

A Theory of A-chains and Multiple Theta-Role Assignment

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1. Introduction

- (1) What did Max buy?
b. Max bought something.
c. $[_{CP} \text{ what}_2 \text{ did} + [_{C} \text{ }]] [_{TP} \text{ Max buy (what}_1)]]$ A'-chain = (what₁, what₂)
- (2) IM [Internal Merge] should be driven only by phase heads (C/v*). (Chomsky 2008: 143)
- (3) a. Max was hit (by Yumi).
b. Yumi hit Max.
c. $[_{CP} C [_{TP} \text{ Max}_2 \text{ was} + [_{T} \text{ }]] \text{ hit (Max}_1)]]$ A-chain = (Max₁, Max₂)
- (4) In the lexicon, T lacks these features. Agree and Tense features are inherited from C, the phase head. (ibid.)
- (5) a. $C[EF, u\varphi] \quad DP_3 \quad \boxed{v} \quad v \quad V \quad (DP_2) \quad \boxed{v} \dots (DP_1)$ A-chain = (DP₁, DP₂, DP₃)
b. $v^*[EF, u\varphi] \quad DP_2 \quad \boxed{v} \dots (DP_1)$ A-chain = (DP₁, DP₂)
c. $C[EF, u\varphi] \quad T \quad v^*[EF, u\varphi]$
- (6) Every child₁ doesn't seem to his₁ father to be smart. (every > not), (not > every) (Sauerland 2003: 310)
- (7) a. Every child **doesn't** seem to **his₁ father** $[_{TP} \text{ (every child) to be smart}]$
b. Every child **doesn't** (every child) seem to his father $[_{TP} \text{ (every child) to be smart}]]$
- (8) Goals
a. To show that feature inheritance is not limited to C from T and v* from V.
b. To demonstrate that DP can receive an additional θ -role in the course of A-movement driven by phase heads.

2. Uninterpretable Features and Feature Inheritance

- (9) a. Max seems to leave.
b. $[_{CP} C [_{TP} \text{ Max } \boxed{v} \text{ seems} + v [_{VP} V [_{TP} \text{ (Max) to } \boxed{v} \text{ to } [(Max) \text{ leave}]]]]]$
- × Case

- (10) a. Yumi believed Max to leave.
 b. $[_{CP} C [_{TP} Yumi T [_{vP} believe+V^* [_{VP} V [_{TP} Max to [(Max) leave]]]]]]]$
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- (11) a. Max persuaded John to leave.
 b. Max persuaded John $[_{CP} C [_{TP} PRO to [be (PRO) leave]]]$
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- (12) The event time of raising infinitivals is identical to or simultaneous with that of the matrix while the one of control infinitivals is unrealized or future with respect to that of the matrix.

- (13) In the lexicon, T lacks these features. Agree and Tense features are inherited from C, the phase head. = (4)

- (14) Phase-Impenetrability Condition (PIC)
 In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations. (Chomsky 2000: 108)

- (15) [...] the uninterpretable features of C must be “inherited” by T. If they remain at C, the derivation will crash at the next phase. (*ibid.* 2006: 13)

- (16)
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- (17) a. $[C[u\phi]] \quad T[u\phi] \quad T \quad T \dots]$
 b. $[C[u\phi]] \quad T[u\phi] \quad T[u\phi] \quad T[u\phi] \dots]$

- (18) a. Max seems to leave.
 b. $[_{CP} C[u\phi] [_{TP} Max T[u\phi] [_{vP} seem [_{TP} to [_{vP} (Max) leave]]]]]$
 c. $[_{CP} C[u\phi] [_{TP} Max T[u\phi] [_{vP} seem [_{TP} (Max) to[u\phi] [_{vP} (Max) leave]]]]]$

- (19) a. Inverse Case Filter: Case assigners must check/assign their Case.
 b. Case Filter: DPs must bear Case.

- (20) a. Agree-feature is not uninterpretable.
 b. It is not a phase head but a target of the operation that requires feature inheritance.

- (21) a. $v^*[EF, \phi] \quad V$
 b. $C[EF, \phi] \quad DP \quad T_1 \quad (DP) \quad v \quad (DP) \quad V \quad (DP) \quad T_2 \quad (DP)$
-

- (22) a. Every child doesn't seem to his father [_{TP} to be smart]. (every > not, not > every) = (6)
 b. Every child **doesn't** seem to **his₁ father** [_{TP} (every child) to be smart]
 c. Every child **doesn't** (every child) seem to his father [_{TP} (every child) to be smart]]]
- (23) V (or v) in unaccusative/passive inherits Agree- and Edge-features from the next phase head.
- (24) a. [At which of the parties that he₁ invited Mary₂ to] was every man₁ ✓ introduced to her₂ *?
 b. *[At which of the parties that he₁ invited Mary₂ to] was she₁ * introduced to every man₂ *?
 (Legate 2003: 507)
- (25) a. [At which conference where he₁ mispronounced the invited speaker₂'s name] did every organizer₁'s embarrassment ✓ escape her₂ *?
 b. *[At which conference where he₁ mispronounced the invited speaker's name₂] did it₂ * escape every₁ organizer entirely *?
 (ibid: 508)
- (26) Successive-cyclic *wh*-movement proceeds through passive [and unaccusative] VPs, as well as transitive *v*Ps.
- (27) Intermediate positions of successive cyclic A'-movement do not induce binding effects or have other A-position properties [...].
 (Chomsky 2008: 150)
- (28) a. Agree-feature is not uninterpretable.
 b. It is not a phase head but a target of the operation that requires feature inheritance.
 c. V and v in unaccusative/passive inherits Agree- and Edge-features from the next phase head.

3. Multiple Θ -Role Assignment

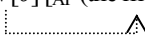
3.1. PRO-based Approach

- (29) a. Max seems to leave
 b. C [_{TP} (Max) T [_{vP} (Max) v [_{VP} (Max) V [_{TP} (Max) T [_{vP} (Max) leave]]]]]
- (30) θ -criterion
 Each argument bears one and only one θ -role, and each θ -role is assigned to one and only one argument.
 (ibid. 1981: 36)
- (31) a. Max tried to leave.
 b. John persuaded Max to leave.
- (32) a. John hammered the metal flat.
 b. The ice froze solid.
- (33) a. Max₁ tried [_{CP} C [_{TP} PRO₁ to leave]]
 b. John persuaded Max₁ [_{CP} C [_{TP} PRO₁ to leave]]

- (34) [PRO] is the sole NP that can bear null Case. [...] the infinitival element (with null agreement) and the head of ING of gerundive nominals check null Case [...]. (Chomsky and Lasnik 1993: 561)
- (35) a. Only PRO bears null Case.
b. Only non-finite T^0 's can check/assign it.
- (36) a. John hammered the metal [_{AP} PRO flat]
b. The ice froze [_{AP} PRO solid]
- (37) It is unclear how PRO in (36) is assigned null Case.

3.2. θ -feature Driven Movement Approach

- (38) a. Who do you want [WH-*t* to vanish]
*Who do you wanna vanish?
b. John's going [NP-*t* to leave]
John's gonna leave.
c. I want [PRO to leave]
I wanna leave. (Hornstein 1999: 75-76)
- (39) a. θ -roles are features on verbs.
b. A D/NP "receives" a θ -role by checking a θ -feature of a verbal/predicative phrase that it merges with.
c. There is no upper bound on the number of θ -roles a chain can have. (*ibid.*: 78)
- (40) a. John persuaded Max to leave.
b. [_{TP} John T [_{VP} (John) persuade+ v^* [θ] [_{VP} Max V[θ] [_{CP} C [_{TP} to [_{VP} (Max) leave]]]]]].

- (41) a. John hammered the metal flat.
b. [_{TP} John T [_{VP} (John) hammer+ v^* [θ] [_{VP} the metal V[θ] [_{AP} (the metal) flat]]]].

- (42) It is not a phase head that drives movement.

3.3. Agree-feature Driven Movement Approach

- (43) a. Yumi believes Max to be a genius.
b. C [_{TP} Yumi T [_{VP} (Yumi) v^* [_{VP} Max V [_{TP} (Max) T [_{VP} (Max) be a genius]]]]]
- (44) a. Sue estimated Bill's weight to be 150 lbs.
b. *Sue estimated Bill to weigh 150 lbs.

- (45) a. Sue estimated Bill's weight.
b. *Sue estimated Bill. (Bošković 1997: 96)

(46) $C [_{TP} \text{ Sue } T [_{vP} (\text{Sue}) v^* [_{VP} \text{ Bill's weight } V [_{TP} (\text{Bill's weight}) T [_{vP} (\text{Bill's weight}) \text{ be 150lbs}]]]]]$

- (47) DP can receive multiple θ -roles iff the landing sites for Agree-feature driven movement include multiple θ -positions.

4. Resultative Constructions

- (48) a. John hammered the metal flat.
b. $v^* [_{VP} V [_{AP} \text{ the metal flat}]]]$
c. $v^* [_{VP} \text{ the metal } V [_{AP} (\text{the metal}) \text{ flat}]]]$
d. $C [_{TP} T [_{vP} \text{ John } v^* [_{VP} \text{ the metal } V [_{AP} (\text{the metal}) \text{ flat}]]]]]$
e. $C [_{TP} \text{ John } T [_{vP} (\text{John}) v^* [_{VP} \text{ the metal } V [_{AP} (\text{the metal}) \text{ flat}]]]]]$
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- (49) a. The ice froze solid.
b. $v [_{VP} V [_{AP} \text{ the ice solid}]]]$
c. $C [_{TP} T [_{vP} v [_{VP} V [_{AP} \text{ the ice solid}]]]]]$
d. $C [_{TP} \text{ the ice } T [_{vP} (\text{the ice}) v [_{VP} (\text{the ice}) V [_{AP} (\text{the ice}) \text{ solid}]]]]]$
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5. Control Constructions

5.1. Peculiarity of Control Clauses

- (50) a. *Sam, who I know [_{CP1} when you said [_{CP2} you saw (Sam)]]], is a famous linguist.
b. Sam, who I know [_{CP1} when to try [_{CP2} to see (Sam)]]], is a famous linguist.¹

- (51) Control infinitivals not introduced by an overt complementizer must be IPs. (Bošković 1996: 301)

- (52) a. *John said [Peter left] and [that Bill kissed Mary]. (Radford 1997: 149)
b. John expected [to write a novel] but [that it would be a critical disaster]. (Bošković 1996: 133)

- (53) Only identical categories can be conjoined, idiomatically. (Radford 1988: 76)

¹ The examples in (50) are adopted from Frampton (1990: 69).

- (54) a. Control clauses project CP irrespective whether it is introduced by an overt complementizer or not.
 b. Syntactically different behavior between the finite and control clauses cannot be attributed to the difference in the categories they project.

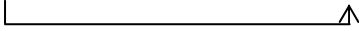
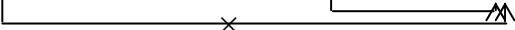
(55) CP in control clauses is not a phase.

- (56) a. C in finite clauses → C*
 b. C in control clauses → C

5.2. Optional Agreement in Icelandic Control Constructions

- (57) Èg skipaði hann að vera góður/góðan.
I asked him-ACC Comp be-INF good-m.sg.NOM/ACC
 “I asked him to be good.”

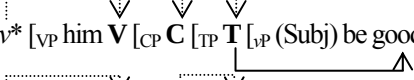
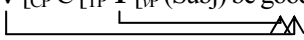
(Anderson 1990: 263)

- (58) a. C [TP I T [_{VP} (I) ν^* [_{VP} him V [_{CP} C [TP T [_{VP} e be good[ACC]]]]]]]]

 b. C [TP I T [_{VP} (I) ν^* [_{VP} him V [_{CP} C [TP T [_{VP} e be good[NOM]]]]]]]]

 MLC/PIC violation

(59) Minimal Link Condition (MLC)

Let P be a probe. Then the goal G is the closest feature that can enter into an agreement relation with P.

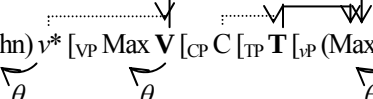
(Collins 2002: 57)

- (60) a. C* [TP I T [_{VP} (I) ν^* [_{VP} him **V** [_{CP} C [TP T [_{VP} (Subj) be good]]]]]]]

 b. C* [TP I T [_{VP} (I) ν^* [_{VP} him **V** [_{CP} C [TP T [_{VP} (Subj) be good]]]]]]]


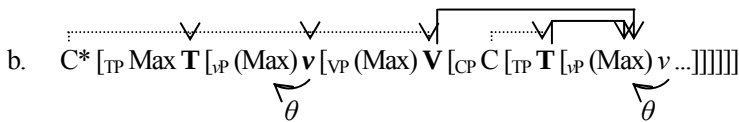
(61) Icelandic adjectival predicates and passive participles agree in case, number and gender. (Sigurðson 1991: 332)

- (62) a. C in control clauses is not ϕ -complete but has some features (enough for adjectival agreement) in Icelandic.
 b. The subject of control clauses should not be a PRO.
 c. Obligatory control constructions are derived by movement driven by features inherited from phase heads.

(63) a. John persuaded Max to leave.

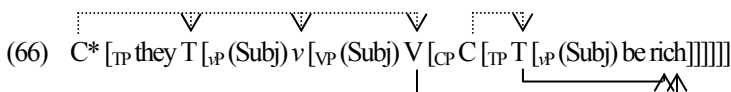
- b. C* [TP John T [_{VP} (John) ν^* [_{VP} Max **V** [_{CP} C [TP T [_{VP} (Max) ν ...]]]]]]]


- (64) a. Max tried to leave.



- (65) Þeir vonuðust til að verða ríkir.
they.m.pl-NOM hoped Comp to be-INF rich.m.pl-NOM
 ‘They hoped to get rich.’

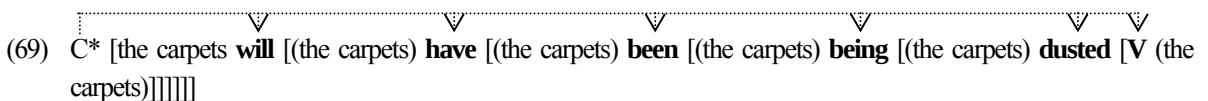
(Sigurðsson 2002: 29)



- (67) a. The control CP complement is not a phase.
 b. C in control clauses is ϕ -incomplete but has enough features for adjective agreement in Icelandic.
 c. Obligatory control constructions are derived by movement driven by features inherited from phase heads.

6. General Discussion

- (68) The carpets will (all) have (all) been (all) being (all) dusted for two hours. (Sportiche 1988: 442)



- (70) Þeir mundu vera taldir vera sagðir hafa verið kosnir.
they-m.pl.NOM would-3pl be believed-m.pl.NOM be-INF said-m.pl.NOM have-INF been elected-m.pl.NOM
 ‘They would be believed to be said to have been elected.’

- (71) Phase heads: $C^*, v^*, a, (D)$

- (72) a. $*C[i\phi] \quad T \quad v \quad V$
 b. $*C[i\phi] \quad T[i\phi] \quad v[i\phi] \quad V[i\phi]$

- (73) a. The phase heads have tense or tenselike property.
 b. The heads which inherit features from the phase head need to be valued a Tense-feature.

7. Concluding Remarks

- (74) a. Feature inheritance is not the requirement of phase heads but is required to satisfy the requirement of the other types of heads. Therefore, the operation is not limited to C from T and v^* from V.
 b. A-movement proceeds through the all specifiers of the heads which inherit features from phase heads.
 c. DP can receive an additional θ -role in the course of A-movement driven by phase heads.

- d. Resultative and obligatory control constructions are derived by A-movement driven by phase heads.

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