Introduction to a TAG-based Linguistic Theory

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TAG and Linguistic Theories

- TAG itself is not a linguistic theory but is a mathematical formalism.

  Thus, we speak of ‘TAG-based linguistic theories/frameworks/approaches.’

- The linguistic theory part of TAG-based linguistic frameworks is localized to the way elementary trees are derived or defined.

  It is the job of the linguistic theory to provide independent specification of the (finite) set of elementary trees that make up the grammar of a language.

- The way in which the elementary trees are formed can be based on different linguistic frameworks.

  Derivational approach: the set of elementary trees are built from a finite set of lexical units drawn from the lexicon

  Non-derivational approach: the lexicon is a finite set of pre-defined elementary trees associated with each lexical unit.

TAG and Linguistic Theories (cont.)

- Thus, depending on the linguistic theory you are developing, elementary trees can be as simple as structures containing Ss, NPs and VPs, or as articulated as structures containing CPs, TPs, DPs, bar-level node labels and so on.

- Cross-linguistic variation is localized to elementary trees.

  E.g., The set of well-formed elementary trees for English and Korean will be different.

- **The fundamental TAG hypothesis**:

  Every syntactic dependency is expressed locally within a single elementary tree.

Some Well-formedness Conditions on Elementary Trees (Frank 2002)

(1) **Conditions on Elementary Tree Minimality (CETM)**:
The heads in an elementary tree must form part of the extended projection of a single lexical head.

(2) Extended Projections:
CP ... VP
DP ... NP
PP ... NP

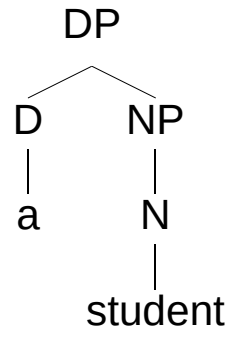
(3) **Theta Criterion (TAG version)**:
   a. If H is the lexical head of elementary tree T, H assigns all of its roles within T.
   b. If A is a frontier non-terminal of elementary tree T, A must be assigned a role in T.

$\Longrightarrow$ An elementary tree is an extended projection of a single lexical head with all and only its argument slots appearing as frontier non-terminals.

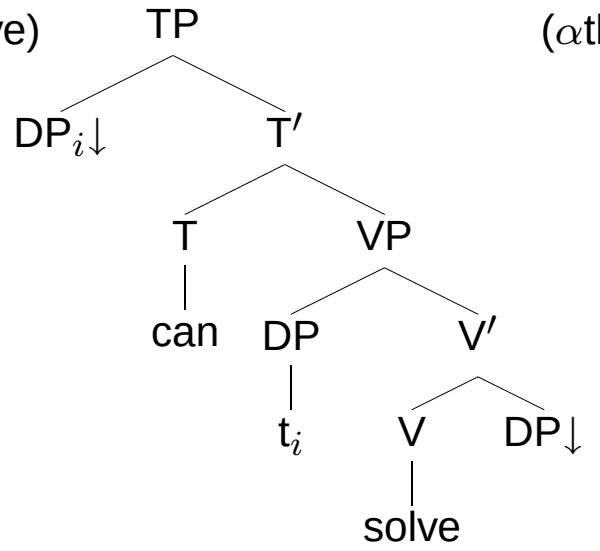
Elementary Trees

- Initial trees

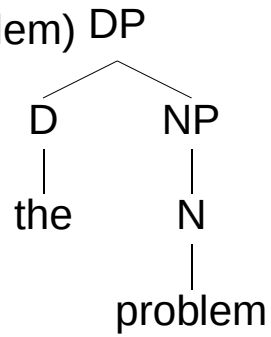
(αa_student)



(αcan_solve)

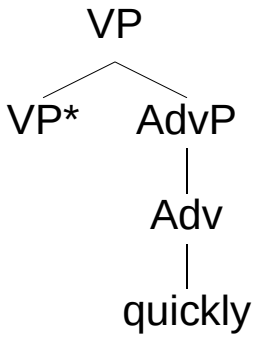


(αthe_problem)

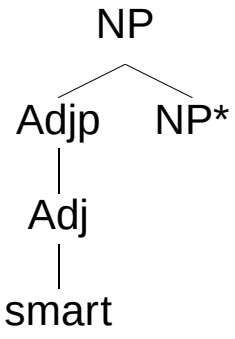


- Auxiliary trees

(βquickly)

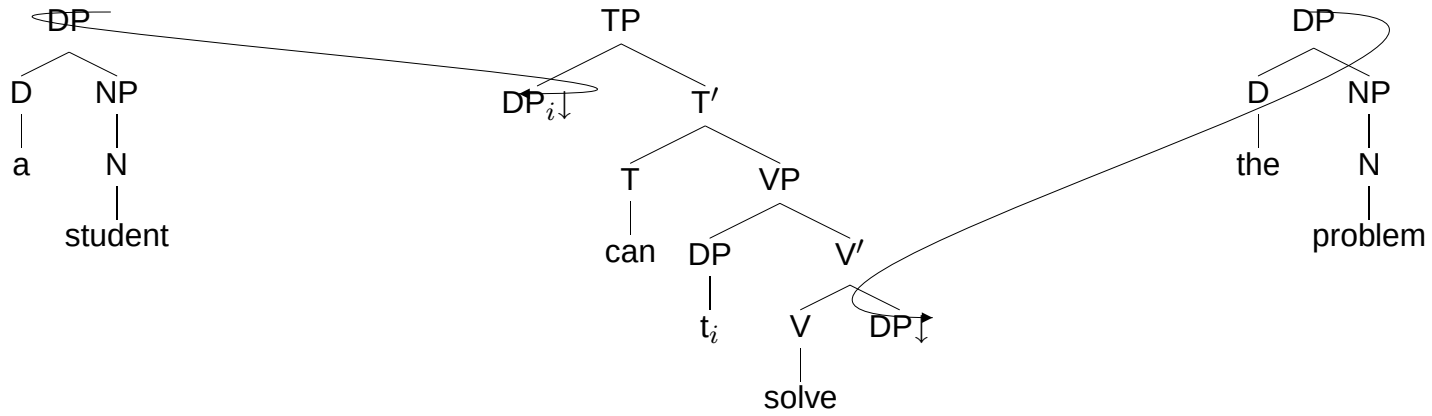


(βsmart)

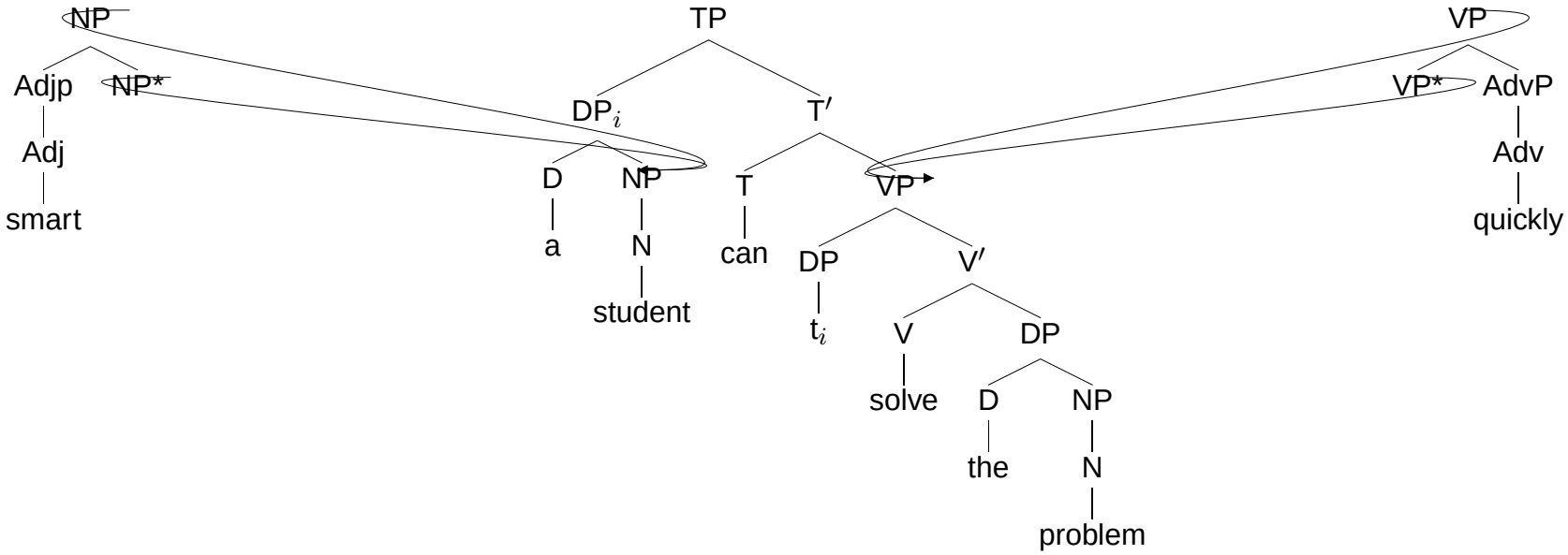


Structure Composition

- Substitution

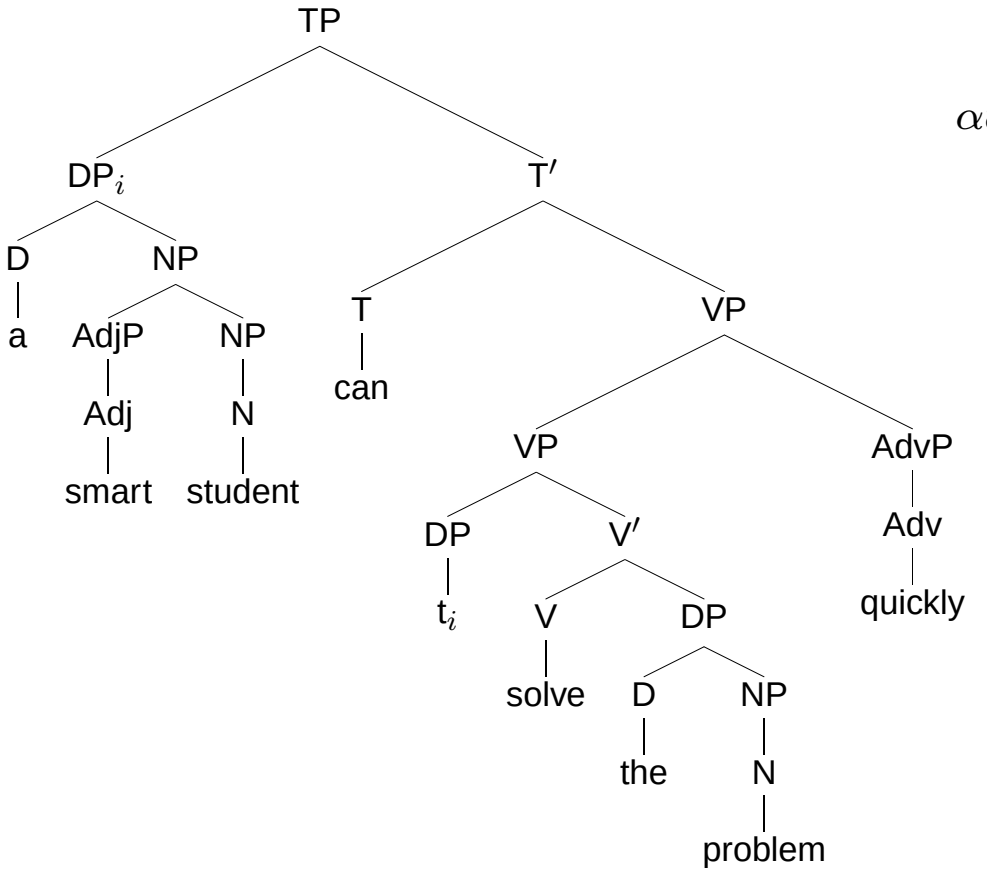


- Adjoining

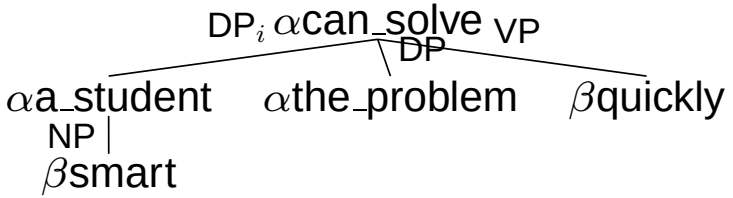


Outputs of TAG Derivation

Derived tree

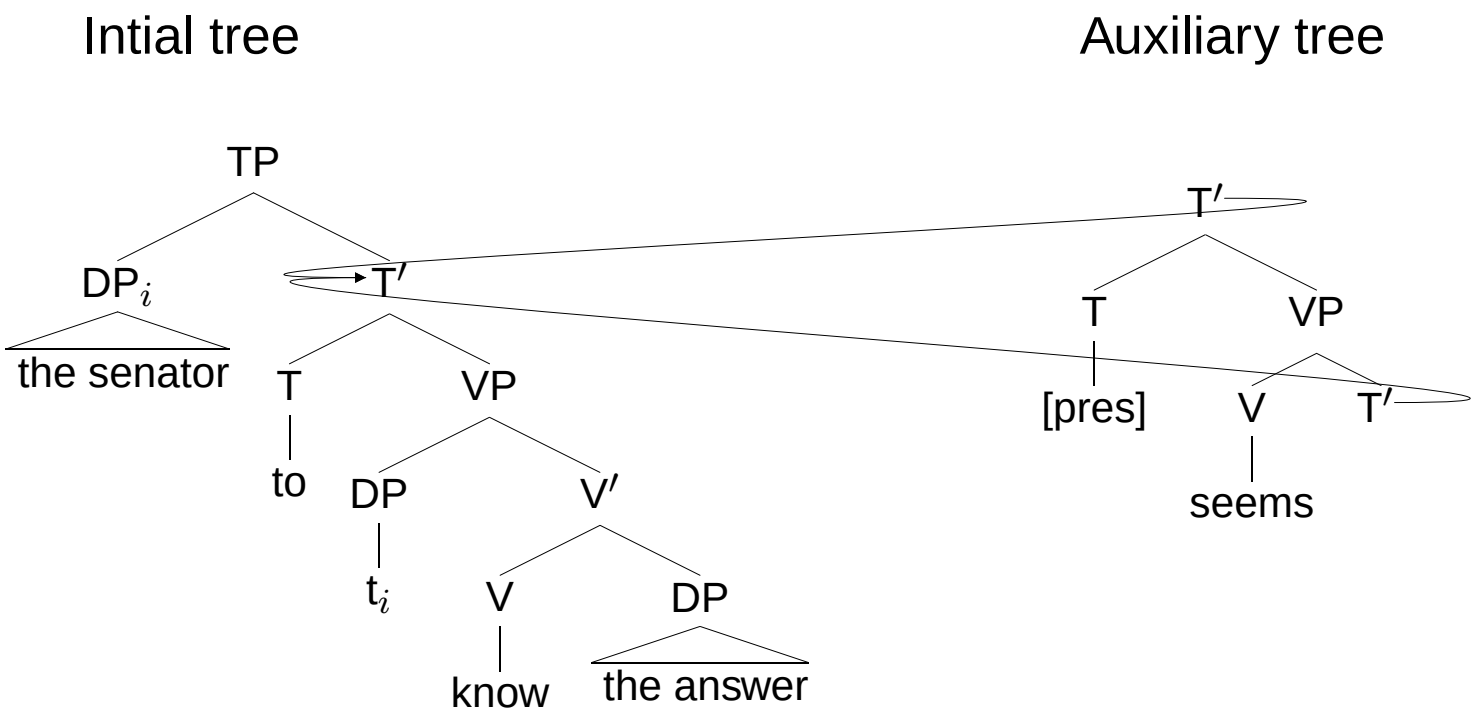


Derivation tree

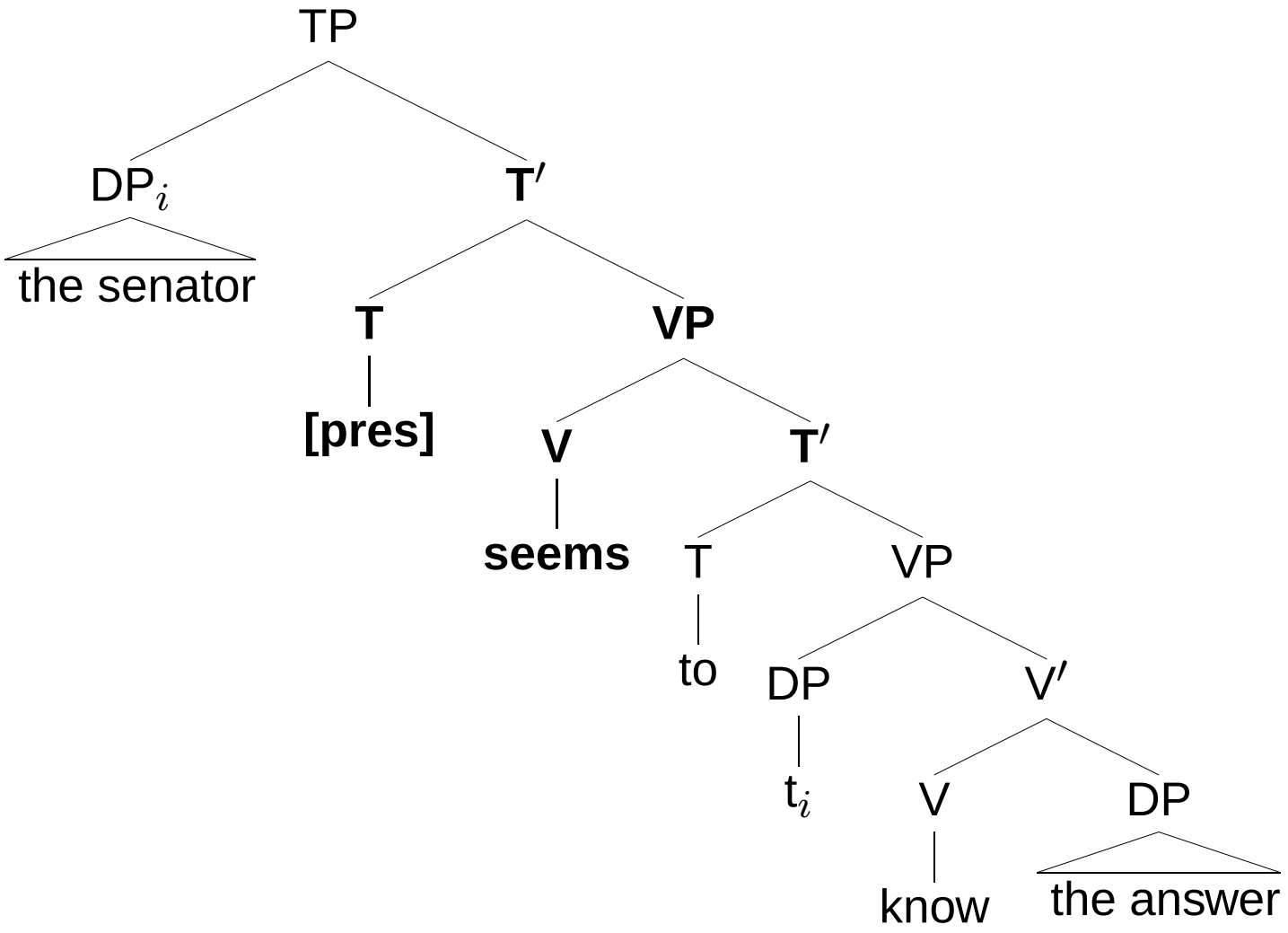


Subject-to-Subject Raising

(4) [The senator]$_i$ seems [t$_i$ to know the answer].



Subject-to-Subject Raising (cont.)

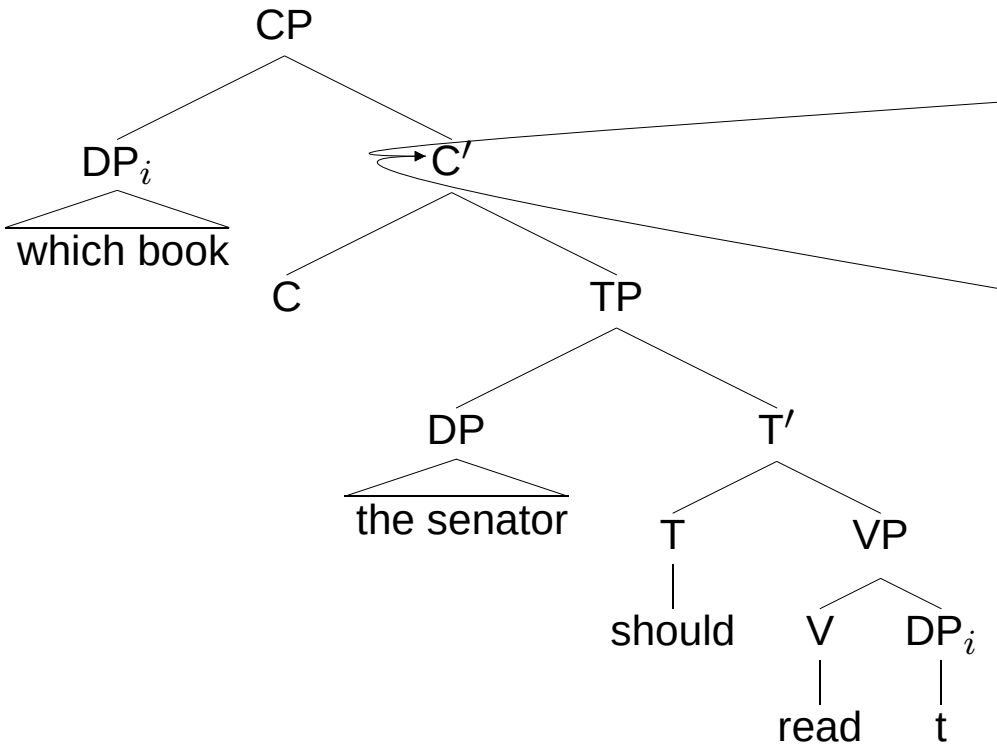


(5) **Non-local dependency corollary**: Non-local dependencies always reduce to local ones once recursive structures are factored away.

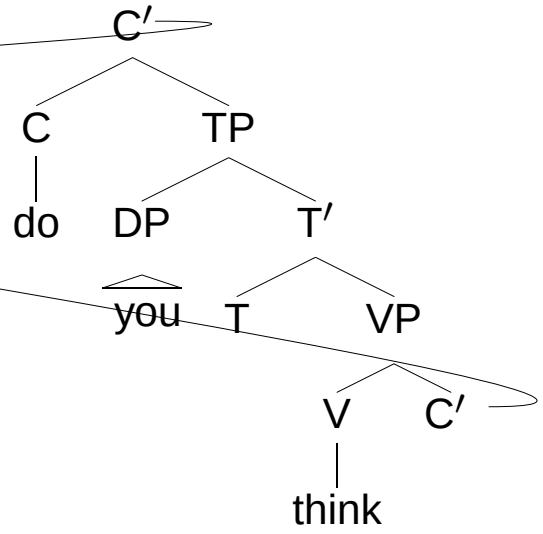
Wh Long Distance Dependency

(6) [which book]$_i$ do you think [the senator should read t$_i$]?

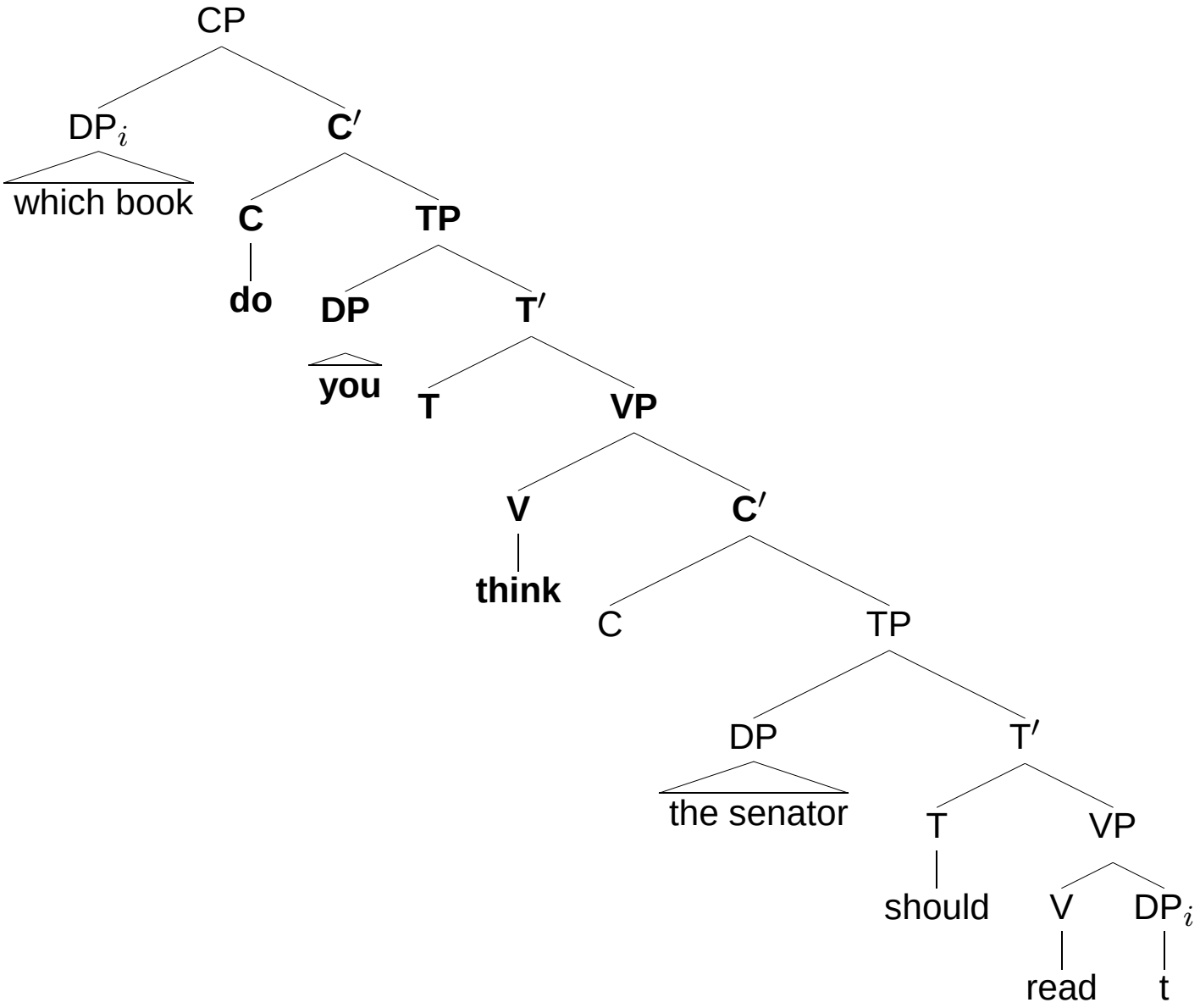
Initial tree with local movement of *wh*-phrase



Auxiliary tree



Wh Long Distance Dependency (cont.)



Islands: Domains from which Extraction is Impossible

Noun complement clause

(7) * What book$_i$ did you hear the claim [that Sofia wrote t$_i$]?

Relative clause

(8) * What book$_j$ did Karen meet the guy [who had written t$_j$]?

Adverbial clause

(9) * What book$_i$ did you fall asleep [because you were reading t$_i$]?

Sentential subject

(10) * I wonder which book$_i$ [for me to read t$_i$] would upset Esther.

Wh-complement clause

(11) * What book$_j$ did Mark ask [whom you had given t$_j$]?

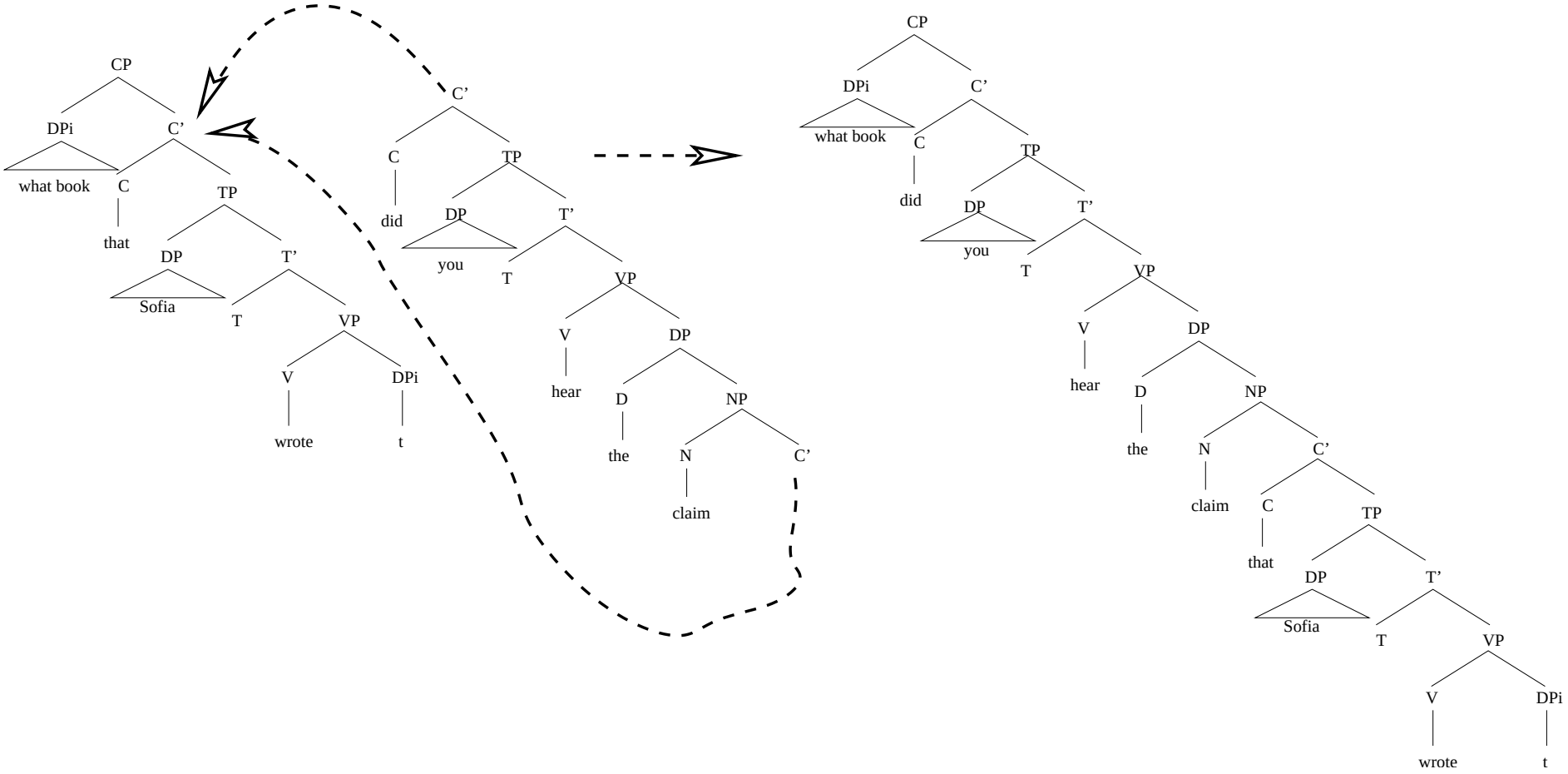
How TAG Derives Island Effects

- Island constraints on *wh*-movement are derived from the nature of the TAG combinatory operations (i.e., adjoining and substitution), and independently motivated assumptions concerning the nature of elementary trees.

- No need to appeal to a stipulative locality principle like Subjacency.

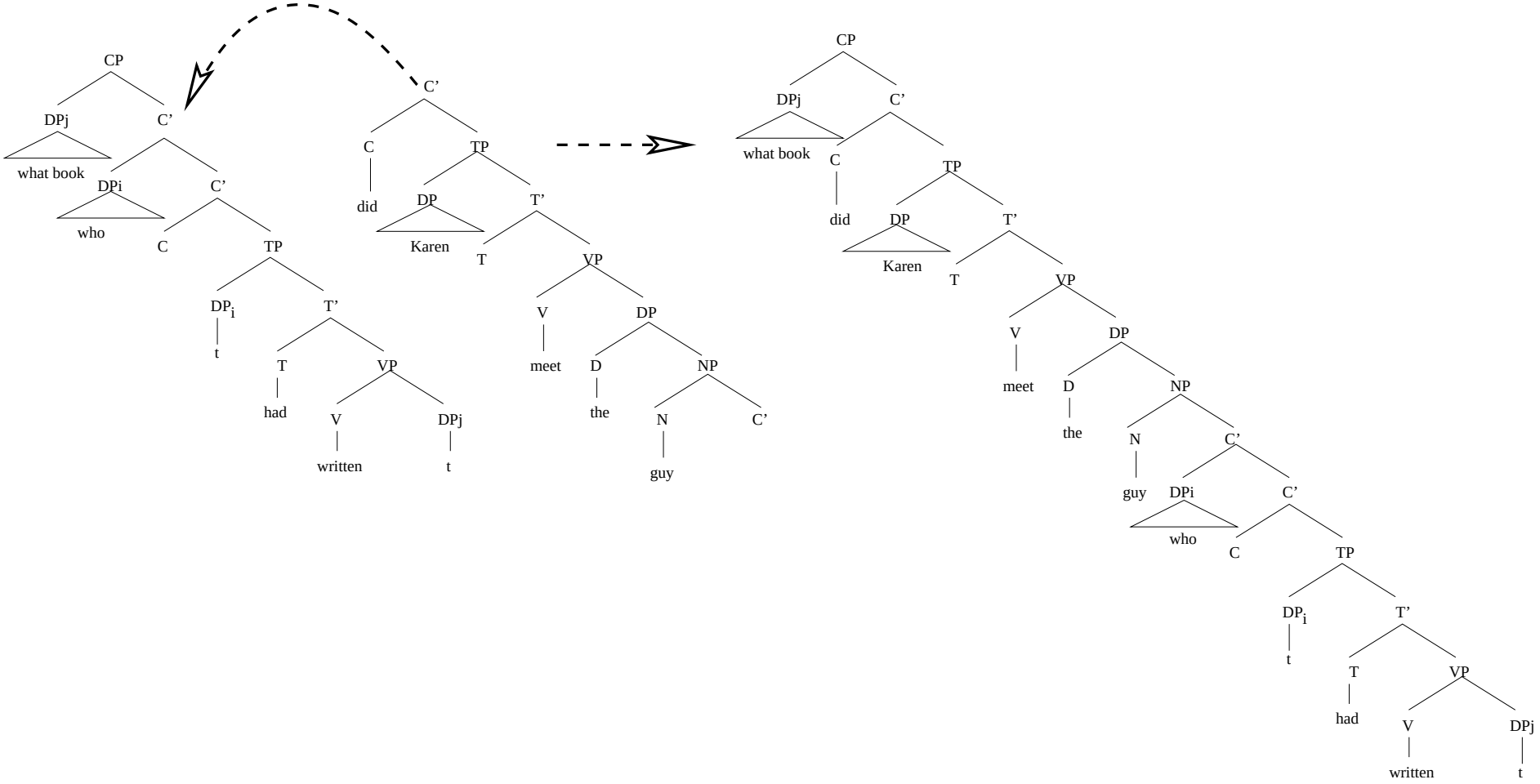
Noun Complement Clause

(12) * What book$_i$ did you hear the claim [that Sofia wrote t$_i$]?



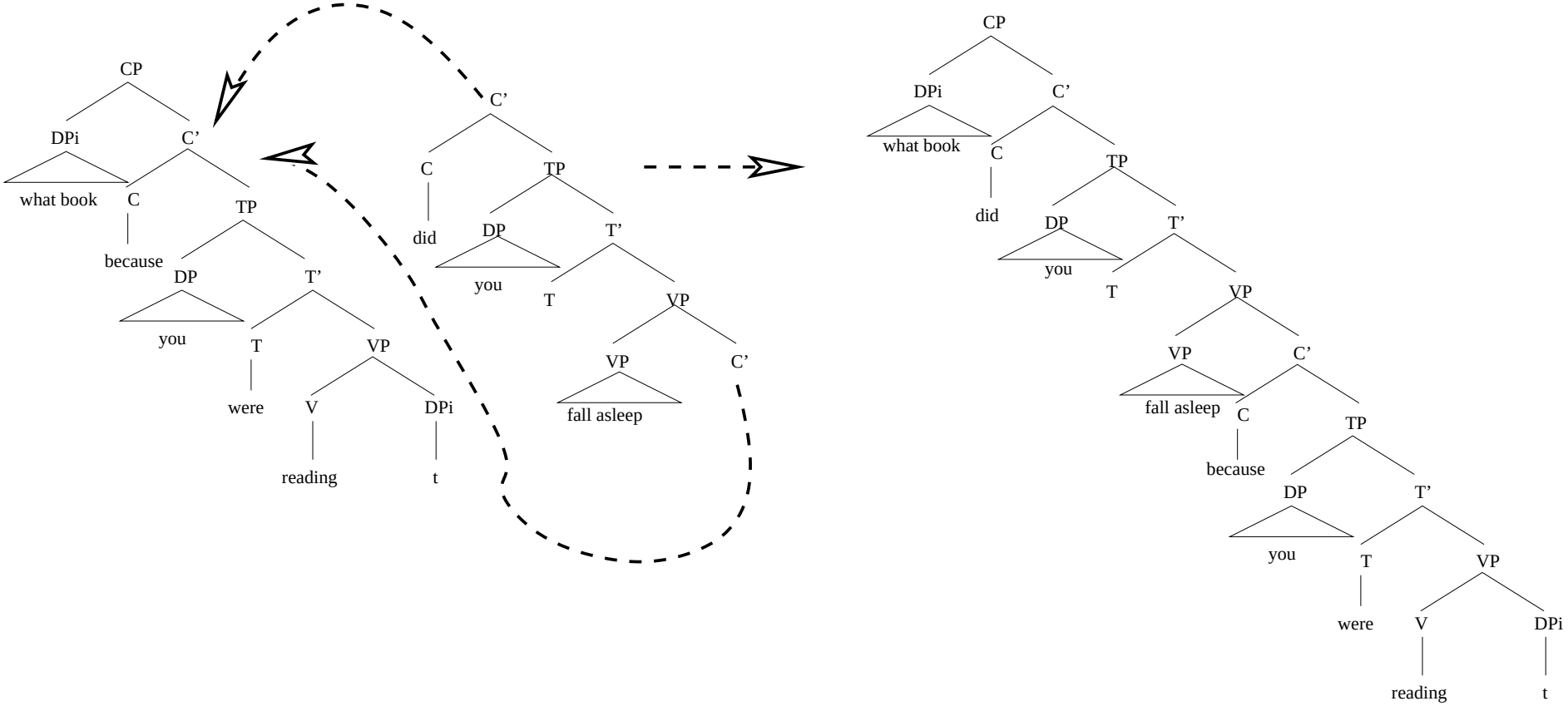
Relative Clause

(13) * What book$_j$ did Karen meet the guy [who had written t$_j$]?



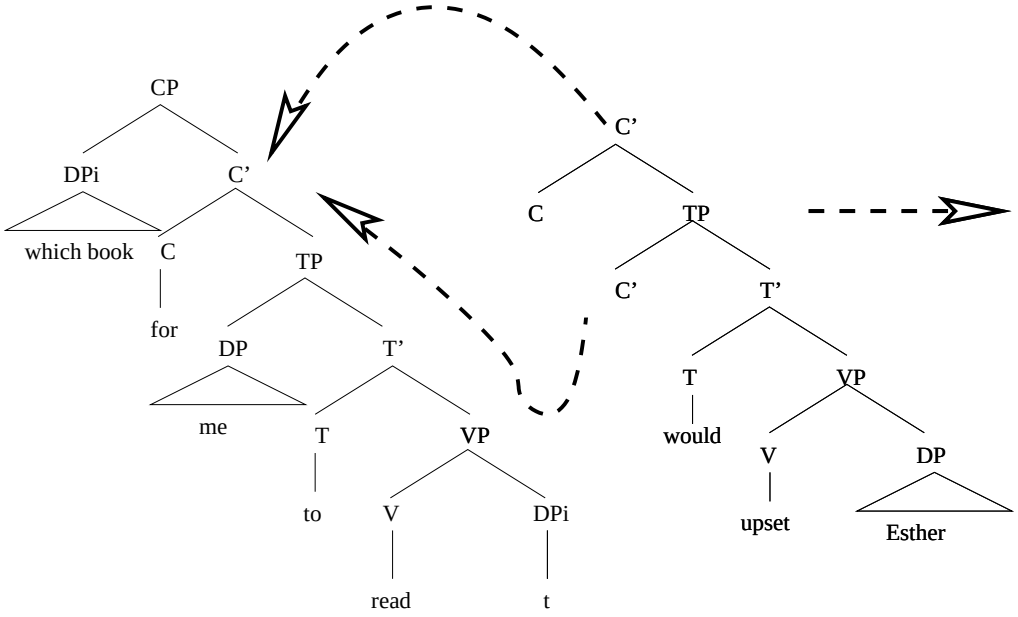
Adverbial Clause

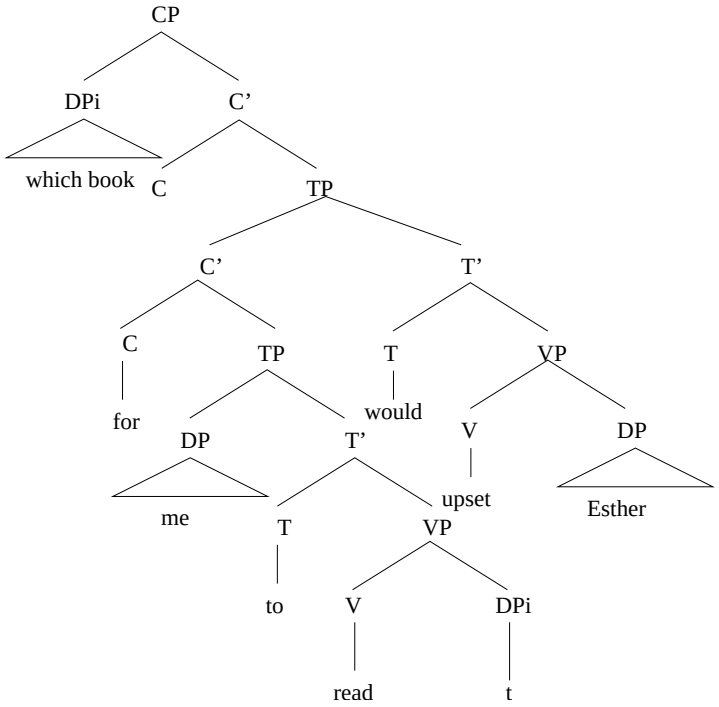
(14) * What book$_i$ did you fall asleep [because you were reading t$_i$]?



Sentential Subject

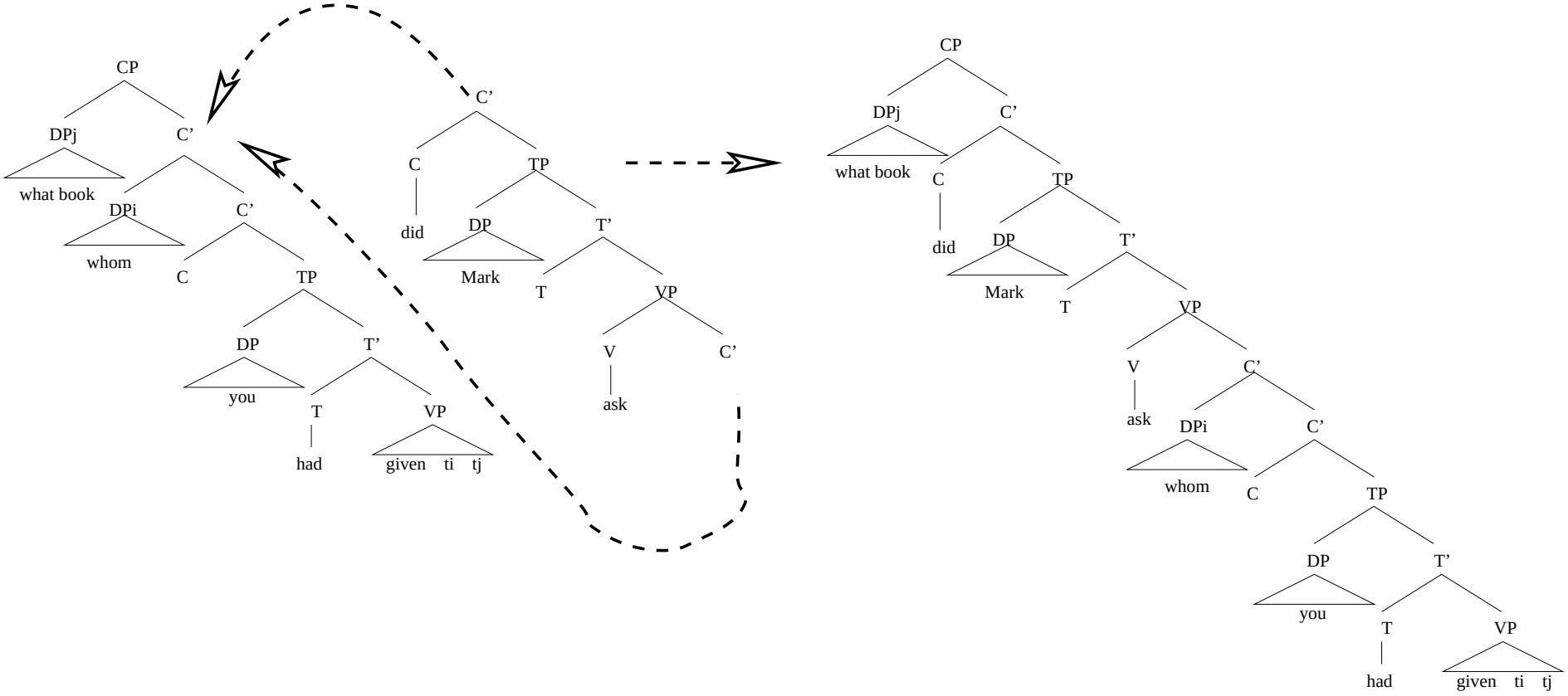
(15) * I wonder which book$_i$ [for me to read t$_i$] would upset Esther.





Wh-Complement Clause

(16) * What book$_j$ did Mark ask [whom$_i$ you had given t$_i$ t$_j$]?



Wh-Complement Clause (cont.)

- The elementary tree that has multiple *wh*-extraction is illegal in English.

(17) a. * I wonder what book whom Mark gave.

b. * I wonder whom what book Mark gave.

- Prediction 1: In languages that allow multiple *wh*-extraction in a single clause should allow extraction out of *wh*-islands.

(18) Romanian

a. Cine despre ce mi-a povestit?
who about what me-has told?
'Who told me about what?'

b. Cine$_j$ ştii [despre ce$_i$ t$_j$ i-a povestit t$_i$]?
who you-know about what him.dat-has told
'Who do you know what (he) has told him about?'

Prediction 2: Only *wh*-elements that are permitted to appear first in the sequence of multiply fronted *wh*-phrases can end up in the higher clause.

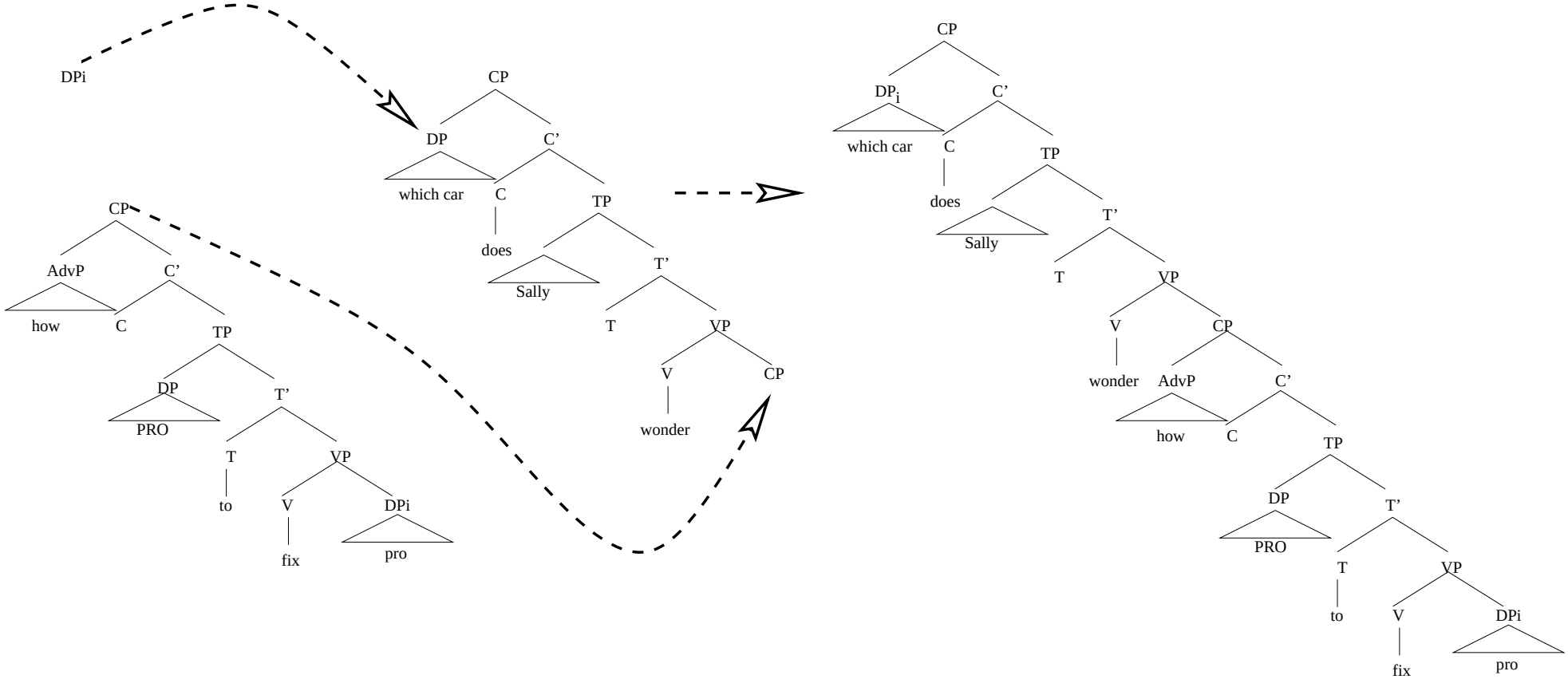
(19) Romanian

a. * Despre ce$_j$ cine$_i$ t$_i$ ţi-a vorbit t$_j$?
about what who you-has told

b. * Despre ce$_i$ ştii [cine$_j$ t$_j$ i-a povestit t$_i$]?
about what you-know who him.dat-has told
'What do you know who told him about?'

Long Movement: Need for Multi-Component (MC) TAGs

(20) Movement of a D-linked *wh*-phrase from a *wh*-island
Which car$_i$ does Sally wonder [how to fix t$_i$]?



The MC tree set as a whole is subject to the CETM (Bleam 2000).

Blocking Adjunct Long Movement

(21) * How$_i$ did you know [who fixed the car t$_i$]?