

A Gapping analysis of Across-the-Board T^0 -to- C^0 movement in English

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1 Introduction

1.1 Background

• **T^0 -to- C^0 Movement.** The standard transformational analysis of subject-auxiliary inversion in matrix question formation involves T^0 -to- C^0 movement (Chomsky 1957, 1986, Williams 1974, et seq.).¹

(1) $[_{CP} \text{Is } [_{TP} \text{Ian } t \text{ sleeping }]]$

• **Across-the-Board Movement.** The standard transformational analysis of Coordinate Structure Constraint exceptions involves Across-the-Board (ATB) extraction (Ross 1967, Williams 1978, et seq.).²

(2) I know $[_{CP} \text{what } [_{\&P} [_{TP} \text{Gale ordered } t] \text{ and } [_{TP} \text{Ted ate } t]]]$

• **Across-the-Board T^0 -to- C^0 Movement.** The standard, and often implicit, transformational analysis for auxiliaries in conjoined interrogatives involves Across-the-Board T^0 -to- C^0 movement.

(3) $[_{CP} \text{Is } [_{\&P} [_{TP} \text{Ian } t \text{ sleeping }] \text{ and } [_{TP} \text{Maxine } t \text{ reading }]]]$

1.2 A Preview

• **A Ban on ATB T^0 -to- C^0 .** Subject-auxiliary inversion is not the product of Across-the-Board T^0 -to- C^0 movement of the fronted auxiliary (see also An 2007, Salzmann 2012, Flor & Zompí 2021).³

No Across-the-Board T^0 -to- C^0

T^0 -to- C^0 movement cannot apply Across-the-Board in English.

The string in question does not have the representation shown in (4).

(4) $\star [_{CP} \text{Is } [_{\&P} [_{TP} \text{Ian } t \text{ sleeping }] \text{ and } [_{TP} \text{Maxine } t \text{ reading }]]]$

• **A Dual-Source Gapping Approach.** Apparent ATB T^0 -to- C^0 constructions are the outputs of the same mechanisms responsible for Gapping (e.g., Lin 2002, Potter et al. 2017).

Apparent ATB T^0 -to- C^0 is Gapping

Gapping derivations omit auxiliaries from non-initial conjuncts in interrogative coordinations.

• **Small Conjunct Gapping (SCG):** Auxiliaries “omitted” from non-initial conjuncts reflect shared auxiliary structure above coordinated v /VPs.

(5) $[_{CP} \text{Is } [_{TP} \text{Kendra } t [_{\&P} [_{VP} t \text{ studying }] \text{ and } [_{VP} \text{Roger sleeping }]]]]$

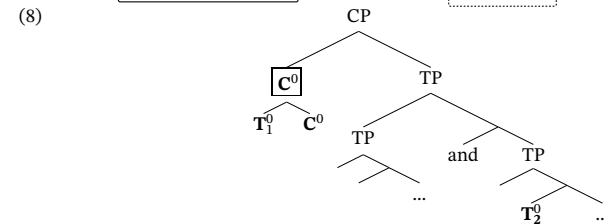
• **Large Conjunct Gapping (LCG):** Auxiliaries are omitted from non-initial conjuncts as part of an elided TP constituent under conjoined clauses.

(6) $[_{CP} \text{Is } [_{\&P} [_{CP} [_{TP} \text{Kendra } t \text{ studying }]] \text{ and } [_{CP} \text{Roger sleeping } [_{TP} t \text{ is } t]]]]$

• **Extensions and Speculations.** The remainder of the talk explores the diagnostic utility of apparent ATB head displacement and considers the implications for constituent questions.

• **Asymmetric Phonological Head Displacement:** Asymmetric extraction and obligatory reconstruction diagnose the post-syntactic displacement of heads.

(7) $[_{CP} \text{Can } [_{\&P} [_{CP} [_{TP} \text{Kendra } t \text{ study }]] \text{ or } [_{CP} \text{Roger sleep } [_{TP} t \text{ can } t]]]]$



• **Gapping Feeds ATB Wh -Movement:** Gapping configurations feed ATB syntactic movement of wh -elements.

(9) $[_{ForceP} \text{Which dish}_1 \text{ can } [_{TP} \text{Sally}_1 t [_{\&P} [_{VP} t \text{ afford } x_1] \text{ and } [_{VP} \text{Tony eat } x_1]]]]$

(10) $[_{ForceP} \text{Which dish}_1 \text{ can } [_{\&P} [_{CP} [_{TP} \text{Sally}_1 t \text{ afford } x_1]] \text{ and } [_{CP} \text{Tony } [\text{eat } x_1] [_{TP} t \text{ can } t]]]]$

2 A Dual-Source Gapping Analysis

2.1 Gapping

• **Canonical Gapping.** The verb (phrase) of a non-initial conjunct can be omitted under identity with material in a preceding conjunct (Ross 1970, Johnson 2019).

- (11) a. Some read a book to Melissa and others **read a book** to Paul.
 b. Some read a book to Melissa and others Δ to Paul. (Johnson 2019:573, (40))

• **Auxiliary Gapping.** Other instances of Gapping involve omission of auxiliaries, possibly along with verb (phrase) (Siegel 1987).

- (12) a. Jill will referee the hockey game and Jori **will** time the luge race.
 b. Jill will referee the hockey game and Jori Δ time the luge race. (Lin 2002:10, (3b))

• **A Dual-Source Gapping Approach.** Apparent ATB T⁰-to-C⁰ constructions are the outputs of the same mechanisms responsible for Gapping (e.g., Lin 2002, Potter et al. 2017).

Apparent ATB T⁰-to-C⁰ is Gapping

Gapping derivations omit auxiliaries from non-initial conjuncts in interrogative coordinations.

2.2 Small Conjunct Auxiliary Gapping

• **Low Coordination.** Gapping may involve the coordination of *v*/VPs (Siegel 1987, Johnson 1996/2004, Lin 2002, Potter et al. 2017).

- **Variable Binding :** A quantificational subject in the first conjunct can bind variables in the subject of the second conjunct (McCawley 1993, Johnson 1996/2004, Lin 2002).

- (13) a. **No student**₁ bought a hat and **her**₁ brother a sweatshirt.
 “There is no student *x* such that *x* bought a hat and *x*’s brother bought a shirt.”
 b. **No student**₁ [_{&P} [_{VP} *t* bought a hat] and [_{VP} **her**₁ brother ~~bought~~ a shirt]]

- **Negative Polarity Items :** Negation licenses NPIs in the second conjunct (Oehrle 1987).

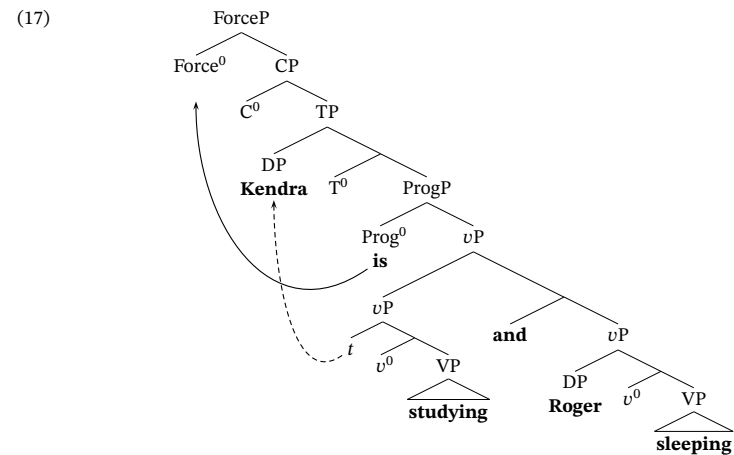
- (14) a. Jane **won’t** live in Boston and Mark live **anywhere** else.
 b. Jane **won’t** [_{&P} [_{VP} *t* live in Boston] and [_{VP} Mark live **anywhere** else]]

- **Wide-Scope Operators :** Modal auxiliaries in the first conjunct can be interpreted above the coordination (Oehrle 1987, Siegel 1987, Potter et al. 2017).

- (15) a. Ward **can’t** eat caviar and Mary eat beans.
 $\neg \Diamond (P \wedge Q)$: “It’s not possible that Ward eats caviar and Mary eats beans.”
 b. Ward **can’t** [_{&P} [_{VP} *t* eat caviar] and [_{VP} Mary eat beans]]

- **Small Conjuncts Feed Aux-Inversion.** Apparent ATB T⁰-to-C⁰ constructions may have Small-Conjunct Gapping structures as their source.

- (16) [_{ForceP} Is [_{TP} Kendra *t* [_{&P} [_{VP} *t* studying] and [_{VP} Roger sleeping]]]]



- **Low Coordination :** Coordination is at the level of the predicate, below any auxiliaries.
 • **Omitted Auxiliaries :** Omission of an auxiliaries from a non-initial conjunct reflects shared structure above the coordination.
 • **Coordinate Structure Constraint :** A-movement of the subject out of the first conjunct is permitted under if the CSC is a constraint on LF representations (Ruys 1992, Fox 2000, Lin 2002).
 • **Question Formation :** The shared auxiliary is displaced to the left periphery.

2.3 Large Conjunction Auxiliary Gapping

• **High Coordination.** Gapping may involve the coordination of clause-level constituents (Ross 1970, Potter et al. 2017).

- Distributed-Scope Operators : Modal auxiliaries can be interpreted below the scope of coordination, in each conjunct (Siegel 1987, Potter et al. 2017)

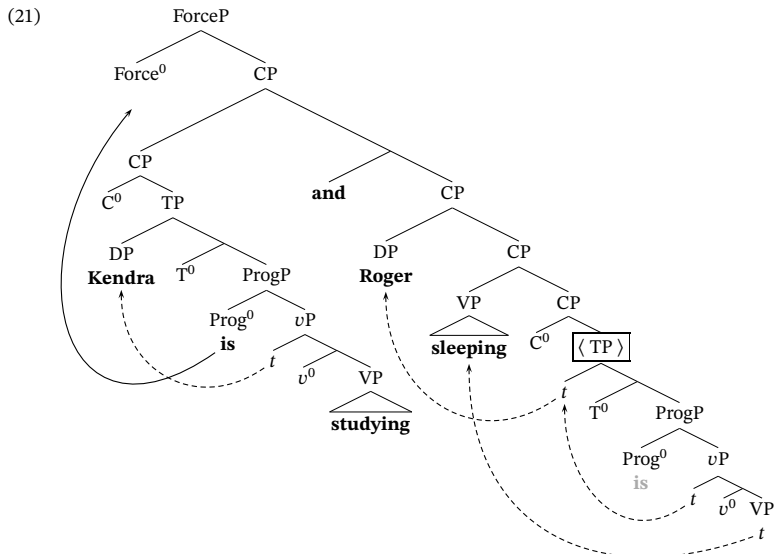
(18) a. Ward **can't** eat caviar and Mary, beans.
 $\neg\Diamond P \wedge \neg\Diamond Q$: ‘Ward can’t eat caviar and Mary can’t eat beans.’
 b. [_{&P} [_{CP} Ward **can't** eat caviar] and [_{CP} Mary beans ~~can't eat~~]]

- Wh-Remnants : The remnants of gapping can be *wh*-elements, which presumably move to Spec,CP (Pesetsky 1982, Boone 2014; cf. López & Winkler 2003, Johnson 2019).

(19) a. Which boy will bring rice and **which girl**, beans?
 b. [_{&P} [_{CP} Which boy will bring rice] and [_{CP} **which girl** beans ~~will bring~~]]

• **A Large Conjunction Gapping Source.** Apparent ATB T⁰-to-C⁰ constructions may be the output of the same mechanisms responsible for Large Conjunction Gapping.

(20) [_{ForceP} Is [_{&P} [_{CP} [_{TP} Kendra *t* studying]] and [_{CP} Roger sleeping (_{TP} *t* is *t*)]]]



- High Coordination : Coordination is at the level of the clause, at the CP layer.
- Omitted Auxiliaries : Omission of auxiliaries from a non-initial conjunct reflect ellipsis of TP containing the missing auxiliary.
- Remnants : Constituents displaced to the left periphery of the second conjunct become remnants.
- Question Formation : The auxiliary in the first conjunct is displaced to the illocutionary force head.
- Coordinate Structure Constraint : Extraction of an auxiliary from the first conjunct is permitted under if the CSC is a constraint on LF representations (Ruys 1992, Fox 2000, Lin 2002).

3 Challenges for Across-the-Board T⁰-to-C⁰ Movement

• **A Ban on ATB T⁰-to-C⁰.** Subject-auxiliary inversion is not the product of Across-the-Board T⁰-to-C⁰ movement of the fronted auxiliary.

No Across-the-Board T⁰-to-C⁰
 T⁰-to-C⁰ movement cannot apply Across-the-Board in English.

3.1 Asymmetric Agreement

• **Asymmetric Agreement.** An auxiliary fronted in a coordination structure may asymmetrically agree with the subject of the first conjunct, but not the second (An 2007, Salzmann 2012).

(22) a. Who **does** he like and they hate?
 b. *Who **do** he like(s) and they hate? (An 2007:8–9, (21)–(22))

(23) Was **hast** [du gekauft] und [Peter verkauft]?
 what have.2S you bought and Peter sold
 ‘What did you buy and Peter sell?’ (Salzmann 2012:403, (9))

(24) a. ?**Is** Kendra studying and the boys sleeping?
 b. ***Are** Kendra studying and the boys sleeping?

• **No ATB Source.** The contrast suggests that the fronted auxiliary does not have a source in both conjuncts, contra expectations if the auxiliary undergoes ATB T⁰-to-C⁰ movement (e.g., Citko 2005).

(25) * [_{CP} [_{&P} [_{TP} Kendra **is** studying] and [_{TP} the boys **is** sleeping]]]

• **Agreement in Gapping.** Gapping provides derivations in which the fronted auxiliary can be expected to agree with only the initial nominal constituent.

• **Small Conjoint Gapping:** In SCG the auxiliary probes and agrees with the highest/closest external argument of the first conjunct.

(26) $[\text{ForceP } [\text{TP Kendra is } [\&P [\text{VP } t \text{ studying }] \text{ and } [\text{VP the boys eating }]]]]$

• **Large Conjoint Gapping:** In LCG the pronounced and fronted auxiliary necessarily agrees with the sole argument of its clause.⁴

(27) $[\text{ForceP } [\&P [\text{CP } [\text{TP Kendra is studying }]]] \text{ and } [\text{CP the boys eating } \langle \text{TP } t \text{ are } t \rangle]]]]$

3.2 Anti-distressing

• **Anti-Distressing.** A second conjunct cannot contain a distressed pronominal subject that is coreferent with the subject of the first conjunct (Bjorkman 2014).

- (28) a. *Is **Kendra**₁ studying and **she**₁ eating?
 b. ??Is **Kendra**₁ studying and **SHE**₂ eating?
 c. Is **Kendra** studying and **Roger** eating?

• **No ATB Source.** Anti-distressing is not an expected property given the acceptability of distressed coreferent pronominal subjects in declarative counterparts.

(29) $^*[\text{CP } [\&P [\text{TP } \textbf{Kendra}_1 \text{ is studying }] \text{ and } [\text{TP } \textbf{she}_1 \text{ is eating }]]]]$

(30) **Kendra**₁ is studying and **she**₁ is eating.

• **Prosodic Conditions on Gapping.** Gapping is well-known to have specific information-structural properties that are reflected in its prosody (e.g., Kuno 1976, Winkler 2005, Toosarvandani 2016).

- (31) *Contrastive Focus Principle*
 In gapping the deleted elements must be given. The remnants must occur in a contrastive relation to their correlates.

• **Small Conjoint Gapping (SCG):** Predicate-internal subjects positions appear to generally resist distressed coreferent nominals.

(32) $^*[\text{ForceP } [\text{TP } \textbf{Kendra}_1 \text{ is } [\&P [\text{VP } t \text{ studying }] \text{ and } [\text{VP } \textbf{she}_1/\textbf{her}_1 \text{ eating }]]]]$

(33) I saw $[\&P [\textbf{Ramona}_1 \text{ reading }] \text{ and } [\textbf{her}_1/\textbf{HER}_2 \text{ relaxing }]]$

• **Large Conjoint Gapping (LCG):** The information-structural status of remnants relative to their correlates requires specific prosodic contours.

(34) $^*[\text{ForceP } [\&P [\text{CP } [\text{TP } \textbf{Kendra}_1 \text{ is studying }]]] \text{ and } [\text{CP } \textbf{she}_1/\textbf{her}_1 \text{ eating } \langle \text{TP } t \text{ are } t \rangle]]]]$

3.3 Undergeneration of Multiple Auxiliaries

• **Vanishing Auxiliaries.** Auxiliaries can be omitted from conjuncts in the absence of auxiliary displacement in the first conjunct.

(35) Will Kendra **be** studying and Roger sleeping?

• **ATB Undergenerates.** ATB movement does not provide a means for removing auxiliaries from non-initial conjuncts that don't have displaced correlates.

(36) $^*[\text{CP } \textbf{Will} [\& [\text{TP } \textbf{Kendra } t \textbf{be} \text{ studying }] \text{ and } [\text{Roger } t \textbf{be} \text{ sleeping }]]]]$

• **Auxiliary Gapping.** A Gapping analysis provides derivations that can omit auxiliaries from non-initial conjuncts without relying on displacement.

• **Small Conjoint Gapping (SCG):** Low coordination below any aspectual phrases will “omit” auxiliaries from the second conjunct.

(37) $[\text{ForceP } [\text{TP } \textbf{Kendra}_1 \textbf{will be} [\&P [\text{VP } t \text{ studying }] \text{ and } [\text{VP } \textbf{Roger} \text{ sleeping }]]]]$

• **Large Conjoint Gapping (LCG):** High coordination in combination with TP-ellipsis will remove all auxiliaries from a non-initial conjunct.

(38) $[\text{ForceP } [\&P [\text{CP } [\text{TP } \textbf{Kendra}_1 \textbf{will be} \text{ studying }]]] \text{ and } [\text{CP } \textbf{Roger} \text{ sleeping } \langle \text{TP } t \textbf{will be } t \rangle]]]]$

4 Support for Dual-Source Gapping

• **A Dual-Source Gapping Approach.** Apparent ATB T⁰-to-C⁰ constructions are the outputs of the same mechanisms responsible for Gapping (e.g., Lin 2002, Potter et al. 2017).

Apparent ATB T⁰-to-C⁰ is Gapping

Gapping derivations omit auxiliaries from non-initial conjuncts in interrogative coordinations.

4.1 Disjunctive Interrogatives

• **An Ambiguity.** Disjunctions in questions show an ambiguity that is commonly associated with multiple structural representations (e.g., Han & Romero 2004, Pruitt & Roelofsen 2011).⁵

(39) *Polar-Questions : Small Conjuncts*

Q: Is Tracy drinking [coffee or tea \wedge]?

“Is it the case that that Tracy is drinking either coffee or tea?”

A: Yes.

(40) *Alternative-Questions : Large Conjuncts*

Q: Is [Tracy drinking coffee \wedge] or [~~Tracy drinking~~ tea \searrow]?

“Which one of the following is Tracy drinking: coffee or tea?”

A: Coffee.

• **Ambiguous Gapping.** Apparent ATB T⁰-to-C⁰ constructions are ambiguous between a polar-question or alternative-question interpretation (cf. Han & Romero 2004:sec. 5.2).

(41) *Context : Due to construction in their building, I wonder if it will be possible for Kendra to study and for Roger to sleep.*

Q: Can [Kendra study or Roger sleep \wedge]?

Polar-Question : “Is it possible that Kendra studies or that Roger sleeps?”

A: Yes, they’ll both be fine.

(42) *Context : Kendra needs to study and Roger needs to sleep. Knowing that one of them will not be able to do so, I wonder if Kendra will be able to study or if Roger will be able to sleep.*

Q: Can [Kendra study \wedge] or [Roger sleep \searrow]?

Alternative-Question : “Which of the following is the case: Kendra can study or Roger can sleep?”

A: Roger can sleep because Kendra works.

• **The Scope of Coordination.** Gapping provides derivations for polar-questions and alternative-questions that correlate with the scope of sentential operators.

• **Small Conjunct Gapping :** SCG configurations are responsible for Polar-Questions and are expected to necessarily assign sentential operators wide-scope.

(43) [_{ForceP} Can [_{TP} Kendra₁ t [_{&P} [_{VP} t study] or [_{VP} Roger sleep]]]]

• **Large Conjunct Gapping :** LCG structures are responsible for alternative-questions and are expected to necessarily assign sentential operators distributed-scope (contra Siegel 1987).

(44) [_{ForceP} Can [_{&P} [_{CP} [_{TP} Kendra t₁ study]]] or [_{CP} Roger sleep $\left\langle \text{TP } t \text{ can } t \right\rangle$]]]

4.2 Bound-Variable Interpretations

• **Small Conjunct Gapping.** A quantificational subject in the first conjunct can bind variables in the subject of the second conjunct (McCawley 1993, Johnson 1996/2004).

(45) a. **No student**₁ bought a hat and **her**₁ brother a sweatshirt.

“There is no student x such that x bought a hat and x’s brother bought a shirt.”

b. **No student**₁ [_{&P} [_{VP} t bought a hat] and [_{VP} **her**₁ brother ~~bought~~ a shirt]]

• **Bound Variables in Interrogatives.** A bound-variable interpretation disambiguates the structure in favor of a polar question interpretation.

(46) *Context : Walking by an apartment building, I see, unexpectedly, that the television is on in every apartment. Expecting that students would be studying and that others would be sleeping, I ask if this isn’t the case.*

Q: Is [**no student**₁ studying or **her**₁ roommate sleeping \wedge]?

Polar-Question : “Is it the case that no student is studying or the roommate is sleeping?”

A: No, everyone is watching television.

(47) *Context : Walking by an apartment building, I see, unexpectedly, that the light is off in every apartment. I inquire about which of two things could explain this.*

Q: *Is [**no student**₁ studying \wedge] or [**her**₁ roommate sleeping \searrow]?

Alternative-Question : “Which of the following is happening: no student is studying or the roommate is sleeping?”

A: #No student is studying.

• **Bound Variables Bleed LCG.** Gapping provides derivations for polar-questions and alternative-questions, but bound-variable interpretations are incompatible with alternative-question interpretations.

• **Small Conjunct Gapping :** SCG configurations are responsible for polar-questions and support a bound-variable interpretation.

(48) [_{ForceP} Is [_{TP} **no student**₁ t [_{&P} [_{VP} t studying] or [_{VP} **her**₁ roommate sleeping]]]]

• **Large Conjunct Gapping :** LCG structures are responsible for alternative-questions and omitting auxiliaries, but cannot support a bound-variable interpretation.

(49) * [_{ForceP} Is [_{&P} [_{CP} [_{TP} **no student**₁ t₁ studying]]] or [_{CP} **her**₁ roommate sleeping $\left\langle \text{TP } t \text{ is } t \right\rangle$]]]

4.3 Conjunction Reduction

Distributed-Scope Operators. The ability to interpret sentential operators below the scope of coordination, in each conjunct provide evidence for LCG (Siegel 1987, Potter et al. 2017).

- (50) a. Ward **can't** eat caviar and Mary, beans.
 $\neg \langle P \wedge \neg \langle Q : \text{'Ward can't eat caviar and Mary can't eat beans.'}$
 b. [_{&P} [_{CP} Ward **can't** eat caviar] and [_{CP} Mary beans ~~can't eat~~]]

• **A Polarity/Alternative Question Ambiguity.** Alternative question interpretations with distributively interpreted operators are available in massively reduced conjuncts.

- (51) Q: Should [**there not be** any students eating or any professors sleeping ↗]?
Polar-Question : “Is it the case that there should be no students eating and no professors sleeping?”
 A: No, of course not.
 (52) Q: Should [**there not be** any students eating ↗] or [any professors sleeping ↘]?
Alternative-Question : “Which of the following is the case: no students should be eating or no professors should be sleeping?”
 A: There shouldn't be any professors sleeping.

• **ATB Undergenerates.** The ATB analysis does not provide a means for understanding how conjunction reduction or the two interpretations are achieved.

- (53) *Should [**there t not be** any students eating] or [**there t not be** any professors sleeping]
 (54) *Should [**there t not be** any students eating] or [any professors t **not be** sleeping]

• **Auxiliary Gapping.** The proposed Gapping analysis provides reduced conjunct constructions that can generate each interpretation.

- **Small Conjunct Gapping (SCG)** : Low coordination in SCG generates a polarity-question interpretation and precludes from the second conjunct any material outside the predicate.

- (55) [_{ForceP} [_{TP} **there should not be** [_{&P} [_{VP} any students eating] or [_{VP} any professors sleeping]]]]

- **Large Conjunct Gapping (LCG)** : High coordination in LCG generates an alternative-question interpretation and elides sentential operators in the second conjunct.

- (56) [_{ForceP} [_{&P} [_{CP} [_{TP} **There should not be** any students eating]] or [_{CP} any professors sleeping < _{TP} **there should t not be** >]]]]

4.4 Overgeneration of Multiple Auxiliaries

• **Spurious Auxiliaries.** Auxiliaries that do not have a displaced correlate are unexpectedly unable appear in a non-initial conjunct (See Appendix A; Lin cf. 2002:42, (20)).

- (57) a. ??**Will** Kendra **be** studying and/or Roger **be** sleeping?
 b. **Will** Kendra **be** studying and/or Roger sleeping?

• **ATB Overgenerates.** The ATB analysis does not provide a means for understanding why unmoved heads cannot appear in their base-generated position.

- (58) ??**Will** [Kendra t **be** studying] and/or [Roger t **be** sleeping]

• **Auxiliary Gapping.** We can appeal to constraints on structure sharing and verbal category fronting in Gapping configurations .

- **Small Conjunct Gapping (SCG)** : If low coordination is necessarily below any aspectual phrases (Potter et al. 2017), we preclude the structure for introducing auxiliaries in non-initial conjuncts.

- (59) ??[_{ForceP} [_{TP} Kendra₁ **will be** [_{&P} [_{VP} t studying] and/or [_{VP} Roger **be** sleeping]]]]

The acceptability of spurious auxiliaries in SCG should be a function of the ability to coordinate midfield categories as well as the polar/alternative interpretation of disjunctions.

- **Large Conjunct Gapping (LCG)** : If Aux+VP is not a frontable constituent, auxiliaries should not survive TP-ellipsis.

- (60) ??[_{ForceP} [_{&P} [_{CP} [_{TP} Kendra₁ **will be** studying]] and/or [_{CP} Roger [_{XP} **be** sleeping] < _{TP} **will** >]]]]

The acceptability of spurious auxiliaries in LCG should be a function of the ability of Aux+VP to be fronted (e.g., Ott 2018, Thoms & Walkden 2019) or escape ellipsis (e.g., Weir 2014)

- (61) a. **Sitting on the table** though the bottle will be ...
 b. ***Be sitting on the table** though the bottle will ...
 (62) a. **Sitting on the table** will be a bottle of wine.
 b. ***Be sitting on the table** will a bottle of wine.
 (63) Will Kendra be running?
 a. No, **studying Kendra will be**.
 b. *No, **be studying Kendra will**.

5 Asymmetric Phonological Head Displacement

• **The Diagnostic Utility of ATB Head Movement.** The source of scope ambiguities in apparent ATB head displacement configurations may diagnose the responsible mechanism.

Reconstruction by Coordination

“Reconstruction” that is a function of the scope of coordination is indicative of phonological head movement.

5.1 Asymmetric T⁰-to-C⁰ Displacement

• **A Dual-Source Gapping Approach.** Apparent ATB T⁰-to-C⁰ constructions are the outputs of the same mechanisms responsible for Gapping (e.g., Lin 2002, Potter et al. 2017).

- **Small Conjunct Gapping (SCG):** Auxiliaries “omitted” from non-initial conjuncts reflect shared auxiliary structure above coordinated *v*/VPs.

(64) [CP Is [TP Kendra *t* [VP *t* studying] and [VP Roger sleeping]]]

- **Large Conjunct Gapping (LCG):** Auxiliaries are omitted from non-initial conjuncts as part of an elided TP constituent under conjoined clauses.

(65) [CP Is [VP [CP [TP Kendra *t* studying]] and [CP Roger sleeping [TP *t* is *t*]]]]

• **Unavailable “Symmetric” Alternatives.** Alternative analyses that would conjoin CPs and not posit asymmetric extraction should be dispreferred.

- **First Conjunct T⁰-to-C⁰ Movement:** If T⁰-to-C⁰ displacement is triggered by the properties internal to the first conjunct, we lose the intuition that the conjunction has scope under interrogation.

(66) *_{[VP [CP Is [TP Kendra *t*₁ studying]] or [CP Roger sleeping [TP *t* is *t*]]]]}

- **Symmetric T⁰-to-C⁰ Movement:** If T⁰-to-C⁰ displacement occurs in both conjuncts, we are forced to rely on a relatively rare instance of CP-ellipsis.

(67) *_{[VP [CP Is [TP Kendra *t*₁ studying]] or [CP Roger sleeping [TP *t* is *t*]]]]}

• **Coordination below Force⁰.** The distribution of force-encoding complementizers suggests that coordination is below the head that is responsible for illocutionary force (see also Johnson 2014, 2019) and, thus, T⁰-to-C⁰ displacement must be asymmetric.

(68) I wonder **if** Kim will be studying or *(**if**) Roger sleeping.

(69) I wonder [_{ForceP} **if** [_{&P} [_{CP} [_{TP} Kendra will be studying]] or [_{CP} Roger sleeping [TP *t* will be *t*]]]]

• **Overtly Asymmetric Head Movement.** Observably non-ATB displacement of heads out of coordinations provides further support for the asymmetric displacement of heads.

(70) [_{CP} **Should** [_{&P} [_{TP} we *t* support Anne]] and [_{TP} she **were** to win]], she would let us drive her Ferrari. (Flor & Zoppi 2021:1, (4))

5.2 Phonological Head Movement

• **Semantically Active Head Movement.** Wide-scope of a displaced head with respect to coordination can diagnose semantically active (narrow-syntactic) head movement (e.g. Lechner 2017).

(71) *Indicator of semantically active head movement*

LF: X₁⁰ [_{&P} [... *t*₁ ...]] and/or [... *t*₁ ...] (X⁰ > &, & > X⁰)

(72) *Uninformative regarding semantically active head movement*

LF: X⁰ [_{&P} [...]] and/or [...] (X⁰ > &)

• **Post-syntactic Head Movement.** Obligatory distributed-scope of a displaced head with respect to coordination diagnoses semantically *inactive* (post-syntactic) head movement.

(73) *Indicator of semantically inactive head movement*

LF: <X⁰ > [_{&P} [... X⁰ ...]] and/or [... X⁰ ...] (& > X⁰)

• **The Scope of Coordination in Gapping.** The relative scope of operators in conjoined interrogatives is not a function of reconstruction (cf. (71)); it is necessarily a function of the scope of coordination.

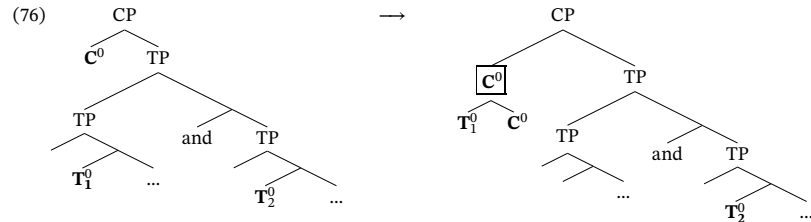
- **Small Conjunct Gapping:** Wide-scope interpretations of sentential operators are the result of are SCG configurations; they are uninformative regarding head movement.

(74) [_{ForceP} **Can** [_{TP} Kendra₁ *t* [_{&P} [_{VP} *t* study]] or [_{VP} Roger sleep]]]] (see (72))

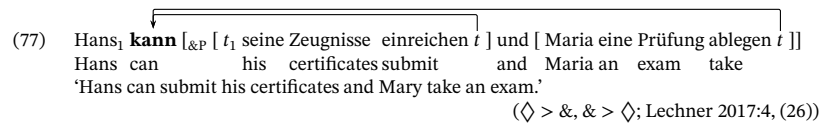
- **Large Conjunct Gapping:** Distributed-scope interpretations of sentential operators are the result of LCG configurations; they indicate semantically *inactive* head movement.

(75) [_{ForceP} **Can** [_{&P} [_{CP} [_{TP} Kendra *t*₁ study]] or [_{CP} Roger sleep [TP *t* **can** *t*]]]] (see (73))

- **CSC “Violating” Head Movement.** Configurations with asymmetric head displacement are permitted on the promise of “reconstruction” (Ruys 1992, Fox 2000, Lin 2002).



- **Across-the-Board V2?** Future work will ask if possible scope ambiguity is a function of reconstruction or a function of the scope of coordination in Across-the-Board V2 configurations across the rest of Germanic (den Besten 1983).



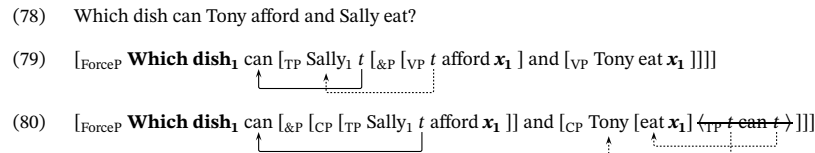
- **Previous Arguments for SAHM?** Future work will have to understand how this fits with the range of arguments for the syntactic nature of head movement (e.g., Lechner 2017, Landau 2020, and references therein).

6 Gapping Feeds ATB Wh-Movement

- **Constituent Questions.** Gapping derivations are expected to generate constituent questions.

Gapping in Constituent Questions
Gapping derivations generate constituent questions.

- **Wh-Gapping.** If Gapping derivations necessarily feed auxiliary fronting, then one or both of the proposed Gapping derivations necessarily feed constituent questions.



- **An Expected Ambiguity.** If both structures are available, constituent questions should show the expected scope ambiguities for sentential operators.

- (81) Context : Tony has a bad habit of eating Sally's food. So, she tries to buy dishes that he won't eat.
Q: Which dish won't Sally buy and Tony eat?
Wide-Scope : "For which dish x will it not be the case that Sally buys x and Tony eats x ?"
A: Liver and onions.
- (82) Context : Sally refuses to buy a certain dish for the potluck. But, it's for the best anyway because Tony would refuse to eat it.
Q: Which dish won't Sally buy and Tony eat?
Distributed-Scope : "For which dish x will it not be the case that Sally buys x nor will it be the case that Tony eats x ?"
A: Liver and onions.

- **Sorting Out ATB Wh-Movement?** Future work must determine what mechanisms are responsible for generating the *wh*-gaps (e.g., Williams 1978, Munn 1993, Nunes 2004, Citko 2005, Zhang 2010, Salzmann 2012).

- **Selective Freezing Effects?** Future work must investigate why *wh*-extraction out of certain remnants is not possible (Yoshida 2005).

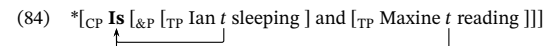
- (83) a. I wonder if Sally talked about **the rice** and Mary ~~talked~~ about **the beans**.
b. *I wonder **which dish₁** Sally talked about **t_1** and Mary ~~talked~~ about **t_1** .

7 Conclusion

- **A Ban on ATB T⁰-to-C⁰.** Subject-auxiliary inversion is not the product of Across-the-Board T⁰-to-C⁰ movement of the fronted auxiliary.

No Across-the-Board T⁰-to-C⁰
T⁰-to-C⁰ movement cannot apply Across-the-Board in English.

The string in question does not have as (84).



- **A Dual-Source Gapping Approach.** Apparent ATB T^0 -to- C^0 constructions are the outputs of the same mechanisms responsible for Gapping (e.g., Lin 2002, Potter et al. 2017).

Apparent ATB T^0 -to- C^0 is Gapping

Gapping derivations omit auxiliaries from non-initial conjuncts in interrogative coordinations.

- **Small Conjunct Gapping (SCG)** : Auxiliaries “omitted” from non-initial conjuncts reflect shared auxiliary structure above coordinated v /VPs.

(85) $[_{CP} \text{Is } [_{TP} \text{Kendra } t \text{ studying}] \text{ and } [_{VP} \text{Roger sleeping}]]]$

- **Large Conjunct Gapping (LCG)** : Auxiliaries are omitted from non-initial conjuncts as part of an elided TP constituent under conjoined clauses.

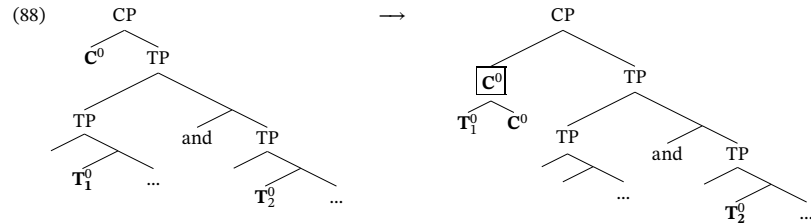
(86) $[_{CP} \text{Is } [_{\&P} [_{CP} [_{TP} \text{Kendra } t \text{ studying}]]] \text{ and } [_{CP} \text{Roger sleeping } \langle \text{TP } t \text{ is } t \rangle]]$

- **The Diagnostic Utility of ATB Head Movement.** The source of scope ambiguities in apparent ATB head displacement configurations may diagnose the responsible mechanism.

Reconstruction by Coordination

“Reconstruction” that is a function of the scope of coordination is indicative of phonological head movement.

(87) $[_{CP} \text{Can } [_{\&P} [_{CP} [_{TP} \text{Kendra } t \text{ study}]]] \text{ or } [_{CP} \text{Roger sleep } \langle \text{TP } t \text{ can } t \rangle]]$



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The responsibility for any errors or misrepresentations of the ideas of others lies solely with the author.

Notes

¹See Bruening (2017) and the references therein for a discussion of Subject-Auxiliary Inversion.

²See de Vries (2017) and the references therein for a discussion of Across-the-Board phenomena.

³For attempts to recast Across-the-Board \bar{A} -movement see Munn 1993, Bošković & Franks 2000, Nunes 2004, Citko 2005, Zhang 2010, Salzmann 2012, among others.

⁴Note that there is independent evidence for morphological mismatches being permitted under ellipsis.

- (i) John said that he is going to the store and
the girls did $\langle \text{say that they are going to the store} \rangle$ too.

⁵See also Schwarz (1999), Wu (2021), and references therein for discussions of declarative disjunctions.

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Appendix A Spuriousness in Multiple-Auxiliary Constructions

- **The Verbal Hierarchy.** The hierarchy of verbal elements in English is as follows:

- (89) *The Verbal Hierarchy*
Mod < Perf < Prog < Pass < V

- **Constituent Questions.** Examining the full paradigm of two-auxiliary constructions perhaps more variability than the simple hypothesis of section would have predicted. (Judgements have been suppressed.)

- (90) a. **Should** Kendra **have** studied and/or Roger **have** slept?
b. **Will** Kendra **be** studying and/or Roger **be** sleeping?
c. **Must** Kendra **be** questioned and/or Roger **be** arrested?
- (91) a. **Has** Kendra **been** studying and/or Roger **been** sleeping?
b. **Has** Kendra **been** questioned and/or Roger **been** arrested?
- (92) **Is** Kendra **being** questioned and/or Roger **being** arrested?
- (93) **Will** Kendra **be** happy and/or Roger **be** upset?

Appendix B Gapping v. Stripping

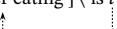
- **Stripping in Disjunctions.** Wu (2021) has argued recently that *either ... or* constructions involve stripping (cf. Schwarz 1999, Han & Romero 2004).

- (94) [_{&P} Either [Tracy is drinking coffee] or [tea ~~Tracy is drinking t~~]]

- **Stripping in Interrogatives?** One could imagine that LCG configurations are derived via Stripping, but not Gapping.

- (95) [_{CP} IS [_{&P} [_{CP} [_{TP} Kendra t studying]]] and [_{CP} [_{XP} Roger sleeping] [_{TP} is t]]]

Gapping, but not Stripping. A Stripping derivation, in which a single remnant is extracted to the left periphery, seems less available than the proposed alternative.

- (96) *Kendra is studying but not [_{CP} [_{XP} Roger eating] (~~is~~)]
- 

Appendix C Upward Bounding and Islands

• **Constraints on Embedding.** Gapping resists recovering an embedded antecedent (Hankamer 1979, Johnson 2019) and remnants are island-sensitive (Neijt 1979).

- (97) *Upward Bounding Constraint*
The antecedent for a gap must include the highest term in the verbal sequence of the first conjunct.
- (98) *Sylvia will ask [**if Luke is bringing rice**] or
- Louise **is bringing** beans.
“Sylvia will ask if Luke is bringing rice or Louise is bringing beans.”
 - Louise ~~will ask~~ [**if Bill is bringing**] beans.
“Kendra will ask if Bill is bringing rice or Louise will ask if Bill is bringing beans.”
- (99) Sylvia will ask [if Luke is bringing rice or Louise ~~is bringing~~ beans]
“Sylvia will ask if Luke is bringing rice or if Louise is bringing beans.”

• **Upward Bounding and Islands in Interrogatives.** Gapping interrogatives are subject to the Upward Bounding Constraint and the remnants are sensitive to island boundaries.

- (100) *Will Sylvia ask [**if Kendra is studying**] or
- Roger ~~be~~ sleeping?
“Will Sylvia ask if Kendra is studying or will Roger be sleeping?”
 - Roger ask [**if Kendra is**] sleeping?
“Will Sylvia ask if Kendra is studying or will Roger ask if Kendra is sleeping?”
- (101) Will Sylvia ask [if Kendra is studying or Roger ~~is~~ sleeping]
“Will Sylvia will ask if Kendra is studying or if Roger is sleeping?”

• **Long-Distance Remnant Movement.** So long as Upward Bounding is respected, remnants can be displaced across (non-finite) clause boundaries.

- (102) Will Kendra want [to be **studying**] or
- *Roger ~~be~~ sleeping?
“Will Kendra want to be studying or will Roger be sleeping?”
 - Roger [~~want to be~~] **sleeping**?
“Will Kendra want to be studying or will Roger want to be sleeping?”