Rightward Movement and Antecedent-Contained Deletion: New Evidence from Hocąk

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1. Introduction

This paper examines data from Hocąk (Siouan) that provide empirical evidence for Fox's (2002) analysis of antecedent-contained deletion (ACD). Fox (2002) argues that ACD is resolved by covert rightward movement of the object, followed by late merger of the relative clause containing the ellipsis site. Thus, the example in (1) has the derivation shown in (2):

(1) John likes every boy that Mary does.

(2) a. [VP John likes every boy]
b. [[VP John likes every boy] *every boy*]
c. [[VP John likes every boy] every boy *that Mary does (likes boy)*] (Fox 2002:76)

The effect of rightward movement is that the parallelism requirement on ellipsis is satisfied: since the relative clause merges with the extraposed QP, there is an antecedent VP [likes every boy] that is identical, after trace conversion, to the elided VP [likes boy].

Hocąk is an SOV language that displays ACD, which makes it an ideal candidate to test Fox's theory: rightward movement is visible. In Hocąk, overt rightward movement is in fact obligatory with ACD, as seen in (3) below:[1]

(3) a.

Bryanga	*ruwį,*	**jaagu**	**Meredithga**	**ųųra.**
Bryan-ga	∅-ruwį	jaagu	Meredith-ga	∅-ųų-ra
Bryan-PROP	3S-buy	what	Meredith-PROP	3S-do-COMP

'Bryan bought what(ever) Meredith did.'

b.

**Bryanga,*	**jaagu**	**Meredithga**	**ųųra,**	*ruwį.*
Bryan-ga	jaagu	Meredith-ga	∅-ųų-ra	∅-ruwį
Bryan-PROP	what	Meredith-PROP	3S-do-COMP	3S-buy

'Bryan bought what(ever) Meredith did.'

In (3a), the relativized object has been moved rightward, and ACD is possible. In contrast, in (3b), the object remains between the subject and the object, resulting in ungrammaticality.

This paper is structured as follows: section 2 gives an overview of relevant aspects of Hocąk syntax. In section 3, I discuss Fox's (2002) analysis of ACD resolution and show that the facts from Hocąk provide strong empirical evidence for that approach. Section 4 concludes the paper.

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[1] The following abbreviations are used throughout this paper: 1 – first person; 3 – third person; COMP – complementizer; DEF – definite; FUT – future; INDEF – indefinite; PROP – proper name; PST – past; S – subject agreement.

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2. Background on Hocąk syntax

2.1. Word order

In Hocąk, the neutral word order is SOV, as in (4) below.

(4) *Hinųkra wažątirera ruwį.*
hinųk-ra wažątire-ra ∅-ruwį
lady-DEF car-DEF 3S-buy
'The lady bought the car.'

While SOV word order is by far the most common, leftward and rightward movement are both freely available for discourse purposes. These are exemplified in (5a) and (5b), respectively.

(5) a. *Wažątirera, hinųkra ruwį.*
wažątire-ra hinųk-ra ∅-ruwį
car-DEF lady-DEF 3S-buy
'The car, the lady bought (it).'

b. *Hinųkra ruwį, wažątirera.*
hinųk-ra ∅-ruwį wažątire-ra
lady-DEF 3S-buy car-DEF
'The lady bought something, the car.'

As hinted at by the translations above, leftward movement is associated with a focus interpretation, while right-dislocated elements are interpreted as backgrounded or "anti-topics" (Johnson et al. 2012).

Both SVO and OSV word orders are marked by an intonational break, represented by a comma in (5a) and (5b) above. These intonational breaks are obligatory: in their absence, the first NP is interpreted as the subject. In (6) below, the only possible interpretation (however pragmatically implausible) is one in which the car is the subject (cf. 5a):

(6) *Wažątirera hinųkra ruwį.*
wažątire-ra hinųk-ra ∅-ruwį
car-DEF lady-DEF 3S-buy
'The car bought the lady.'

For ease of exposition, I will be representing Hocąk as underlyingly SOV, contra previous research that takes SOV word order to be derived from SVO order (e.g. Kanye 1994). Evidence that suggests that this analysis is on the right track comes from quantifier scope: in Hocąk, postverbal arguments obligatorily take wide scope. In (7a) with SOV word order, the subject obligatorily distributes over the object: the sentence can only describe a situation in which each man caught a different fish. However, if the object is moved rightward (SVO word order), the interpretation changes: (7b) can only describe a situation in which each man caught the same fish. If the subject is instead moved rightward (OVS word order), as in (7c), then the subject scopes over the object.

(7) a. *Wąąkra hižąkišąną hoohižą gisikire.*
wąąk-ra hižąkišąną hoo-hižą gisik-ire
man-DEF each fish-INDEF catch-3PL.S
'Each man caught a fish.' (each > a; *a > each)

b. *Wąąkra hižąkišąną gisikire, hoohižą.*
wąąk-ra hižąkišąną gisik-ire hoo-hižą
man-DEF each catch-3PL.S fish-INDEF
'Each man caught a fish.' (a > each; *each > a)

c. *Hoohižą gisikire, wąąkra hižąkišąną.*
hoo-hižą gisik-ire wąąk-ra hižąkišąną
fish-INDEF catch-3PL.S man-DEF each
'Each man caught a fish.' (each > a; *a > each)

These quantifier scope facts are not straightforwardly explained under Kayne's (1994) Linear Correspondence Axiom (LCA): the LCA forbids elements to c-command elements to their left. Since the object is still to the right of the subject in (7b), we would expect the same scopal relations to hold, contra to fact. Furthermore, when the subject moves rightward in (7c), we would expect that the object, which is leftmost, would take wider scope, which is not the case.

On the basis of similar data from Turkish, Kural (1997) shows that an account for the scope of postverbal arguments that only permits leftward movement leads to contradictory results. To derive SVO word order, the O would need to move above the S, and then the SV constituent would move above the O. In order to yield the correct scopal relations at LF, either the SV would need to reconstruct or the O would raise higher than the S. OVS word order is derived by movement of the OV constituent to a position above the subject. To ensure that the S takes wide scope, either the OV would reconstruct or the S would raise higher than the O at LF.

As Kural points also out, this analysis overgenerates. Under the raising approach, it is not clear why only the O can raise at LF with SVO word order, while only the S may do so with OVS word order. Under the reconstruction approach, it is not clear why the OV can reconstruct with OVS word order, but the O cannot for SVO word order. Instead, a simpler account of Hocąk quantifier scope is as follows: Hocąk has underlying SOV word order, and rightward movement of both subjects and objects does not reconstruct. However, regardless of the explanation of the quantifier scope facts, the analysis of ACD presented here is still fully compatible with an antisymmetric syntax.

2.2. Verb Phrase Ellipsis

Hocąk exhibits VPE. As seen in example (8), the light verb *ųų* 'do' replaces the object and verb to the exclusion of the subject.

(8)

Cecilga	[VP	*ważątirehižą*	*ruwį*]	*kjane*	*anąga*	*nee*	*šge*	[*haųų*]	*kjane.*
Cecil-ga		ważątire-hižą	Ø-ruwį	kjane	anąga	nee	šge	ha-ųų	kjane
Cecil-PROP		car-INDEF	3S-buy	FUT	and	I	also	1S-do	FUT

'Cecil will buy a car, and I will too.'

The examples in (9) show that verb phrase ellipsis also targets VP-level adjuncts: (9a) shows that VPE targets VPs containing temporal adjuncts. In (9b) and (9c), locative adjuncts are included in the ellipsis site. (9d) exemplifies VPE with a comitative. In all of these examples, the adjunct is the antecedent VP is interpreted as being present in the ellipsis site.

(9) a.

Cecilga	[VP	*xjanąre*	*waši*]	*anąga*	*Bryanga*	*šge*	[*ųų*].
Cecil-ga		xjanąre	Ø-waši	anąga	Bryan-ga	šge	Ø-ųų
Cecil-PROP		yesterday	3S-dance	and	Bryan-PROP	also	3S-do

'Cecil danced yesterday, and Bryan did too.'

b.

Cecilga	[VP	*hosto*	*eja*	*waši*]	*kjane*	*anąga*	*Bryanga*	*šge*	[*ųų*]
Cecil-ga		hosto	eja	Ø-waši	kjane	anąga	Bryan-ga	šge	Ø-ųų
Cecil-PROP		gathering	there	3S-dance	FUT	and	Bryan-PROP	also	3S-do

kjane.
kjane
FUT

'Cecil will dance at the gathering, and Bryan will too.'

c.

Cecilga	[VP	*ciinąk*	*eja*	*ważątirehižą*	*ruwį*]	*anąga*	*Bryanga*	*šge*
Cecil-ga		ciinąk	eja	ważątire-hižą	Ø-ruwį	anąga	Bryan-ga	šge
Cecil-PROP		city	there	car-INDEF	3S-buy	and	Bryan-PROP	also

[*ųų*].
Ø-ųų
3S-do

'Cecil bought a car in the city, and Bryan did too.'

d. *Cecilga* [VP *hinųkra* *hakižu* *waši*] *anąga* *Bryanga* *šge* [*ųų*].
Cecil-ga hinųk-ra hakižu Ø-waši anąga Bryan-ga šge Ø-ųų
Cecil-PROP woman-DEF be.with 3S-dance and Bryan-PROP also 3S-do
'Cecil danced with the woman, and Bryan did too.'

Constructions with *ųų* cannot be analyzed as a *pro*-form, as object extraction is permitted (10).

(10) a. *Meredithga* *waagaxra* *ruwį* *nųnįge* *wiiwagaxra* *hąąke* *ųųnį.*
Meredith-ga waagax-ra Ø-ruwį nųnįge wiiwagax-ra hąąke Ø-ųų-nį
Meredith-PROP paper-DEF 3S-buy but pencil-DEF NEG 3S-do-NEG
'Meredith bought the paper, but not the pencils..'

b. *Jaagu* *Bryanga* *ruwįra* *yaaperesšąną,* *nųnįge* *jaagu* *Hunterga*
Jaagu Bryan-ga Ø-ruwį-ra <ha>hiperes-šąną nųnįge jaagu Hunter-ga
what Bryan-PROP 3S-buy-COMP <1S>know-DECL but what Hunter-PROP
ųųra *hąąke* *yaaperesnį.*
Ø-ųų-ra hąąke <ha>hiperes-nį
3S-do-COMP NEG <1S>know-NEG
'I know what Bryan bought, but not what Hunter did.'

VPE is possible in embedded clauses (11a) and adjuncts (11b-c), which is also inconsistent with a *pro*-form analysis.

(11) a. *Bryanga* *hąąke* *nįįtašjak taaxu* *ruwįnį,* *nųnįge* *Meredithga*
Bryan-ga hąąke nįįtašjak taaxu Ø-ruwį-nį nųnįge Meredith-ga
Bryan-PROP NEG coffee 3S-buy-NEG but Meredith-PROP
ųųra *yaaperesšąną.*
Ø-ųų-ra <ha>hiperes-šąną
3S-do-COMP <1S>know-DECL
'Bryan didn't buy coffee, but I know Meredith did.'

b. *Bryanga* *ųų* *kjanegi* *Meredithga* *Hunterga* *(nišge)* *gišja hii* *kjane.*
Bryan-ga Ø-ųų kjane-gi Meredith-ga Hunter-ga (nišge) Ø-gišja hii kjane
Bryan-PROP 3S-do FUT-if Meredith-PROP Hunter-PROP also 3S-visit FUT
'Meredith will visit Hunter if Bryan will.'

c. *Bryanga* *hąąke* *ųųnįge* *Meredithga* *(nišge)* *hąąke* *Hunterga*
Bryan-ga hąąke Ø-ųų-nį-ge Meredith-ga (nišge) hąąke Hunter-ga
Bryan-PROP NEG 3S-do-NEG-because Meredith-PROP also NEG Hunter-PROP
gišja hiinį.
Ø-gišja hii-nį
3S-visit-NEG
'Meredith didn't visit Hunter because Bryan didn't.'

Now that I have introduced these relevant aspects of Hocąk syntax, I turn to my analysis of ACD in Hocąk.

3. Rightward movement and ACD in Hocąk

3.1. Fox's (2002) analysis of ACD

ACD resolution faces two problems that any theory of ellipsis must account for: (1) parallelism between the antecedent and the gap, and (2) infinite regress. Both of these problems are due to the fact that the gap is properly contained by the antecedent VP. Parallelism is the requirement that the antecedent VP and elided VP be syntactically identical. On the surface, there appears to be no appropriate antecedent VP for the gap in example (12a), as evidenced by a comparison with its non-elliptical counterpart in (12b).

(12) a. John [VP likes every boy that Mary does [VP e]].

b. John [VP likes every boy that Mary [VP likes]].

For parallelism to be satisfied in (12a), there would need to be an antecedent VP that consisted solely of the verb 'likes'. Instead, the only available VP in (12a) is [likes every boy that Mary does e], while the gap is the VP [does e]. Since the antecedent is not equivalent to the gap, parallelism is not satisfied.

The infinite regress problem arises when the antecedent VP is copied into the gap. Since the antecedent VP properly contains the gap, an attempt to resolve the ellipsis will necessarily involve copying the gap back into the gap. Each operation of VP-copying results in a new gap, with the result that ellipsis can never be resolved. This is illustrated in (13):

(13) John [VP likes every boy that Mary does [VP likes every boy that Mary does [VP e]]].

Fox (2002) argues that ACD resolution is achieved via rightward movement.[2] This analysis makes use of three crucial assumptions. First, Fox adopts Lebeaux's (1988) theory that adjuncts can undergo so-called "late-merger"; that is, that adjuncts, in contrast to arguments, can be added to a structure at a later stage in the derivation. Second, Fox follows Fox & Nissenbaum (1999) and assumes that that overt and covert movements can be interspersed. Third, Fox assumes that relative clauses are both head external and head internal (following Sauerland 1998, among others). Fox proposes that the derivation of ACD constructions occurs in three steps, which are shown in (14):

(14) a. [VP John likes every boy]

b. [[VP John likes every boy] *every boy*]

c. [[VP John likes every boy] every boy *that Mary does (likes boy)*] (Fox 2002:76)

The first step is the derivation of the VP, as in (14a). The second step is covert rightward movement of the object *every boy*, as in (14b). Finally, the relative clause *that Mary does (likes boy)* undergoes overt late merger with the covert copy of the object, as seen in (14c). Parallelism is satisfied due to late merger: since the relative clause merges with the raised object, there is an antecedent VP [likes every boy] that is identical (after trace conversion) to the elided VP [likes boy]. Fox's analysis assumes that PF-Deletion is the relevant ellipsis mechanism, and so the problem of infinite regress is avoided.

One of the main empirical advantages of Fox's analysis is that it can account for Condition C effects while still being fully consistent with the copy theory of movement. As first noted by Fiengo & May 1994, ACD can obviate Condition C effects, as evidenced by the contrast between (15a) and (15b):

(15) a. * I introduced him$_i$ to every guy Peter$_i$ found attractive.

b. I introduced him$_i$ to every guy Peter$_i$ wanted me to.

(15a) is ungrammatical, which is expected due to a Condition C violation. In contrast, (15b) is acceptable, despite the fact that the R-expression *Peter* is in the c-command domain of its antecedent, *him*. This apparent violation of Condition C is readily accounted for if QR is responsible for satisfying parallelism: after QR of the phrase [every guy Peter wanted me to] takes place, the R-expression is no longer in the scope of the pronoun. However, as Fox notes, this analysis is not consistent with the copy theory of movement. There would still be a copy of the R-expression *Peter* at the tail of the movement chain, which should result in a Condition C violation. Under Fox's analysis, late merger is responsible for the fact that Condition C is obviated: since the relative clause containing the R-expression is merged with the raised QP, the antecedent pronoun in the matrix clause never c-commands it.

[2] Fox acknowledges that what he terms 'rightward movement' could in fact be derived by other mechanisms that are compatible with Kayne's (1994) Linear Correspondence Axiom, such as leftward movement of the object followed by remnant VP movement (Fox 2002:71, fn. 14).

3.2. ACD in Hocąk

In Hocąk, ACD is possible with one constraint: if an object is relativized, *the object must be right-dislocated,* as shown in (16a). In contrast, if the object remains *in situ*, the result is ungrammatical (16b). This difference in grammaticality is only found in elliptical environments: note that the non-elliptical counterparts of the examples in (16) are both grammatical, as shown in (17).

(16) a. *Bryanga* *ruwį,* **jaagu** **Meredithga** **ųųra.**
Bryan-ga ∅-ruwį jaagu Meredith-ga ∅-ųų-ra
Bryan-PROP 3S-buy what Meredith-PROP 3S-do-COMP
'Bryan bought what(ever) Meredith did.'

b. **Bryanga,* **jaagu** **Meredithga** **ųųra,** *ruwį.*
Bryan-ga jaagu Meredith-ga ∅-ųų-ra ∅-ruwį
Bryan-PROP what Meredith-PROP 3S-do-COMP 3S-buy
'Bryan bought what(ever) Meredith did.'

(17) a. *Bryanga* *ruwį,* **jaagu** **Meredithga** **ruwįra.**
Bryan-ga ∅-ruwį jaagu Meredith-ga ∅-ruwį-ra
Bryan-PROP 3S-buy what Meredith-PROP 3S-buy-COMP
'Bryan bought what(ever) Meredith bought.'

b. *Bryanga,* **jaagu** **Meredithga** **ruwįra,** *ruwį.*
Bryan-ga jaagu Meredithga ∅-ruwį-ra ∅-ruwį
Bryan-PROP what Meredith-PROP 3S-buy-COMP 3S-buy
'Bryan bought what(ever) Meredith bought.'

However, ACD involving an adjunct exhibits no such constraint. Instead, the relative clause has the option of remaining between the subject and the verb. This is demonstrated in (18a) with *hacįįja* 'where(ever)' and in (18b) with *jaajanąre* 'when(ever)'. As shown in (19) the default position for adjuncts is between the subject and verb.

(18) a. *Bryanga,* **hacįįja** **Meredithga** **ųųra,** *waši.*
Bryan-ga hacįįja Meredith-ga ∅-ųų-ra ∅-waši
Bryan-PROP where Meredith-PROP 3S-do-COMP 3S-dance
'Bryan danced where(ver) Meredith did.'

b. *Bryanga,* **jaajanąre** **Meredithga** **ųųra,** *waši.*
Bryan-ga jaajaną-re Meredith-ga ∅-ųų-ra ∅-waši
Bryan-PROP when-PST Meredith-PROP 3S-do-COMP 3S-dance
'Bryan danced when(ever) Meredith did.'

(19) *Hinųkra* **hoxataprookeeja** *heepšį.*
hinųk-ra hoxatap-rook-eeja ∅-heepšį
lady-DEF woods-inside-there 3S-sneeze
'The lady sneezed in the woods.'

Right-dislocation of the adjunct relative clause is also possible, as shown in (20). However, this is not unusual, because right-dislocation is freely available for discourse-informational purposes in Hocąk.

(20) a. *Bryanga* *waši,* **hacįįja** **Meredithga** **ųųra.**
Bryan-ga ∅-waši hacįįja Meredith-ga ∅-ųų-ra
Bryan-PROP 3S-dance where Meredith-PROP 3S-do-COMP
'Bryan danced where(ver) Meredith did.'

b. *Bryanga* *waši,* **jaajanąre** **Meredithga** **ųųra.**
Bryan-ga ∅-waši jaajaną-re Meredith-ga ∅-ųų-ra
Bryan-PROP 3S-dance when-PST Meredith-PROP 3S-do-COMP
'Bryan danced when(ever) Meredith did.'

As with direct object free relatives, the two positions for the relative clause are available in non-elliptical environments as well. This can be seen in (21) for *hacį̨ja* 'where(ever)' and (22) for *jaajanąre* 'when(ever)'.

(21) a. *Bryanga,* **hacį̨ja** **Meredithga** **wašira,** *waši.*
Bryan-ga hacį̨ja Meredith-ga ∅-waši-ra ∅-waši
Bryan-PROP where Meredith-PROP 3S-dance-COMP 3S-dance
'Bryan danced where(ver) Meredith danced.'

b. *Bryanga* *waši,* **hacį̨ja** **Meredithga** **wašira.**
Bryan-ga ∅-waši hacį̨ja Meredith-ga ∅-waši-ra
Bryan-PROP 3S-dance where Meredith-PROP 3S-dance-COMP
'Bryan danced where(ver) Meredith danced.'

(22) a. *Bryanga,* **jaajanąre** **Meredithga** **wašira,** *waši.*
Bryan-ga jaajaną-re Meredith-ga ∅-waši-ra ∅-waši
Bryan-PROP when-PST Meredith-PROP 3S-dance-COMP 3S-dance
'Bryan danced when(ever) Meredith danced.'

b. *Bryanga* *waši,* **jaajanąre** **Meredithga** **wašira.**
Bryan-ga ∅-waši jaajaną-re Meredith-ga ∅-waši-ra
Bryan-PROP 3S-dance when-PST Meredith-PROP 3S-dance-COMP
'Bryan danced when(ever) Meredith danced.'

To account for this data, I propose that ACD resolution in Hocąk proceeds in the same way that Fox argues for on the basis of English data. The only difference between Hocąk and English is that rightward object movement is visible in Hocąk. The derivation of the example in (23) (repeated from (16a) above) is schematized in (24):

(23) *Bryanga* *ruwį,* **jaagu** **Meredithga** **ųųra.**
Bryan-ga ∅-ruwį jaagu Meredith-ga ∅-ųų-ra
Bryan-PROP 3S-buy what Meredith-PROP 3S-do-COMP
'Bryan bought what(ever) Meredith did.'

(24) a. [VP Bryanga jaagu ruwį]
[VP Bryan.PROP what 3S.buy]

b. [[VP Bryanga jaagu ruwį] *jaagu*]
[[VP Bryan.PROP what 3S.buy] what]

c. [[VP Bryanga jaagu ruwį] jaagu *Meredithga ųųra*]
[[VP Bryan.PROP what 3S.buy] what Meredith.PROP 3S.do.COMP]

First, the VP is generated (24a). Following Bresnan & Grimshaw (1978), Larson (1987) and Citko (2002), among others, I assume that free relatives are externally-headed so that the *wh*-phrase of free relatives sits in the DP; however, no part of my analysis rests crucially on this analysis.[3] Second, the object moves rightward and adjoins to the VP (24b). Lastly, the relative clause adjoins to the right-dislocated object (24c). At PF, the right-adjoined object is pronounced. As in Fox's analysis, parallelism is satisfied due to the late merger of the relative clause.

In the case of adjunct free relatives, rightward movement is not necessary for ACD resolution because parallelism can be satisfied without it. Instead, after VP generation, the adjunct can left-adjoin to the VP. Thus, the sentence in (25) (repeated from (18a) above) has the structure shown in (26):

[3] If we instead adopt the Comp(lementizer) account of free relatives, as advocated by Groos & van Riemsdijk (1981), Grosu & Landman (1998) and Gračanin-Yuksek (2008), then the head of the relative clause is occupied by *pro*. Thus *pro* would be base-generated in object position and the CP of the relative clause will be adjoined to the rightward moved *pro*.

(25) *Bryanga,* **hacįįja** **Meredithga** **ųųra,** *waši.*
Bryan-ga hacįįja Meredith-ga ∅-ųų-ra ∅-waši
Bryan-PROP where Meredith-PROP 3S-do-COMP 3S-dance
'Bryan danced where(ver) Meredith did.'

(26) [VP [CP *hacįįja Meredithga ųųra*] [VP waši]]
[VP [CP where Meredith.PROP 3S.do.COMP] [VP 3S.dance]]

The data from Hocąk provide strong empirical evidence for Fox's analysis. Rightward movement is both overt in Hocąk and required for ACD resolution of objects. In contrast, adjuncts may remain *in situ*, which I attribute to their adjoined status.

4. Conclusion

To conclude, I presented new data from Hocąk and discussed its implications for theories of ACD resolution. I argued that the data strongly support Fox's (2002) analysis of ACD, as overt rightward movement is obligatory for argument ACD in Hocąk. Furthermore, adjuncts have the option to remain *in situ* precisely because they do not have to move for parallelism to be satisfied.

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