The Price of Freedom: Why Adjuncts are Islands

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The Talk in a Nutshell

(1) a. Which book did John complain that he lost?
b. * Which book did John complain **because he lost**?
c. * Which book did John complain **after losing**?

Take-Home Message

Why do adjuncts constitute islands?
Because they are not as tightly integrated as arguments.

Outline

1. A Theory-Neutral Definition of Adjuncts
   - Defining Adjuncts
   - Characterizing Adjunct Languages
2. Empirical Implications
   - Deriving the AIC
   - Parasitic Gaps
3. The Big Picture: Structure & Information Flow
   - Constraints through Operations
   - Adjuncts: The Price of Freedom
4. Conclusion

Adjuncts in the Literature

Adjuncts . . .

- have no special operational status (CG; Cinque 1999),
- are pair-merged (Chomsky 1995),
- are late-merged (Stepanov 2001),
- are inserted but not merged immediately (Hunter 2012),
- involve asymmetric feature checking (Frey and Gärtner 2002),

⋮

Problem

Can we abstract away from these details?
Properties that hold of every conceivable implementation?

Two Surface Properties of Adjuncts

- **Optionality**
  Adjuncts can be omitted.

  (2) **(Obviously)** I will **(easily)** ace this **((very) challenging)** exam **(because I (really) am that smart)**.

- **Independence**
  Independently well-formed adjuncts can be combined.

  (3) a. **Obviously** I will ace this exam.
  b. I will **easily** ace this exam.
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Definition (Adjuncts)

Phrase marker *a* is an **Adjunct** iff it is optional and independent.

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Adjunct Extension

What do these properties tell us about grammars with Adjuncts?
What is the general shape of the **generated language**?

Definition (Adjunct Extensions)

Let **s** and **t** be (multi-dominance) trees.
Then **t** is an **Adjunct extension** of **s** for grammar G (**s** $<_G$ **t**) iff **t** is the result of inserting one or more Adjuncts of G in **s**.

Example

- **Obviously** I will ace this exam $<_G$ **Obviously** I will **easily** ace this exam
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Characterizing Adjunct Languages

Theorem (Optionality Closure)

If **t** *is an Adjunct extension of* **s** *for G and G generates* **t**, *then G generates* **s**.

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For **s** *and* **t** *adjunct extensions of some tree, G generates the "fusion" of* **s** *and* **t** *(***s** $\vee$ **t***) if it generates both* **s** *and* **t***.*

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I **really** will **easily** ace this exam **now**

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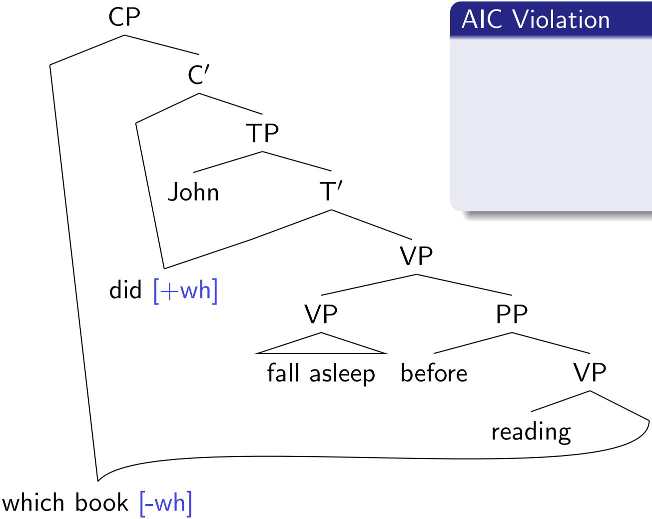
Interim Summary

Any implementation of Adjunction that captures Optionality and Independence yields a grammar formalism where

- $\Downarrow$ grammaticality is downward entailing with respect to $<_G$,
- $\Uparrow$ ungrammaticality is upward entailing with respect to $<_G$,
- $\vee$ grammaticality is preserved under "fusion".

Deriving the AIC

The AIC follows from **optionality closure and feature checking**.



AIC Violation

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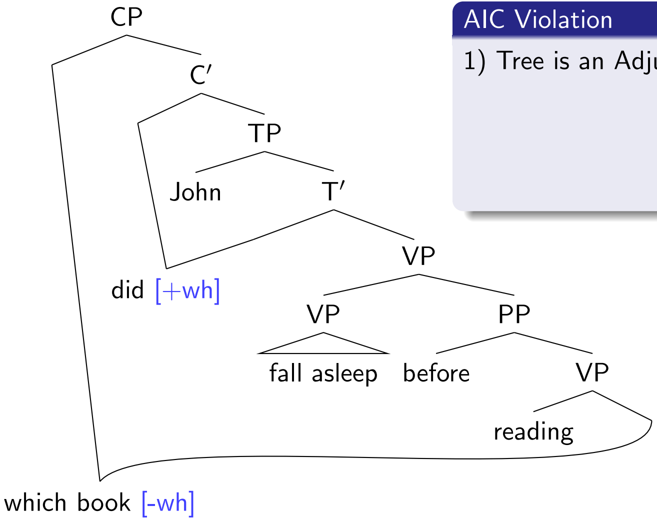

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1) Tree is an Adjunct extension

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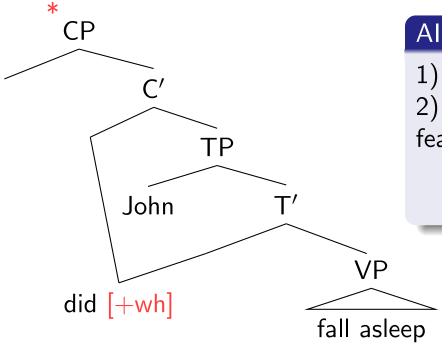

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1) Tree is an Adjunct extension
2) Tree without Adjunct violates feature calculus

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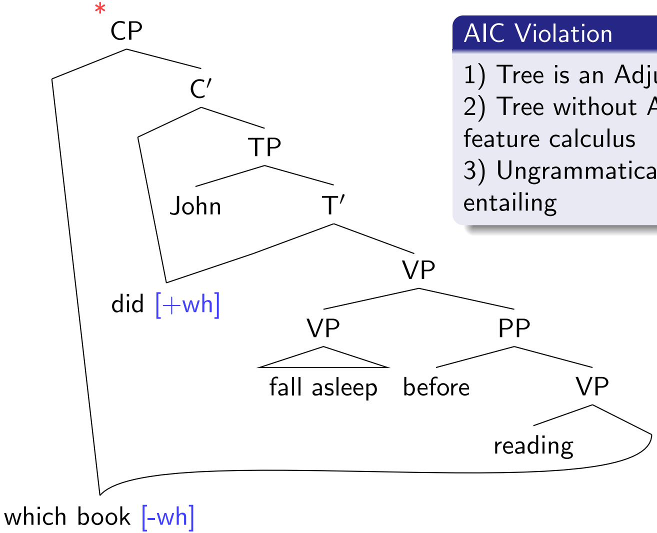
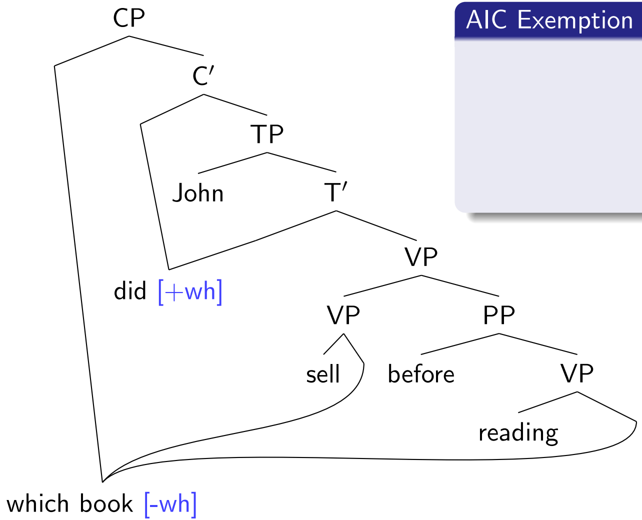


AIC Violation

1) Tree is an Adjunct extension
2) Tree without Adjunct violates feature calculus
3) Ungrammaticality is upward entailing

Why Parasitic Gaps are Different

PGs piggyback on a **mandatory feature checker**.



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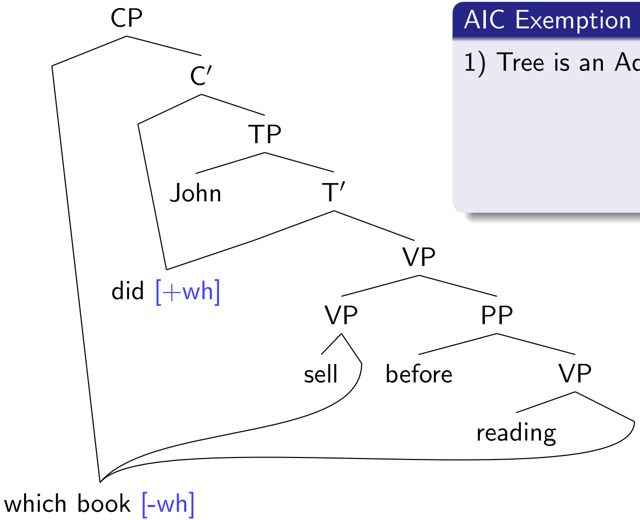

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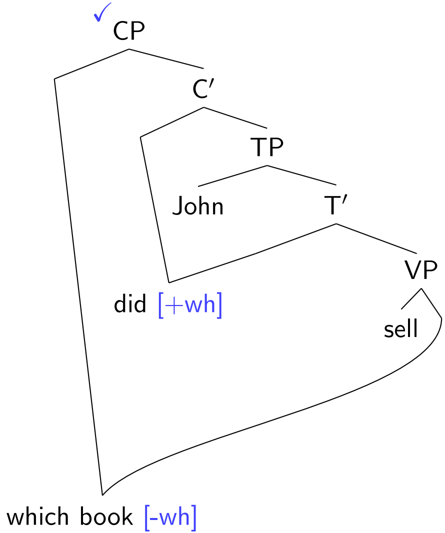

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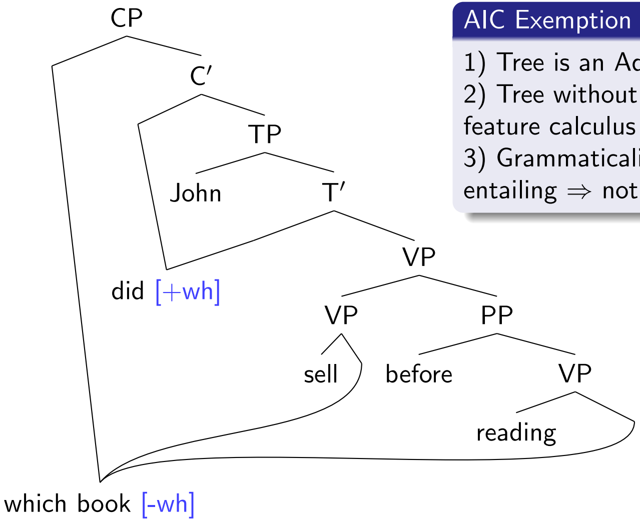

AIC Exemption

1) Tree is an Adjunct extension
2) Tree without Adjunct satisfies feature calculus
3) Grammaticality isn't upward entailing ⇒ nothing follows

Why Parasitic Gaps are Idempotent

Multiple PGs may piggyback on a single mover.

(4) Which movie did John **whilst mocking** throw in the trash **after watching**?

Follows from **independence closure**

(5) a. Which movie did John **whilst mocking** throw in the trash?

b. Which movie did John throw in the trash **after watching**?

Constraints through Operations

Constraints and operations are **closely connected**.

Theorem (Graf 2011; Kobele 2011)

A constraint can be expressed via Merge iff it can be computed using only a finitely bounded amount of working memory.

- **Intuition**: Use feature calculus to emulate how information flows through the tree during computation
- Doable for almost all constraints from the syntactic literature
- Relies on symmetry of c-selection
  (category features & selection features)

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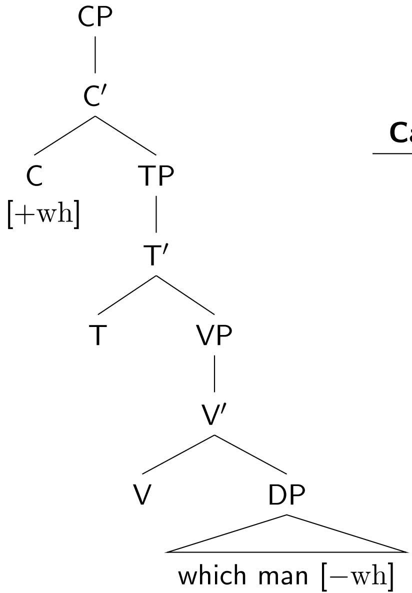

Category	Selects	Selected by
D	N	V
V	D	T
T	V	C
C	T	V,N

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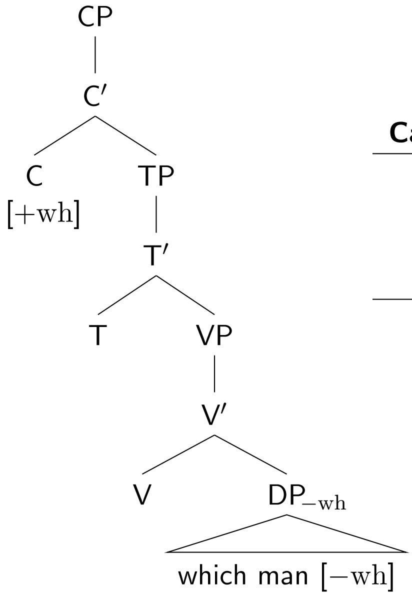

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D_{-wh}	N	

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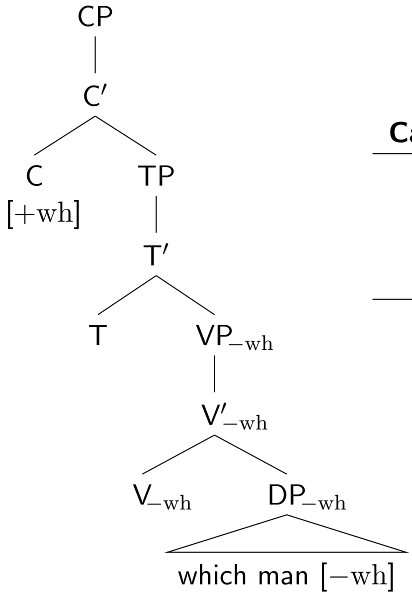

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D$_{-\mathrm{wh}}$	N	V$_{-\mathrm{wh}}$
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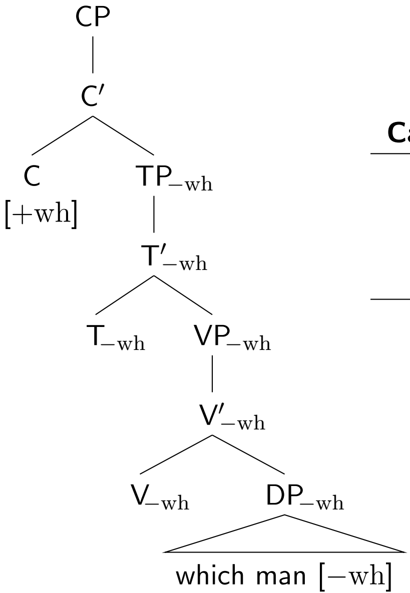

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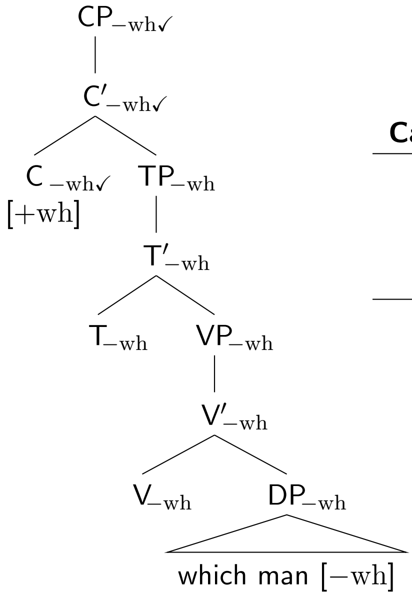

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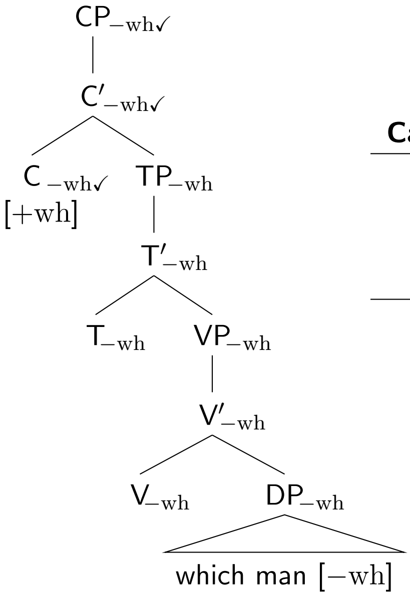

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C_{-wh}	T_{-wh}	V_{-wh},N_{-wh}

Adjuncts: The Price of Freedom

- Adjuncts very free due to Optionality and Independence
- Freedom reflected in feature calculus, limits information flow
  $\Rightarrow$ feature calculus cannot emulate all constraints correctly

Semi-Permeability

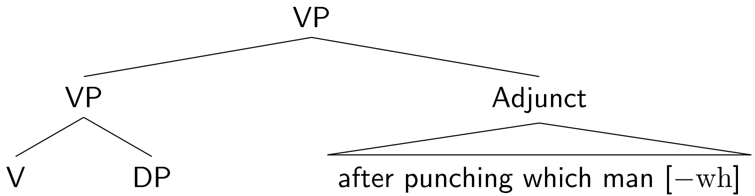
- Information flow into Adjuncts reliable
  $\Rightarrow$ Adjuncts can put restrictions on shape of tree
  (cf. parasitic gaps)
- Information flow out of Adjuncts unreliable
  $\Rightarrow$ Adjuncts cannot be depended on

Adjunct $\equiv$ black hole

Example: Adjunction a la Frey and Gärtner (2002)

Adjunction as Asymmetric Selection

Adjuncts select XP they adjoin to, but are not themselves selected.



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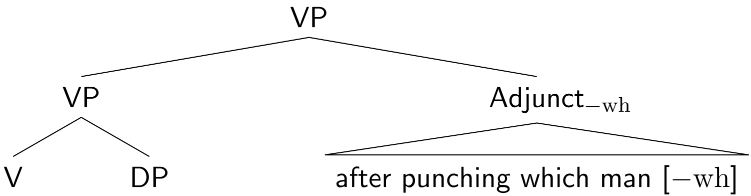

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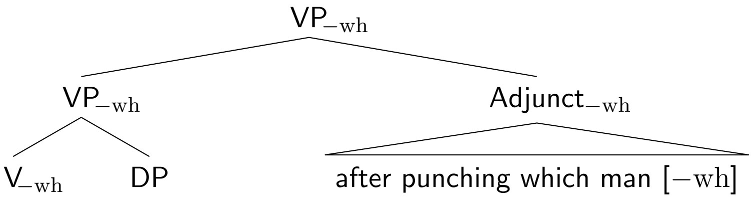

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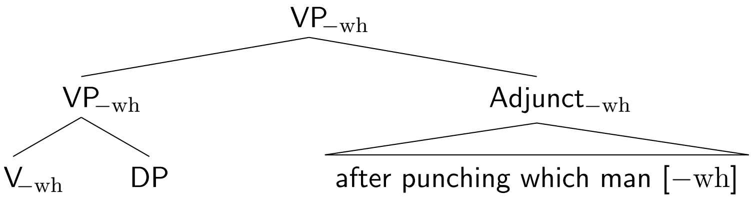

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Summary

- Adjuncts characterized by Optionality and Independence
- enforces certain grammatical inferences
  - $\Downarrow$ grammaticality is preserved under Adjunct removal
  - $\Uparrow$ ungrammaticality is preserved under Adjunct insertion
  - $\vee$ grammaticality is preserved under Adjunct combination

$\Rightarrow$ AIC falls out naturally, yet allow for parasitic gaps

- Information flow metaphor: Adjuncts $\equiv$ black holes

Work in Progress

- **Not all adjuncts are Adjuncts**
  Some adjuncts can be extracted from (Truswell 2007):

  (6) Which car did John drive Mary crazy **trying to fix**?

  Truswell's event-based generalization ≈
  some adjuncts more tightly integrated semantically

	sem-argument	sem-adjunct
syn-adjunct	Truswell adjuncts	Adjuncts
syn-argument	arguments	???

- **Extension to Other Cases**
  DP-conjuncts are also optional and independent
  ⇒ **CSC ≡ AIC & ATB extraction ≡ PGs**

  Caveat: agreement, binding, NPI-licensing

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  $\Rightarrow$ **CSC $\equiv$ AIC & ATB extraction $\equiv$ PGs**

  Caveat: agreement, binding, NPI-licensing

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