The emergence of case matching in discontinuous DPs*

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1 Introduction

- Many languages display case concord on multiple elements in both continuous and discontinuous DPs

(1) *Concord in Warlpiri*

a. [Kurdu-**jarra-rlu** wita-**jarra-rlu**] ka-pala maliki wajili-pi-nyi.
child-DU-ERG small-DU-ERG PRES-3ds dog chase-NPST
'The two small children are chasing the dog.'
Simpson 1991:258-259

b. [Kurdu-**jarra-rlu**] ka-pala maliki wajili-pi-nyi [wita-**jarra-rlu**] .
child-DU-ERG PRES-3ds dog chase-NPST small-DU-ERG
'Two small children are chasing the dog.'
Simpson 1991:257

- Tiwa (Tibeto-Burman; India) and Amahuaca (Panoan; Peru) show case matching only in discontinuous DPs

(2) *Case matching in Tiwa*

a. Mansing [kojá**(*-gô)** khúgri-**gô**] nú-ga.
Mansing red-ACC dog-ACC see-PFV
'Mansing saw a red dog.'

b. [Khúgri-**gô**] Mansing [kojá-**gô**] -lo nú-ga.
dog-ACC Mansing red-ACC -FOC see-PFV
'Mansing saw a red dog.'

(3) *Case matching in Amahuaca*

a. [kiyoo=vi**(*=nin)** joni***(=n)**] =mun jono
all=EMPH=ERG man=ERG =C peccary
rutu=hi=ki=nu
kill=IPFV=3.PRES=DECL
'All the men are killing a peccary.'

b. [joni**=n**] =mun jono [kiyoo=vi**=nin**]
man=ERG =C peccary all=EMPH=ERG
rutu=hi=ki=nu
kill=IPFV=3.PRES=DECL
'All the men are killing a peccary.'

➤ We argue that this pattern of case matching only under discontiguity arises as a result of multiple DP layers and a restricted mechanism of feature spreading between nested instances of D

2 Case matching in Tiwa

- General background:
  - Tibeto-Burman language spoken primarily in Assam, India by approximately 27,100 speakers (Simons and Fennig, 2017)
  - Data collected by Virginia Dawson between 2015 and 2017 in Umswai, Karbi Anglong district, Assam
  - Head-final with basic SOV order, accusative alignment with case enclitics
- Case concord is ungrammatical in continuous DPs (4a)
- Case matching is obligatory in discontinuous DPs (4b)

*We would like to thank the members of the Tiwa community (particularly Mary Maslai, Bibiana Maslai, and Pilsing Malang) and Amahuaca community (especially José Piño Bonangué and Celia Sampi Ríos) for their collaboration. We are also grateful to Amy Rose Deal and audiences at UC Berkeley, MIT, Georgetown, and Stanford for their feedback.

(4) 'Mansing saw a red dog.'

a. Mansing [kojá**(*-gô)** khúgri**-gô**] nú-ga.
Mansing red-ACC dog-ACC see-PFV

b. [Khúgri**-gô**] Mansing [kojá**-gô**] -lo nú-ga.
dog-ACC Mansing red-ACC -FOC see-PFV

- Case matching happens with various elements that can be separated from the head noun: adjectives (4), numerals (5), relative clauses (6), quantifiers (7), and possessors (8)

(5) 'Saldi didn't take three pens.'

a. Saldi [thin-tha kholom**-go**] khol lá-ya-m.
Saldi three-CL pen-ACC pick.up AUX-NEG-PST

b. [Thin-tha**-go**] -lo Saldi [kholom**-gô**] khol lá-ya-m.
three-CL-ACC -FOC Saldi pen-ACC pick.up AUX-NEG-PST

(6) 'Mukton saw the person that ran.'

a. Mukton [cholói hál-a líbing**-gô**] nú-ga.
Mukton run AUX-NMLZ person-ACC see-PFV

b. Mukton [líbing**-gô**] [cholói hál-a**-gô**] -lo nú-ga.
Mukton person-ACC run AUX-NMLZ-ACC -FOC see-PFV

(7) 'Mukton greeted every priest in the market.'

a. Mukton [sógol loró-râw**-go**] hat-o sêwa os-ga.
Mukton every priest-PL-ACC market-LOC greet-PFV

b. Mukton [loró-râw**-go**] hat-o [sógol**-go**] -lo
Mukton priest-PL-ACC market-LOC every-ACC -FOC
sêwa os-ga.
greet-PFV

(8) 'Monbor saw Sonali's cat.'

a. Monbor [Sonali-ne miyâw**-go**] nú-ga.
Monbor Sonali-GEN cat-ACC see-PFV

b. Monbor [miyâw**-go**] [Sonali-ne**-go**] -lo nú-ga.
Monbor cat-ACC Sonali-GEN-ACC -FOC see-PFV

- Case matching occurs with accusative (4)-(8), nominative (9), dative (10), genitive (11), and comitative (12) case

(9) 'Every woman didn't come yesterday.'

a. [Sógol margî-raw] khóna phi-ya-m.
every woman-PL yesterday come-NEG-PST

b. [Margî-raw] khóna [sógol] -lô phi-ya-m.
woman-PL yesterday every -FOC come-NEG-PST

(10) 'Mansing gave flowers to every woman.'

a. Mansing [sógol margî-raw**-a**] khúm os-ga.
Mansing every woman-PL-DAT flower give-PFV

b. Mansing [margî-raw**-a**] khúm [sógol**-a**] -lô os-ga.
Mansing woman-PL-DAT flower every-DAT -FOC give-PFV

(11) 'Lastoi bought the book that every teacher read.'

a. Lastoi [[$_{RC}$ [sógol sígai kirî-raw**-e**] lekhé-wa] lái-go]
Lastoi every teacher-PL-GEN read-NMLZ book-ACC
pre-ga.
buy-PFV

b. Lastoi [[$_{RC}$ [sígai kirî-raw**-e**] [sógol**-e**] -lô lekhé-wa]
Lastoi teacher-PL-GEN every-GEN -FOC read-NMLZ
lái-go] pre-ga.
book-ACC buy-PFV

(12) 'Lastoi went to market with every man.'

a. Lastoi [sógol mewâ-raw**-re**] hat-a lí-ga.
Lastoi every man-PL-COM market-DAT go-PFV

b. Lastoi [mewâ-raw**-re**] hat-a [**sógolarê**] -lo lí-ga.
Lastoi man-PL-COM market-DAT every.COM -FOC go-PFV

- Each piece of a discontinuous DP behaves syntactically like an independent DP
  - Each piece can undergo scrambling independently
  - Each piece can be case-marked

3 The DP-shell analysis

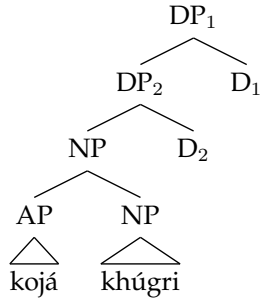
- The pattern of case matching only under discontiguity looks empirically different from canonical concord, and analyses of concord cannot be straightforwardly extended to cover it

  - If case concord is the result of assigning case directly to multiple elements in the DP (Kayne, 2002; Brattico, 2008; Matushansky, 2008), it is unclear why multiple case assignment could only happen in discontinuous structures
  - If case concord arises by assigning case once and then spreading the feature (Babby, 1987; Halpert, 2015; Norris, 2018), it is unclear why feature spreading could only occur in discontinuous DPs
- Desiderata:
  - Account for case matching, which occurs only under discontiguity
  - Account for the fact that each piece of a discontinuous DP behaves like an independent DP

➤ Both can be achieved on an account which assumes multiple DP-shells and a restricted mechanism of feature spreading between nested instances of D

- We assume that DPs in Tiwa have two nested DP shells,[1] drawing on big-DP analyses of clitic doubling (Torrego, 1992; Uriagereka, 1995)
- The head of the highest DP selects a DP complement, not specifier (similar to the dP proposal for Danish DPs put forth by Hankamer and Mikkelsen 2012)
- A DP like *kojá khúgri* 'red dog', will have the basic structure in (13)

(13)



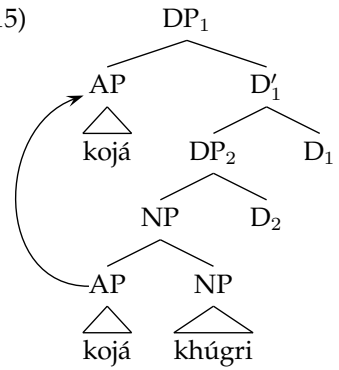
- Case is spread between nested instances of D, but only one instance of case is realized due to haplology

[1] For concreteness we assume that the nested structure is two instances of DP. What is important for the current analysis is that both heads are of the same category and that the category is that to which case is assigned in the language. This could also be KP, etc.

(14) Mansing [$_{DP_1}$ [$_{DP_2}$ kojá khúgri**-gô**] **(*-gô)**] nú-ga.
Mansing red dog-ACC -ACC see-PFV
'Mansing saw a red dog.'

- To form a discontinuous DP, a subconstituent of DP_2 moves to Spec,DP_1
- The modifier that will be stranded (in this case the AP)[2] undergoes movement to Spec,DP_1

(15)



- DP_2, containing the head noun, then undergoes remnant movement, stranding the modifier in DP_1
- D_1 and D_2 are spelled out as case, resulting in matching

(16) [$_{DP_2}$ Khúgri**-gô**] Mansing [$_{DP_1}$ kojá t_{DP_2} **-gô**] -lo nú-ga.
dog-ACC Mansing red -ACC -FOC see-PFV
'Mansing saw a red dog.'

- Evidence that the pieces of discontinuous DPs are related via movement comes from islands
- A DP cannot be split across a relative clause island

[2] If all elements which can be stranded in Tiwa are independent phrases which do not contain the noun, then all such structures will look similar to the one in (15). If some are heads which select the phrase containing the noun, then the structures would involve long distance head movement of the head to a higher specifier position. This view of syntactic head movement has been argued for by (Harizanov and Gribanova, resubmitted).

(17) 'Lastoi saw the dog that bit every person.'

a. Lastoi [$_{DP}$ [$_{RC}$ sógol líbing-râw**-go** chí-wa] khúgri-gô]
Lastoi every person-PL-ACC bite-NMLZ dog-ACC
nú-ga.
see-PFV

b. * Lastoi [$_{DP}$ [$_{RC}$ líbing-râw**-go** chí-wa] khúgri-gô]
Lastoi person-PL-ACC bite-NMLZ dog-ACC
[$_{DP}$ sógol**-gô(-go)**] -lo nú-ga.
every-ACC(-ACC) -FOC see-PFV

- In contrast, modifiers can be separated from their head noun within a relative clause island

(18) 'Sonali loves the man who greeted all the priests.'

a. Sonali [$_{DP}$ [$_{RC}$ [$_{DP}$ sógol loró-râw**-go**] sêwa os-a] mewâ-go]
Sonali every priest-PL-ACC greet-NMLZ man-ACC
han sha-w.
love-NEUT

b. Sonali [$_{DP}$ [$_{RC}$ [$_{DP}$ loró-râw**-go**] [$_{DP}$ sógol**-gô**] -lo
Sonali priest-PL-ACC every-ACC -FOC
sêwa os-a] mewâ-go] han sha-w.
greet-NMLZ man-ACC love-NEUT

- Further, a modifier to a DP containing a relative clause can be separated

(19) Lastoi [$_{DP}$ [$_{RC}$ líbing-gô chí-wa] khúgri**-gô**] [$_{DP}$ mile**-go**]
Lastoi person-ACC bite-NMLZ dog-ACC every-ACC
-lo nú-ga.
-FOC see-PFV
'Lastoi saw every dog that bit the man.'

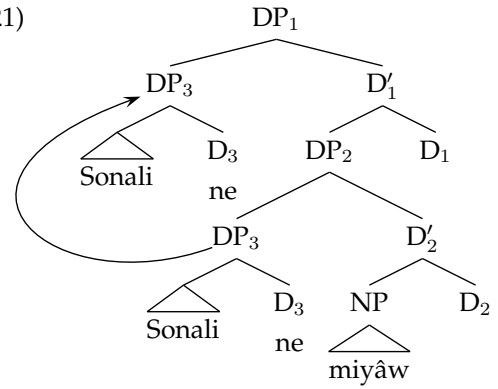
4 Accounting for case stacking

- This analysis can account for the case stacking found in Tiwa when a possessor is stranded
  - Stranded possessors surface with two case markers: genitive and the case assigned to the discontinuous DP

(20) Monbor [miyâw**-go**] [Sonali**-ne-go**] -lo nú-ga.
Monbor cat-ACC Sonali-GEN-ACC -FOC see-PFV
'Monbor saw Sonali's cat.'

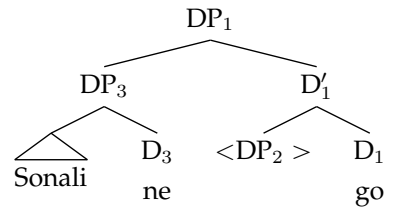
- Case stacking arises because the stranded possessor contains two instances of D
- When the possessor is stranded, it first moves to Spec,DP_1

(21)



- When case is assigned to DP_1, it is spread from D_1 to D_2
- DP_2 can then undergo remnant movement, stranding the possessor

(22)



- In this structure, D_3 is realized as the genitive case marker *-ne* and D_1 is realized as the accusative case marker *-go*
- Since these adjacent instances of D bear different case features, there is no haplology, resulting in case stacking
- The only other place in the language where case stacking is available is in NP ellipsis

- When an NP is elided under identity, a case suffix that is typically realized on the noun surfaces on the genitive marked possessor

(23) Milton-e [Monbor-e thílu-gô] chá-wa-ne khélango,
Milton-GEN Monbor-GEN banana-ACC eat-NMLZ-GEN after
Monbor-bo [**Milton-e-go**] chá-ga.
Monbor-ADD **Milton-GEN-ACC** eat-PFV
'After Milton ate Monbor's banana, Monbor ate Milton's.'

- Like case stacking in discontinuous DPs, this configuration involves two adjacent instances of D: one internal to the possessor DP and the other in the main DP

5 Accounting for differential object marking

- Contrary to the pattern found with other cases, case matching with accusative case is seemingly "optional" in some configurations

(24) Lastoi [ngá**-gô**] khóna [mile**(-go)**] -lo pre-ga.
Lastoi fish-ACC yesterday every-ACC -FOC buy-PFV
'Lastoi bought every fish yesterday.'

- This apparent optionality is only found with accusative case; case matching with other case markers, like dative, is obligatory

(25) Mansing [margî-raw**-a**] khúm [sógol***(-a)**] -lô os-ga.
Mansing woman-PL-DAT flower every-DAT -FOC give-PFV
'Mansing gave flowers to every woman.'

- Tiwa independently exhibits differential object marking (DOM)

(26) Mansing mai**(-go)** chá-ga.
Mansing rice-ACC eat-PFV
'Mansing ate (the) rice.'

- The presence or absence of the accusative case marker is linked to the object's structural position. Accusative marked objects are structurally higher than unmarked objects.
  - If an object scrambles above the subject, it must be marked accusative

(27) Mai***(-go)** Mansing chá-ga.
rice-ACC Mansing eat-PFV
'Mansing ate (the) rice.'

  - If an object appears to the left of low adverbs it must be marked accusative[3]

(28) 'Mansing ate a lot of rice.'
  a. Mansing khúp mái**(-go)** chá-ga.
  Mansing INTS rice-ACC eat-PFV
  b. Mansing mai***(-go)** khúp chá-ga.
  Mansing rice-ACC INTS eat-PFV

- Accusative case matching exhibits the same pattern – pieces of DPs that appear in high positions must be accusative

(29) Lastoi [ngá***(-go)**] khóna [mile] -lo pre-ga.
Lastoi fish-ACC yesterday every -FOC buy-PFV
'Lastoi bought every fish yesterday.'

- This interaction of case matching and DOM falls out from the DP-shell analysis
- When there is case matching, the entire nested DP moves to the position associated with accusative case
- Case is spread to both instances of D prior to remnant movement of DP_2, yielding matching

(30) Lastoi [$_{DP_2}$ ngá**-go**] khóna [$_{DP_1}$ mile t_{DP_2} **-go**] -lo t_{DP_1}
Lastoi fish-ACC yesterday every -ACC -FOC
pre-ga.
buy-PFV
'Lastoi bought every fish yesterday.'

- When there is a case mismatch, the unmarked piece is stranded below the accusative case position

[3] We assume the optionality of case marking to the right of adverbs reflects the availability of two distinct object positions below the adverb.

- DP_2 remnant moves to the accusative case position and accusative case is assigned only to that piece of the discontinuous DP, yielding a case mismatch

(31) Lastoi [$_{DP_2}$ ngá**-go**] khóna [$_{DP_1}$ mile t_{DP_2}] -lo pre-ga.
Lastoi fish-ACC yesterday every -FOC buy-PFV
'Lastoi bought every fish yesterday.'

6 Extension to Amahuaca

- Background:
  - Panoan language spoken in the Peruvian and Brazilian Amazon by approximately 500 speakers (Simons and Fennig, 2017)
  - Data collected by Emily Clem in 2016 and 2017 in the district of Sepahua in Atalaya Province, Ucayali, Peru
  - Mixed headed, being almost entirely head final in the TP domain, but having a head-initial CP (Clem, accepted)
  - Tripartite alignment, with case surfacing as a DP enclitic

6.1 Data

- There is no case concord in continuous DP structures in Amahuaca
  - Only one syntactic constituent can surface before the second position clitic *=mun*
  - Before *=mun* only one instance of case is possible in a DP

(32) [kiyoo=vi**(*=nin)** joni***(=n)**] =mun jono rutu=hi=ki=nu
all=EMPH=ERG man=ERG =C peccary kill=IPFV=3.PRES=DECL
'All the men are killing a peccary.'

- In discontinuous DPs case matching becomes available[4]

[4]Note that case markers show allomorphy based on their host.

(33) [joni**=n**] =mun jono [kiyoo=vi**=nin**]
man=ERG =C peccary all=EMPH=ERG
rutu=hi=ki=nu
kill=IPFV=3.PRES=DECL
'All the men are killing a peccary.'

- Various types of modifiers can appear in discontinuous structures and exhibit case matching, including quantifiers (33), numerals (34), relative clauses (35), and some adjectives (36)

(34) 'Two men are looking for capybaras.'

a. [ravuu joni**=n**] =mun hamun vuna=hi=ki=nu
two man=ERG =C capybara look.for=IPFV=3.PRES=DECL

b. [ravuu**=tan**] =mun [joni**=n**] hamun
two=ERG =C man=ERG capybara
vuna=hi=ki=nu
look.for=IPFV=3.PRES=DECL

(35) 'The man who the woman had seen grabbed the capybara.'

a. [xano=n **joni** hiin=ha**=ton**] =mun hamun
woman=ERG man see=REL.SQ=ERG =C capybara
hachi=xo=nu
grab=3.PST=DECL

b. [xano=n hiin=ha**=ton**] =mun [joni**=n**] hamun
woman=ERG see=REL.SQ=ERG =C man=ERG capybara
hachi=xo=nu
grab=3.PST=DECL

(36) 'The tall man is looking for a paca.'

a. [joni chaii**=tan**] =mun hano vuna=hi=ki=nu
man tall=ERG =C paca look.for=IPFV=3.PRES=DECL

b. [chaii**=tan**] =mun [joni**=n**] hano
tall=ERG =C man=ERG paca
vuna=hi=ki=nu
look.for=IPFV=3.PRES=DECL

- In addition to ergative case, nominative case can exhibit case matching

(37) 'The yams that the man washed fell.'

a. [joni=n **kari** choka=ha**=tox**] =mun pakuu=xo=nu
man=ERG yam wash=REL.SQ=NOM C fall=3.PST=DECL

b. [kari**=x**] =mun pakuu=xo=nu [joni=n
yam=NOM =C fall=3.PST=DECL man=ERG
choka=ha**=tox**]
wash=REL.SQ=NOM

- Like Tiwa, Amahuaca exhibits differential case marking based on structural position, but this is for transitive subjects, not objects
- Subjects which remain in their base position are not marked with ergative case (Clem, accepted)
  - The externally-merged position of subjects is Spec,vP
  - AspP is head-initial and dominates vP
  - Subjects in their base position appear linearly to the right of aspect
  - Subjects to the right of aspect cannot surface with ergative case while moved subjects to the left of aspect must be marked ergative

(38) 'The man is killing the peccary.'

a. joni***(=n)**=mun jono rutu=hi=ki=nu
man=ERG=C peccary kill=IPFV=3.PRES=DECL

b. jono=mun rutu=hi joni**(*=n)**=ki=nu
peccary=C kill=IPFV man=ERG=3.PRES=DECL

- Case matching interacts with this pattern of differential subject marking
- The two pieces of a discontinuous DP mismatch in case when one piece remains too low to be marked ergative

(39) [kiyoo=vi**=nin**] =mun jono rutu=hi [joni**(*=n)**]
all=EMPH=ERG =C peccary kill=IPFV man=ERG
=ki=nu
=3.PRES=DECL
'All the men are killing a peccary.'

- This pattern of case mismatching aligns with what is expected given the general pattern of case marking in the language
- Only the noun in a discontinuous DP can be stranded in the base position of the DP, modifiers cannot be stranded in this way

(40) 'All the men are killing a peccary.'

a. jono=mun rutu=hi [kiyoo=vi joni] =ki=nu
peccary=C kill=IPFV all=EMPH man =3.PRES=DECL

b. jono=mun [kiyoo=vi=nin] rutu=hi [joni] =ki=nu
peccary=C all=EMPH=ERG kill=IPFV man =3.PRES=DECL

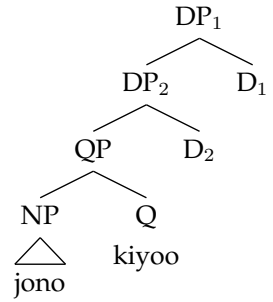
c. * jono=mun [joni=n] rutu=hi [kiyoo=vi] =ki=nu
peccary=C man=ERG kill=IPFV all=EMPH =3.PRES=DECL

- Comparison to Tiwa data:
  - Tripartite alignment vs. accusative alignment
  - Differential subject marking vs. differential object marking
  - Nouns stranded vs. modifiers stranded

6.2 Analysis

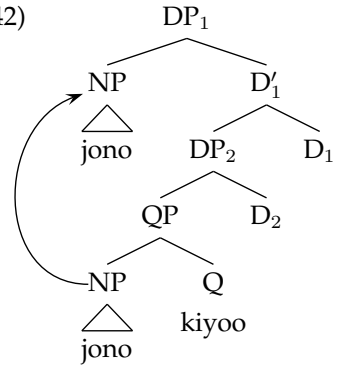
- We assume two DP layers in Amahuaca, yielding the structure in (41) for a DP like *jono kiyoo* 'all peccaries'

(41)



- Crucially different from Tiwa is the pattern of movement out of DP_2 to Spec,DP_1
- Given the noun-stranding facts in Amahuaca, we assume that NP moves to Spec,DP_1

(42)



- DP_2 containing the modifier is then free to undergo remnant movement

(43) [$_{DP_2}$ kiyoo**=pan**] =mun [$_{DP_1}$ jono t_{DP_2} **=n**] jiriti
all=ERG =C peccary =ERG food
vuna=hi=ki=nu
look.for=IPFV=3.PRES=DECL
'All the peccaries are looking for food.'

- As seen before, case matching is derived via feature spreading when case assignment precedes remnant movement of DP_2
- Case mismatching is also possible in differential subject marking contexts
- Case mismatches in discontinuous DPs arise when movement precedes case assignment
  - DP_2 undergoes remnant movement out of DP_1 into the position associated with ergative case assignment
  - DP_2 is assigned ergative leaving DP_1 unmarked

(44) [$_{DP_2}$ kiyoo**=pan**] =mun jiriti vuna=hi [$_{DP_1}$ jono t_{DP_2}]
all=ERG =C food look.for=IPFV peccary
=ki=nu
=3.PRES=DECL
'All the peccaries are looking for food.'

7 Conclusion

- Case matching is found only in discontinuous DPs in both Tiwa and Amahuaca, two typologically distinct and unrelated languages
- Case concord and case matching are empirically distinct phenomena and merit distinct analyses
- Case matching can be straightforwardly accounted for under an analysis that assumes multiple DP shells and feature sharing between nested instances of D

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