1 Introduction

Parasitic gaps as in (1) have often been used to diagnose whether scrambling is A- or A’-movement (papers in Corver and van Riemsdijk 1994; Karimi 2003a,b a.o.).


If scrambling licenses a parasitic gap, then it is A’-movement:

(2) a. [ XP1 ... [ \(\sqrt{\text{PG}}\) ] ... \(t_i\) ]
   b. [ XP1 ... [ \(\sqrt{\text{PG}}\) ] ... \(t_i\) ]

A-scrambling

If a language allows PGs within DPs, A-scrambling should feed PG licensing in cases which would otherwise trigger a violation of the anti-c-command condition.

2 Background on West Circassian

2.1 General clause structure

- Polysynthesis

(6) so- qo- p-f-a-r jo-he ne leh^{w}s-\(\text{ PG}\)
1SG.ABS- DIR- 2SG.IO- BEN- 3PL.IO- DAT- 3SG.ERG- CAUS- see -PST

′He showed me to them for your sake.’ (Korotkova and Lander 2010:301)

- Cross-reference morphology strictly ordered per ergative alignment:

(7) a. ABS- APPL- ERG-
   w- a de s- \(\text{ s'ar}\)
1SG.ABS- 3PL.IO- COM- 1SG.ERG- bring.PST

′I brought you with them′ (Rogava and Keraˇseva 1966:160)

b. ABS- APPL-
   wo- q- a- fe- \(\text{ k'ar}\)
2SG.ABS- DIR- 3PL.IO- BEN- go.PST

′You went’ (Rogava and Keraˇseva 1966:38)

- Possessee marked with personal marker referring to possessor:

(8) s-\(\text{ kopy}\)^{w}s-xe-r
1SG.PR-sister-PL-ABS

′my sisters’ (inalienable)

(9) t-\(\text{ jo-ir}\)^{w} neleh^{w}s-xe-m
1PL.PR-POSS-neighbor-PL-OBL

′our neighbors’ (alienable)

- Ergative alignment in case marking:
   -r (absolutive) = subject of intransitive verb, theme of transitive verb
   -m (oblique) = agents of transitive verbs, applied objects, possessors, complements of postpositions

- Indefinite nouns, possessors nominalized in the singular, proper names and personal pronouns are usually unmarked for case (Arkadiie 2009:51-52; Arkadiie and Testelet 2013) ⇒ case markers are definite determiners (D^w)."
2.2 Relative clauses

Relativization is the only type of wh-movement. Per Lander (2009a,b, 2012); Caponigro and Polinsky (2011)

2.2.1 General structure of relative clauses (Caponigro and Polinsky, 2011):

(10) \[ CP \implies Op, C[WH] \implies [TP \ldots \implies t \ldots \implies ] \]

- φ-agreement referring to the relativized participant replaced by wh-agreement:
  \( \sigma(\cdot) = \text{ergative agents, applied objects, and possessors} \)
  \( \Omega- = \text{absolutive arguments} \)
- Nominal head (i) appears to the left of relative clause with -ew (ADV) case marking; (ii) to the right with regular case marking; (iii) is null (in headless relative clauses).

2.2.2 Relative clauses

Relativization of an ergative agent:

a. \( \text{mar} \hat{\text{c}}\text{'al-e-m(ERG) } \text{a-s} \text{ velosjapen} \)
\( \text{here boy-OBL 3SG.PR-brother bicycle} \)
\( \Omega- \text{Ø- r- jao- to -r} \)
\( 3ABS- 3SG.IO- DAT- 3SG.ERG- give -PST \)

‘This boy gave a bicycle to his brother.’

b. \( \text{mar} \hat{\text{c}}\text{'al-ew [RC Op$_1$ t$_1$(ERG) a-s] velosjapen} \)
\( \text{here boy-ADV 3SG.PR-brother bicycle} \)
\( \Omega- \text{Ø- je- zo- to -reo] -r} \)
\( 3ABS- 3SG.IO- DAT- WH.ERG- give -PST -ABS \)

‘Here is the boy that gave a bicycle to his brother.’

2.3 Multiple wh-agreement

Multiple wh-agreement: if the relativized participant is co-referent with another argument in the clause, that argument may trigger additional wh-agreement.

(11) \[ \text{mar} \hat{\text{c}}\text{'al-ew [RC Op$_1$ t$_1$(ERG) a-zo-s] velosjapen} \)
\( \text{here boy-ADV 3SG/WPR-brother bicycle} \)
\( \Omega- \text{qo- ze- r- jao- to -reo] -r} \)
\( 3ABS- \text{DIR- WH.1O- DAT- 3SG.ERG- give -PST -ABS} \)

‘Here is the boy, to whom his, brother gave a bicycle.’

May also appear cross-clausally:

(12) \[ \text{mar} \hat{\text{c}}\text{'al-ew [RC Op$_1$ [DP pro$_1$(PR) a zos-s] (ERG) t$_1$(10)} \)
\( \text{here boy-ADV 3SG/WPR-brother} \)
\( \text{velosjapen} \Omega- qo- ze- r- jao- to -reo] -r \)
\( 3ABS- \text{DIR- WH.1O- DAT- 3SG.ERG- give -PST -ABS} \)

‘Here is the boy, to whom his, brother gave a bicycle.’

3 Multiple wh-agreement as a parasitic gap dependency

Main point: parasitic gaps can be diagnosed via multiple wh-agreement.
- One-to-one mapping between wh-traces and wh-agreement.
- Additional wh-agreement is agreement with a parasitic wh-trace.
Multiple wh-agreement displays properties typical of parasitic gaps (Ershova 2018b):

- Additional wh-agreement in multiple wh-agreement is mostly optional.
- Additional wh-agreement may appear within islands for extraction:

\[(16) \text{ Non-absolute DPs}^{4} \]

\[\text{a.} \quad * \text{marč} \text{8} \text{e-ew} \quad [\text{RC} \text{Op}_t \quad [\text{DP} \quad t_1 \quad \text{z-jo-z'ale}] \text{(ERG)} \text{ dax-ew} \quad \text{here} \quad \text{woman-ADV} \quad \text{WH.PR-POSS-boy} \quad \text{good-ADV} \]
\[\quad \text{wered} \quad \text{Ø-} \quad \text{q-} \quad ? \text{e-} \quad \text{-r}] \quad \text{-r}
\[\quad \text{song} \quad 3\text{ABS-} \quad \text{DIR-} \quad \text{3SG.ERG-} \quad \text{say PRS-ABS}
\]

Expected: ‘Here is the woman whose son sings (lit. says songs) well.’

\[\text{b.} \quad [\text{RC} \text{Op}_t \quad [\text{DP} \quad pro_{v} \quad / \text{PG} \text{(PR)}] \quad \text{Ø-} \quad \text{jate} \quad [\text{ERG}] \quad t_{1}(10) \quad \text{mašjone} \quad \text{3SG-} \quad \text{WH.PR-father} \quad \text{car}]
\[\quad \text{Ø-} \quad \text{qo-} \quad \text{ze} \quad \text{-j-} \quad \text{t-} \quad \text{-ie} \quad \text{'} \text{čale-m} \quad \text{szejx'apse}
\[\quad \text{3ABS-} \quad \text{DIR-} \quad \text{WH.IO-} \quad \text{DAT-} \quad \text{3SG.ERG-} \quad \text{give PRS-obl} \quad \text{boy-obl} \quad \text{I envy}
\]

‘I envy the boy to whom, his father gave a car.’

\[(17) \text{ Clausal adjuncts:} \]

\[\text{a.} \quad * \text{xet-a} \quad [\text{RC} \text{Op}_t \quad \text{Zarine} \quad [\text{ADJUNCT} \quad t_{1}(10) \quad \text{Ø-} \quad \text{z-} \quad \text{e-} \quad \text{ma-} \quad \text{who-Q} \quad \text{Zarine} \quad 3\text{ABS-} \quad \text{WH.IO-} \quad \text{DAT-} \quad \text{neg-}
\[\quad \text{wopč-} \text{ añ-} \quad \text{-ew}] \quad \text{ma-} \quad \text{pšaše-m} \quad \text{qořjøš'efare}] \quad \text{-r}
\[\quad \text{ask-ADV this girl-obl} \quad 3\text{SG.IO(BEN)+3SG.ERG.buy-PST} \quad \text{-ABS}
\]

lit. ‘Whom did Zarina buy a book for this girl [without asking _].’

\[\text{b.} \quad * \text{xet-a} \quad [\text{RC} \text{Op}_t \quad \text{Zarine} \quad [\text{ADJUNCT} \quad pro_{v} \quad / \text{PG}(10)] \quad \text{Ø-} \quad \text{j-} \quad \text{z-} \quad \text{f-} \quad \text{who-Q} \quad \text{Zarine} \quad 3\text{ABS-} \quad 3\text{SG-} \quad \text{WH.IO-} \quad \text{e-} \quad \text{mo-}
\[\quad \text{wopč-} \text{ añ-} \quad \text{-ew}] \quad \text{t_{1}(10)} \quad \text{Ø-} \quad \text{qo-} \quad \text{z-} \quad \text{f-} \quad \text{ja-}
\[\quad \text{DAT-} \quad \text{neg-} \quad \text{ask-ADV} \quad 3\text{ABS-} \quad \text{DIR-} \quad \text{WH.IO-} \quad \text{BEN-} \quad \text{3SG.ERG-}
\[\quad \text{š'efare}-\text{rie}] \quad \text{-r}
\[\quad \text{buy-PRS} \quad \text{-ABS}
\]

‘Whom did Zarina buy a book for _ [without asking _].’

Additional evidence for parasitic gap analysis of multiple wh-agreement in Appendix A

\[^{4}\text{See e.g. Bošković [2015] in press on islandhood of inherent case-marked phrases.} \]

\[^{4}\text{The ban on multiple wh-agreement with a relativized absolutive was first observed by Lander [2009a,b, 2013].} \]
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Summary: West Circassian parasitic gaps are subject to the anti-c-command condition – the absolutive trace in Spec,TP cannot license parasitic gaps in other DPs.

5 Interactions between non-absolutive DPs and A-scrambling

Main claim: The applied object may undergo A-scrambling from Spec,ApplP to Spec,vP above ergative agent.

Evidence: Non-absolutive DPs do not display anti-c-command effects.

Local A-scrambling is common cross-linguistically: e.g. in Hindi (Mahajan 1990, 1994, Dayal 1994), Persian (Karimi 2003b, 2005), Japanese (Grewendorf and Sabel), Georgian (McGinnis 1999), and Tlingit (Cable 2009).

(22) Structure of vP after A-scrambling:

5.1 Non-absolutive DPs are not subject to the anti-c-command condition

Baseline prediction: If XP c-commands YP, wh-movement of XP should fail to license parasitic gap in YP.

⇒ If DP_{ERG} \rightarrow DP_{IO}, an ergative trace should fail to license parasitic gaps in DP_{IO}.

This is not borne out:

- Applied object trace can license PG in ergative DP:

(23) mara ˇc’al-ew [RC Op_{i] t_i(ABS) [DP pro_{i}/ \_PG(PR) 3SG/WH PR-mother] 3SG/WH.ABS-NEG-CAUS-eat-PRS puppy-PL-OBL my heart aches  
‘My heart aches for the puppies whom their mother doesn’t feed.’
But ergative trace can likewise license PG in applied object DP:

\[
\text{mar} \text{ç`al-ew } [_{RC} \text{Op}_i \text{ t}_1(\text{ERG}) ]_{[\text{DP proi} / \text{PG}(\text{PR}) \triangleright / \text{z}o-\text{s} ](\text{IO})} \\
\text{here boy-ADV } \text{velosjoped } \text{Ø- } \text{Ø- } \text{je- } \text{z}o- \text{to } -\text{re] } -r \\
\text{bicycle } \text{3ABS- } \text{3SG.IO- } \text{DAT- } \text{WH.ERG- } \text{give } -\text{PST } -\text{ABS} \\
\text{Here is the boy who gave a bicycle to his brother.}
\]

**Proposal:** the lack of any anti-c-command effect between non-absolutive DPs is a consequence of A-scrambling within vP.

**Analysis:** v\( ^0 \) may optionally carry an uEPP feature which allows for the applied object to undergo movement to Spec,vP.

**Consequence for parasitic gaps:** no anti-c-command effects

\[
\text{a. } \text{IO trace licenses PG in ergative DP:}
\]

\[
\text{C} \quad \text{C'} \\
\text{D} \quad \text{vP} \\
\text{PossP} \quad \text{Dp}_{\text{IO}} \quad \text{ApplP} \quad \text{v'} \quad \text{v}
\]

\[
\text{b. } \text{ERG trace licenses PG in scrambled applied object DP:}
\]

\[
\text{C} \quad \text{C'} \\
\text{D} \quad \text{vP} \\
\text{PossP} \quad \text{Dp}_{\text{IO}} \quad \text{ApplP} \quad \text{v'} \quad \text{v}
\]

**Summary:** A-scrambling feeds parasitic gap licensing within the applied object DP by an ergative wh-trace.

5.2 Another puzzle explained: no Weak Crossover effects

**Main claim:** Clausemate DPs fail to display Weak Crossover effects due to A-scrambling.

Engdahl (1983): potential Weak Crossover configurations give rise to obligatory PGs

\[
\text{a. Which student, did [your attempt to talk to /}^{*}\text{him}\text{] scare } \text{to death? (Engdahl 1983:16)} \\
\text{b. [CP which student, } \text{[TP [DP ... /}^{*}\text{him}\text{] ... scare } \text{t}_i \text{... ] ]}
\]

The same pattern holds in West Circassian: wh-movement out of an embedded CP licenses an obligatory parasitic gap in the matrix clause.
A-scrambling analysis correctly predicts lack of Weak Crossover effects between DP\textsubscript{IO} and DP\textsubscript{ERG}, i.e. optionality of parasitic gap:

\begin{align}\text{(27)}\quad a.\  & \text{mar}a\  \text{paš-
\begin{array}{lll}  
\text{p}\text{aš-ew} & [\text{rc Op}\text{p}_1] & \text{here} \\
\text{girl-ADV} & [\text{cp č’elejraža-r}] & \text{teacher-ABS} \\
\text{Ø-} & \text{q} & \text{-e-} \\
\text{3ABS-DIR- WH1.O- DAT- scold-MOD-ADV} & \text{Ø-fe-ma-je} & \text{-r} \\
\text{WH3SG.PR-mother} & \text{3ABS-BEN-NEG-want-ABS} \\
\text{‘Here is the girl whom, her, mother doesn’t want [the teacher to scold _]’} \\
\end{array}\end{align}

A-scrambling analysis can feed parasitic gap licensing too

\begin{align}\text{(28)}\quad a.\  & \text{mar}a\  \text{č’al-ew} \quad [\text{rc Op}\text{p}_1] \quad [\text{dp \text{pro}_1} / \text{Ø\text{pro}}] & \quad \text{here} \quad \text{boy-ADV} \quad \text{3SG/WH.PR-brother} \\
\text{t(1O)} & \text{velosiped} & \text{Ø-} & \text{q} & \text{ze-} & \text{-r} & \text{to-} & \text{-ite}\quad \text{-r} \\
\text{bicycle} & \text{3ABS-DIR- WH1.O- DAT-} & \text{3SG/ERG-give} & \text{- PST- ABS} \\
\text{‘Here is the boy, to whom his\textsubscript{2} brother gave a bicycle.’} \\
\end{align}

b. Hypothesized structure without scrambling:

\begin{align} & \star [\text{cp Op}_1 ... [\text{dp\textsubscript{ERG} \text{pro}_1} ... ] \quad [\text{dp\textsubscript{IO} \text{t}(1O)}] \quad [\text{dp\textsubscript{IO} \text{pro}_1} ... ] \quad [\text{dp\textsubscript{IO} \text{t}(1O)}] \quad [\text{dp\textsubscript{IO} \text{pro}_1} ... ] \end{align}

c. Actual structure – no Weak Crossover configuration:

\begin{align} [\text{rc Op}_1] & [\text{dp\textsubscript{IO} \text{t}(1O)}] & [\text{dp\textsubscript{ERG} \text{pro}_1} ... ] \quad [\text{dp\textsubscript{IO} \text{pro}_1} ... ] \quad [\text{dp\textsubscript{IO} \text{t}(1O)}] \quad [\text{dp\textsubscript{IO} \text{pro}_1} ... ] \end{align}

\begin{itemize}
\item \textbf{6 Conclusion}
\end{itemize}

- West Circassian scrambling can be diagnosed solely through morphological cues (wh-agreement marking), without any reference to word order.

- A-scrambling can feed parasitic gap licensing by obviating potential anti-c-command violations.

\begin{center}
\textbf{Summary:} A-scrambling of DP\textsubscript{IO} to Spec,CP accounts for the absence of both anti-c-command and Weak Crossover violations between non-absolutive DPs.
\end{center}

\begin{center}
\textbf{References}
\end{center}


Bošković, Željko. in press. On extraction out of inherently case-marked elements. Proceedings of FASL 25.


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A. Appendices

A.1 Parasitic gaps cannot be embedded in an additional island


Who did John visit –

Non-island: √ [without claiming [that he knew ___]]

Adjunct island: ?? [after offending me [by not introducing me to ___]]

In West Circassian:

(30) a. maro [RC $waz-ewi [ADJUNCT [COMP pro / _-_PG(10)] here woman-ADV]

so- $O / ?z- de- $g-aw $Te -nO -m ] so-p$La-fe ]

1SG.ABS- 3SG/WH.IO- COM- speak -MOD- OBL. 1SG.ABS-attempt-LIM

za- $g$ere $t_{i}(10) O- $qo- za- $Te -wa-Te -r

one-INDEF 3ABS- DIR- WH.IO- BEN- LOC- hit -PST-ABS

b. maro [RC $waz-ewi [ADJUNCT [ADJUNCT pro / _-_PG(10)] here woman-ADV]

so- $O / ?z- de- $g-aw $Te -nO -m ] so- $e- so -fe ]

1SG.ABS- 3SG/WH.IO- COM- speak -ADV 1SG.ABS- LOC- sit -LIM

za- $g$ere $t_{i}(10) O- $qo- za- $Te -wa-Te -r

one-INDEF 3ABS- DIR- WH.IO- BEN- LOC- hit -PST-ABS

‘Here is the woman whom someone called [while I was sitting [talking to her]]’

A.2 Parasitic gaps cannot be licensed by a PP wh-trace

Cinque(1990), Postal(1993): parasitic gaps cannot be licensed by a PP-trace.

(31) a. This is a topic, you should think about $t_{i}$ [before talking about _-_PG].

b. * This is a topic about which, you should think $t_{i}$ [before talking _-_PG].

PPs are cross-referenced on the predicate via applicative (LOC) and can be pro:


3ABS- 3SG.LA- LOC- PRS- sleep -LIM I

so- $O- $e- $g$e

1SG.ABS- 3SG.LA- LOC- PRS- play

‘While the girl sleeps at her neighbors’, I play there.’

Relativization of postpositional phrases:

(33) [PP t-j$a-n $anem- $o-xe-m a-de$Z ] arc [RC Op $t_{LOC}

1SG.PP-POSSESS-neighbor-PL-OBL 3PL.PP-at PRED

so- $z- $e- $g$e $re -r [CP $m$ a$p$aše-r] 1SG.ABS- WH.IO- LOC- play -PRS- ABS this girlABS

pro / _-_PG(LOC) $O- $O- $e- $čeje -fe ]

3ABS- 3SG/WH.IO- LOC- PRS- sleep -LIM

‘At our neighbors’ is where I play while this girl sleeps there.’
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Contrast with a locative DP:

(34) \[
\begin{align*}
\text{tribe-ABS} & \quad 3\text{ABS- WH.IO- LOC- settle -PST -ADV} \\
\text{t}(\text{LOC}) & \quad \text{Ø- zo- s’á- rehatá-r} \quad -r \quad \text{a wone-càk*kà-xe-r}
\end{align*}
\]

\text{ARG} \quad \text{PRED}

‘Those small houses are where the tribe multiplied, having settled there.’ (Adyge Mak’, 2017.07.05)

B Non-absolutive arguments can license parasitic gaps within the absolutive DP

B.1 Unergative verb with applied object (ABS-IO)

Applied object trace can license PG within absolutive external argument.

(35) a. \[
\begin{align*}
\text{Ø- qó- z- e- wa-r} & \quad \text{Ø- zo- s’á- rehatá-r} \\
\text{3ABS- WH.IO- DIR- hit -PST} & \quad \text{3ABS- WH.IO- DAT- hit -PST}
\end{align*}
\]

‘I was consoling the boy whom his brother hit.’

b.

B.2 Transitive (ERG-ABS) verb

Ergative trace can license PG within absolutive theme.

(36) a. \[
\begin{align*}
\text{Ø / z-jó-śxən}[\text{ABS}] & \quad \text{Ø- zo- ma- s’xə-re} \quad -r \\
\text{3SG/WH.PR-POSSESS-food} & \quad \text{3ABS- WH.ERG- NEG- eat -PRS -ABS}
\end{align*}
\]

‘Here is the cat who doesn’t eat its food.’

b.