Semantically, however, the “raised” constituent is no immediate part of the argument structure of the raising verb.

(8) a. [John] seems [to leave]. (subject raising)
    b. John expects [her to leave]. (object raising)
    c. [There] seems [to be disorder after a revolution].
    d. John expected [it to rain].

⇒ assign no semantic role to the raised constituent (raising of expletive it/there)

(9) John seems unhappy.
    *John tries unhappy.

⇒ allow for small clauses

---

Raising verbs - XTAG-Analysis (1)

- no PRO
- The “raised” constituent is still part of the to-infinitive!
- ECM via ASSIGN-CASE feature

Example for subject raising:

![Diagram of subject raising]

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Raising verbs - XTAG-Analysis (2)

Example for object raising:

(10) We expect him to leave.

![Diagram of object raising]

---

Raise or control - The big GB-picture

!!! Handle with care, I am not an expert on this !!!

Forschungsobjekt: to-infinitives
Background assumption: argument → complement (Projection Principle)

Findings: the subject of to-infinitives (1) can have several cases or (2) is not realized phonologically.

Hypothesis: (1) to-infinitives cannot assign case to its subject; (2) incomplete to-infinitives have a phonologically empty PRO in subject position.

What does the case marking, then?

- nothing
- something (but not the to-infinitive)

PRO
no need for case
semantic content is controlled by coreference

ECM
subject is raised to another verb
that has a free case marking slot

CONTROLLING
RAISING
Raise or control?

Summary:

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Classification game:

(11) a. They asked Jan to leave. (object control)
b. Bo turns out to be obnoxious. (subject raising)
c. Sandy is willing to go to the movies. (subject control)
d. Terry was expected to win the prize. (subject raising)
e. Kim believed a unicorn to be approaching. (object control)

Raise or control?

Summary:

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Classification game:

(12) a. It is important for Bill to dance.
b. Christy left the party early to go to the airport.
c. Peter kept standing in the doorway.

Extraction and unbounded dependency

Topicalization/Extraction

Wh-extraction

Topicalization - Basics

Topicalization/Extraction:

Placing a post-verbal constituent into a sentence-initial position.

(13) a. Sandy loves Kim. (base configuration)
b. Kim, Sandy loves . (NP-topicalization)
c. On Kim, Sandy depends . (PP-topicalization)
Topicalization - Unbounded dependency

Unbounded dependency:
The dependency between an extracted constituent and its trace may extend across arbitrarily many clause boundaries.

(14) a. Kim, Sandy loves .
b. Kim, [Chris knows] Sandy loves .
c. Kim, [Dana believes Chris knows] Sandy loves .

Topicalization - XTAG-analysis (outline)

extra tree for topicalization

\[ S \rightarrow NP_{s} \rightarrow VP \rightarrow V \rightarrow NP_{o} \rightarrow NP_{s} \rightarrow VP \rightarrow V \rightarrow NP_{o} \rightarrow S \]

Example:

\[ S \rightarrow NP_{nom} \rightarrow VP \rightarrow V \rightarrow NP_{s} \rightarrow S \]

⇒ extended domain of locality and factoring of recursion

Wh-extraction - Basics

Wh-Extraction:
Placing a post-verbal constituent as wh-phrase into a clause-initial position.

(15) a. I wonder who Sandy loves . (indirect question)
b. Who does Sandy love . (direct question)
c. Sandy loves Kim who Irmgard hates . (relative clause)

wh-phrase: phrase that contains a wh-pronoun.
wh-pronoun: who, which, what, whom, whose, that, when,...

(16) Here’s the minister, [in the middle of whose sermon] the dog barked.

Wh-extraction - More basics

Pied piping:
Additional material along with wh-pronouns is fronted. (The fronted wh-phrase may be larger than the wh-pronoun.)

(17) This is the book [the covers of which] I have designed .

Preposition stranding:
Material from the wh-phrase is left in base position.

(18) This is the book [which] I have designed [the covers of ].
Wh-extraction - Unbounded dependency

Unbounded dependency:
The dependency between an extracted wh-phrase and its trace may extend across arbitrarily many clause boundaries.

(19) a. I wonder who Sandy loves.
b. I wonder who [Chris knows] Sandy loves.
c. I wonder who [Dana believes Chris knows] Sandy loves.

Wh-extraction - Islands for extraction

- Adjuncts:

  (20) *[Which movie] did Gorgette fall asleep after watching .

- Finite sentences with complementizer (that, whether)

  (21) *Who did the elephant whisper that the emu saw ?
  Who did the elephant say that the emu saw ?

- Subjects from finite sentences with complementizer

  (→ In GB. Empty Category Principle/Subjacency):

  (22) *Who did Alice say that left.
  Who did Alice say left.

- Coordination

  (23) *I wonder who Sandy loves and Kim.

Wh-extraction - Multiple traces

- Parasitic gaps:

  (24) That was the rebel leader who rivals of shot .
  *That was the rebel leader who rivals of shot the British consul.
  That was the rebel leader who agents of foreign powers shot .

- Tough movement:

  (25) Kim would be easy to bribe .
  Kim would be easy to prove Sandy bribed .
  This is a problem which John is difficult to talk to about .

- Multiple wh-extraction is forbidden in English:

  (26) *Who do you wonder who loves .

Wh-extraction - TAG-analysis from XTAG (1)

Basic trees for topicalization and wh-extraction:
Wh-extraction - TAG-analysis from XTAG (2)

Tree for topicalization and wh-extraction of an accusative object:

\[ S \]

\[ NP \]

\[ V \]

\[ VP \]

\[ NP_{nom} \]

\[ V \]

\[ VP \]

Direct questions:

- In the root node: INV = +

(27) Who does Sandy love.

Indirect questions:

- wonder selects a sentential complement with WH = +, INV = -.

(28) I wonder [who Sandy loves].

Unbounded dependency:

(29) I wonder who [Chris believes Sandy loves].
Unbounded dependency:

(30) I wonder who [Irmgard said Chris believes] Sandy loves.

Extraction islands in XTAG:

⇒ Constraints for extraction and unbounded dependencies follow from the elementary trees, i.e., can be stated locally.

- **Adjuncts:**
  
  Adjuncts are not present in elementary trees of the projections they modify (minimality of elementary trees).

- **Finite sentences with complementizer:**
  
  COMP = nil, where non-bride verbs attach (whisper)
  
  COMP = nil/that, where bridge verbs attach (say)

- **Subjects from finite sentences with complementizer:**
  
  Corresponding elementary tree is not given.

- **Coordination:**
  
  Coordinated NPs are realized as one initial NP-tree that cannot split during derivation.

Relative clauses - Basics

“Relative clauses are NP modifiers involving extraction of an argument or an adjunct” (XTAG manual)

(31) a. the dog [that ate the cake] (wh-relatives)

b. the export exhibition [Muriel planned] (wh-less relatives)

c. [What; Sandy loves ___] is Kim. (free wh-relatives)

d. the girl [reading the magazine] (gerunds ???)

(32) Somebody lives nearby [who has a CD-burner]. (extraposition)

⇒ internal vs. external syntax

Wh/that-relatives

(33) a. The dog, [that; ate the cake] (subject relative)

b. The person, [who; I talked to] (non-subject relative)

**internal syntax:** same as wh-extraction

**external syntax:** adjunction at a NP-node

Note: in XTAG, adjunction to a PRO-NP is not possible due to colliding CASE features.
That-less relatives

(34) a. the export exhibition [Muriel planned/is planning]
(35) a. the export exhibition [planned by Muriel]
b. *the export exhibition [is being planned by Muriel]
c. the export exhibition [taking place in October]
d. *the export exhibition [takes place in October]

internal syntax: same as wh-extraction, but missing wh-pronoun
external syntax: adjunction at a NP-node

Free wh-relatives

Also known as Pseudoclefts!

(36) [What, Sandy loves] is Kim.

internal syntax: same as wh-extraction
external syntax: counts as an NP

Extraposed relatives

(37) a. Somebody; lives nearby [who; has a CD-burner].

internal syntax: same as wh-extraction
external syntax: no adjunction at a NP-node, but to the right periphery of the sentence

TAG-analysis ???

“movement”
Kroch, Joshi (1987)
multicomponent TAG
anchor structures
Kiss (2005) for HPSG

Summary

- Topicalization and wh-extraction obtain a uniform analysis.
- Account for unbounded dependency via extended domain of locality + factoring of recursion
- Island constraints can be modelled rather naturally (wrt. TAG).
- Relative clauses are realized as auxiliary trees. Their internal structure is analysed as ordinary wh-extraction.
- Extraposed relative clauses: Which way to go?
  ⇒ more details in later sessions...