Locality and (a)symmetry in case and agreement

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1 Alignment in ditransitives

Outline and claims

Alignment in ditransitives

Like (in)transitives, ditransitives show different alignment patterns in case and agreement. **Not all combinations are attested.**

Explaining the gap

This gap is **not accidental**. It follows from locality, hierarchical syntactic structure and the case hierarchy.
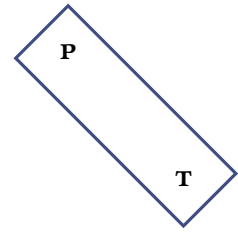
"Exceptional" patterns have different causes

Information structure (IS) and φ-features seem to allow violations of the locality of agreement: these patterns provide evidence for relativised agreement.

Indirective or direct object alignment

(1) a. *Lát-ja* [ₚ *a kutyá-t*].   [Hungarian]
       see-3SG.SBJ>3.OBJ   the dog-ACC
       'S/he sees the dog.'

   b. [ᵣ *Neked*] *ad-ja* [ₜ *a kutyá-t*].
       you.SG.DAT   give-3SG.SBJ>3.OBJ   the dog-ACC
       'S/he gives you the dog.'

Figure 1 Indirective alignment
(ICIA)

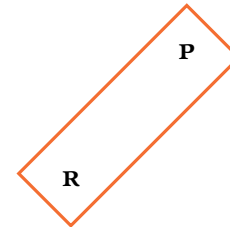Monotransitive, (1a):

Ditransitive, (1b):

Secundative or primary object alignment

(2) a. *Ciq'aamqal-nim* ***pee**-tw'ehke'yk-se-Ø* [P ***picpic-ne***].　　　　[Nez Perce]
dog-ᴇʀɢ　　　　3/3-chase-ɪᴘꜰᴠ-ᴘʀs　　cat-ᴀᴄᴄ
'The dog is chasing the cat.'　　　　　　　　　　　　　　　(Deal 2013: 396)

b. *Beth-nim* *hi-**neec**-'ni-Ø-ye*　　　[R ***lepit picaloo-na***] [T ***hipt***].
Beth-ᴇʀɢ　3.sʙᴊ-ᴏʙᴊ.ᴘʟ-give-ᴘꜰᴠ-ʀᴇᴍ.ᴘsᴛ　two　kitten-ᴀᴄᴄ　　food.ɴᴏᴍ
'Beth gave the two kittens food.'　　　　　　　　　　　　　(Deal 2019: 393)

Figure 2 Secundative alignment
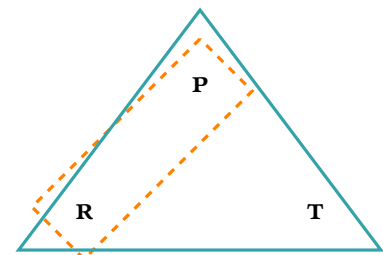(SCSA)

Monotransitive, (2a):

Ditransitive, (2b):

Mixed alignment: neutral case, secundative agreement

(3) a. *Ləmma*　　[P ***gənzəb-u-n***　　] *sərrək'-ə-**w**.*　　　　　　[Amharic]
Lemma.ᴍ　　money.ᴍ-ᴅᴇꜰ-ᴀᴄᴄ　　rob-3.ᴍ.sʙᴊ-3.ᴍ.ᴏʙᴊ
'Lemma stole the money.'　　　　　　　　　　　　　　　　(Baker 2012: 261)

b. *Ləmma*　　[R *Aster-in*　] [T ***his'an-u-n***　　] *asaj-**at**.*
Lemma.ᴍ　　Aster.ꜰ-ᴀᴄᴄ　　baby-ᴅᴇꜰ-ᴀᴄᴄ　　show.3.ᴍ.sʙᴊ-3.ꜰ.ᴏʙᴊ
'Lemma showed Aster the baby.'　　　　　　　　　　　　　(Baker 2012: 258)

Figure 3 Neutral case,
secundative agreement
(NCSA)

Monotransitive, (3a):
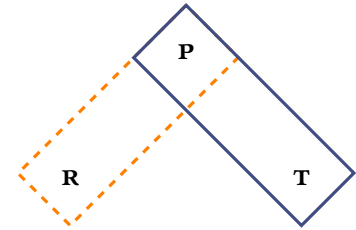
Ditransitive, (3b):

Mixed alignment: indirective case, secundative agreement

(4) a. *Ləmma* [P *gənzəb-u-n*] *sərrək'-ə-w.*   [Amharic]
Lemma.M   money.M-DEF-ACC   rob-3.M.SBJ-3.M.OBJ
'Lemma stole the money.'

b. *Ləmma* [R *l-Almaz*] [T *tarik-u-n*] *nəggər-at.*
Lemma.M   DAT-Almaz.F   story.M-DEF-ACC   tell.3.M.SBJ-3.F.OBJ
'Lemma told Almaz the story.'   (Baker 2012: 261)

Figure 4 Indirective case,
secundative agreement
(ICSA)

Monotransitive, (4a):

Ditransitive, (4b):

Distribution of alignment in case and agreement

- **Four logical ways** of combining secundative/neutral and indirective case and agreement alignment in languages with **one instance of object agreement**
- Three types are found all over the world (Dryer 1986, Haspelmath 2005)
- One type is missing (cf. Faltz 1978, Haspelmath 2013, Bárány 2017)

	Secundative/neutral case	Indirective case
Secundative agreement	✔ (Nez Perce)	✔ (Amharic)
Indirective agreement	✘	✔ (Hungarian)

2 Explaining the gap

Assumptions about ditransitives

Assumption 1 The agreeing head c-commands both R and T
Assumption 2 R c-commands T, cf. (5) and (6) (Barss & Lasnik 1986, Harley 2002, ...)

(5) WCO effect due to movement of T over R (Amharic, Baker 2012: 266)

?* *Nərs-wa* [T *his'an*] [R *lə-innat-u*] *t-asaj-at-all-ətʃtʃ.*
nurse-DEF.F   baby   DAT-mother-3.M.POSS   3.F.SBJ-show-3.F.OBJ-AUX-3.F.SBJ
'The nurse showed a baby$_i$ to its$_i$ mother (e.g., shortly after the delivery).'

(6) **R** binding pronoun in **T** (Nez Perce, Deal 2013: 397)

P.-nim$_i$	***pee-kiwyek-Ø-e***	[$_R$ *Elwit'et-ne$_j$*]	[$_T$ *'ip-nim$_{i/j}$*	***hipt***	].
P.-ERG	3/3-feed-PFV-REM.PST	Elwit'et-ACC	3SG-GEN	food.NOM	

'Pinooc$_i$ fed Elwit'et$_j$ her$_i$/his$_j$ food.'

Assumptions: Morphological case and agreement

Assumption 3 Interaction of m-case and agreement follows the case hierarchy

- In IC, if the verb cannot agree with DAT object: **indirective agreement**
- If the verb can agree with DAT object: **secundative agreement** (Table 1)
→ **Case hierarchy**: NOM/ABS > ACC/ERG > **DAT** > OBL > …
  (cf. Blake 2001, Caha 2009, Smith et al. 2019, Zompì 2019)

	Secundative/neutral case	Indirective case
Secundative agreement		✔ (Amharic)
Indirective agreement		✔ (Hungarian)

Table 1 Variation in accessibility of R's m-case in IC

- In SC/NC, ABS/ACC **must** be accessible: **secundative agreement** (Table 2)
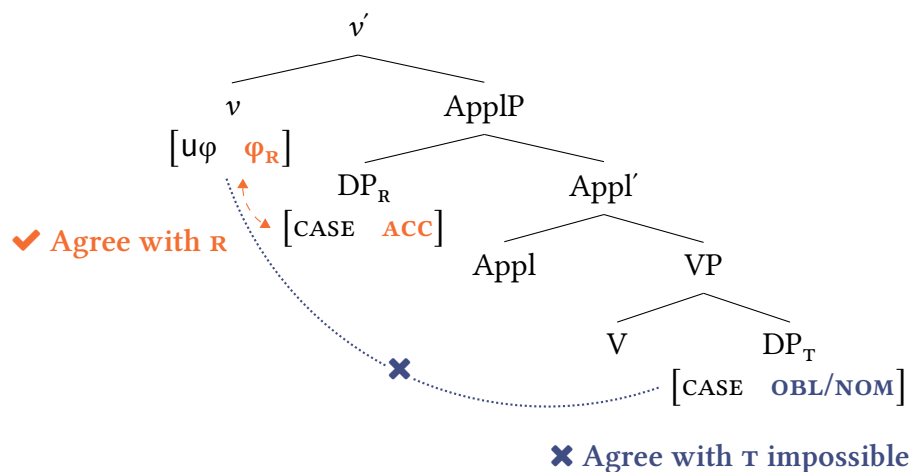→ **Case hierarchy**: NOM/**ABS** > **ACC**/ERG > DAT > OBL > …
→ Indirective agreement, i.e. with T, should be impossible (due to locality)

	Secundative/neutral case	Indirective case
Secundative agreement	✔ (Nez Perce)	✔ (Amharic)
Indirective agreement	✘	✔ (Hungarian)

Table 2 No variation in accessibility of R's m-case in SC/NC

Ruling out secundative case and indirective agreement

✔ These assumptions rule out secundative case and indirective agreement

✘ Agree with T impossible

Empirical support

- Structural explanation makes the right predictions
- Sample of **77 genera** (99 languages), see Figure 5, p. 6
    - ICIA: 10 Ls, ICSA: 19 Ls, SCSA: 16 Ls, NCSA: 54 Ls

✔ **Secundative or neutral case always allow secundative agreement**

3 Apparent exceptions

Skipping accessible goals

⚠ In some languages, R is skipped **under certain conditions** and the verb agrees with T — even though R's case is accessible for agreement.

- 17 of 99 languages (13 of 77 genera) in my sample show such alternations
- 💡 **Lexical properties** of the predicate can determine agreement alignment
- 💡 **Competition** between objects in person and/or information structure

- ❓ Probe on Appl instead of *v*?
- ❓ Movement of T over R?

Lexical properties determine agreement alignment

Across languages, predicates differ in whether they allow double object constructions (DOCs) *and* prepositional dative constructions (PDCs)

- Cross-linguistically common (Malchukov et al. 2010: 48–56)

⚠ Unexpected patterns involve variation in **agreement, but not case alignment**

(7) a. *Markus-w* [T *pr kati*] [R *nson*] *b-**mae**-y.*   [Ngkolmpu]
    Markus-ERG   tree leaf.ABS   1SG.DAT   1SG.OBJ-give-SG.SBJ.HOD
    'Markus gave me the money (earlier today).'

   b. *Markus-w* [T *ngko*] [R *Jon-en*] *b-**re**-y.*
    Markus-ERG   1SG.ABS   John-DAT   1SG.OBJ-send-SG.SBJ.HOD
    'Markus sent me to John (earlier today).'   (Carroll 2016: 149)

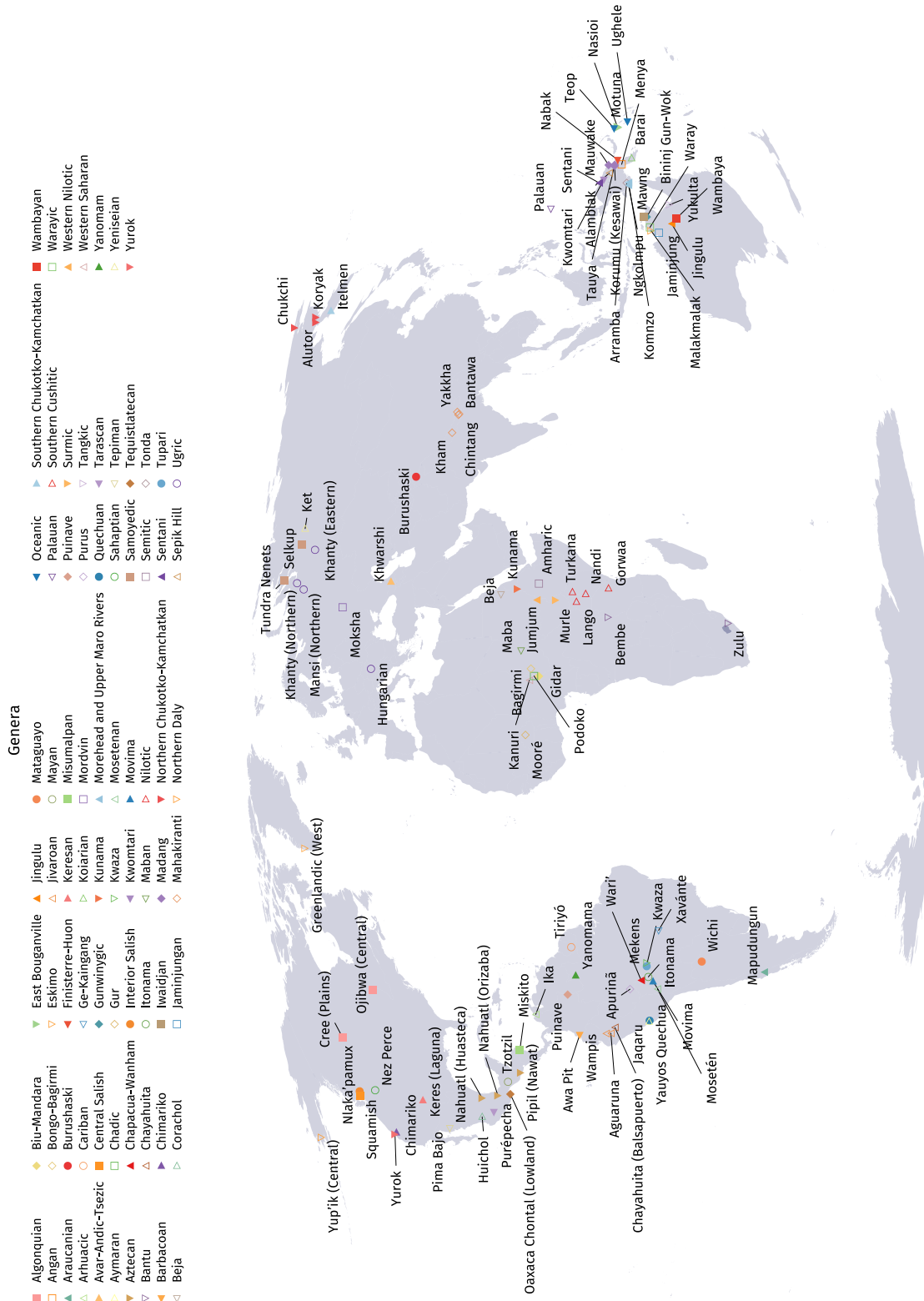- Also in Burushaski (Baker 2015) and Chukotko-Kamchatkan (Mel'čuk 1988)

Figure 5 Areal distribution of languages in sample

Information structure determining agreement alignment

In Itelmen (Chukotko-Kamchatkan), salience determines object agreement

(8) a. Context: *My brother came.* [Itelmen]

 i kma [R *ənna-nk*] [T *βałč*] *t-zəl-nen.*
 and I him-DAT knife 1SG.SBJ-give-3SG.OBL
 'And I gave the knife to him.'

 b. Context: *Where is the knife?*

 qełnu [R *zlatumx-enk*] *t-zəl-čen?*
 really brother-DAT 1SG.SBJ-give-1SG.SBJ>3SG.OBJ
 'Didn't I give it to my brother?' (Bobaljik & Wurmbrand 2002: 17)

 ❓ Also in some Bantu languages? (van der Wal to appear)

Person determining agreement alignment

In Alutor, Chukchi, Koryak (Chukotko-Kamchatkan), person determines agreement

- *give* agrees with the higher object on 1 > 2 > 3 …
- ⚠️ … or with T if both are 3 (Alutor/Chukchi) or both are 1/2 (Koryak)

(9) a. Secundative agreement with 1SG R [Alutor]

 əlləγ-a Ø-ina-jəl-i [R *γəmək-əŋ*] [T *γəttə*]
 father-ERG 3SG.SBJ-1SG.OBJ-give-3SG.SBJ 1SG-DAT 2SG.ABS
 'Father gave you as a wife to me.'

 b. Indirective agreement with 1SG T

 əlləγ-a Ø-ina-jəl-i [R *γənək-əŋ*] [T *γəmmə*]
 father-ERG 3SG.SBJ-1SG.OBJ-give-3SG.SBJ 2SG-DAT 1SG.ABS
 'Father gave me as a wife to you.' (Mel'čuk 1988: 294–295)

4 Analysing "exceptions"

Lexical properties and agreement alignment

Identical case-marking need not reflect identical semantics (cf. DOM=DAT)

- ❓ Is DAT the syncretic expression of "true" DAT and more oblique (PP) arguments?
- 💡 Ngkolmpu *give* selects R, *send* selects GOAL: both spelled out as DAT?
- → Testable via the syntactic behaviour of DAT arguments
- → Distinct behaviour of agreeing and non-agreeing DAT would support syncretism
- Baker (2015) suggests this for Burushaski, Rezac (2011) for Basque

Object agreement with interaction and satisfaction

- ❏ Person and agreement (a)symmetries can be analysed using relativised probing
- One such approach: Deal's (2015) interaction and satisfaction
- **Interaction** (INT) features value a probe, but do not halt probing
- **Satisfaction** (SAT) features halt a probe, are a subset of INT

Itelmen object agreement

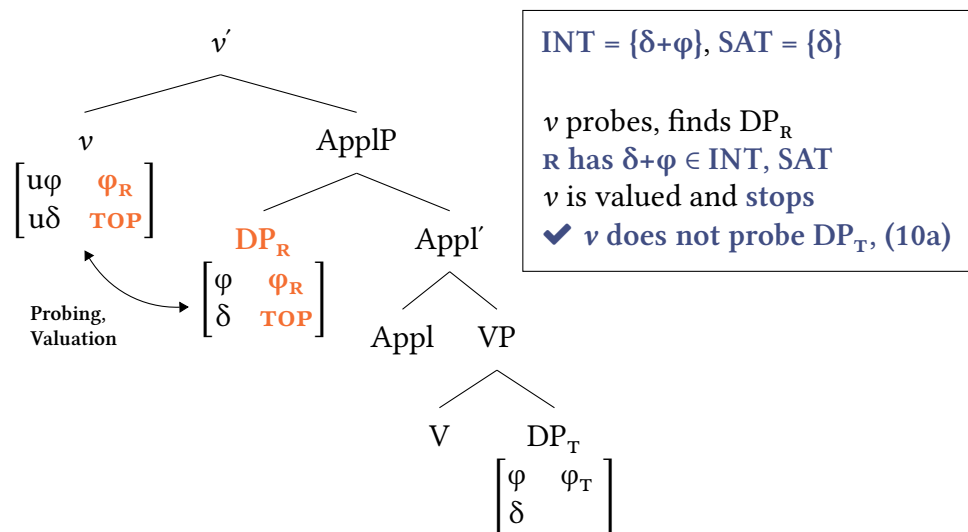Itelmen v can probe δ-/A′-features (cf. van Urk 2015, Miyagawa 2017, Baier 2018)

(10) a. Context: ***My brother** came.* [Itelmen]

    i   *kma* [$_R$ ***ənna-nk***] [$_T$ ***βałč***] *t-zəl-**nen**.*
    and 1SG   him-DAT   knife   1SG.SBJ-give-3SG.OBL
    'And I gave the knife **to him**.'
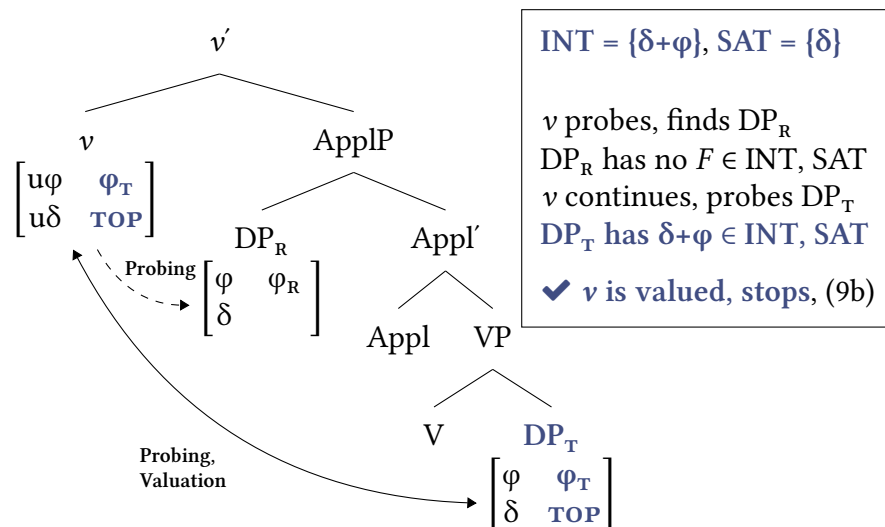
    b. Context: *Where is **the knife**?*

    qełnu [$_R$ ***zlatumx-enk***] *t-zəl-čen?*
    really   brother-DAT   1SG.SBJ-give-1SG.SBJ>3SG.OBJ
    'Didn't I give **it** to my brother?'

(11) a.

INT = {δ+φ}, SAT = {δ}

v probes, finds DP$_R$
R has δ+φ ∈ INT, SAT
v is valued and **stops**
❏ **v does not probe DP$_T$, (10a)**

    b.

INT = {δ+φ}, SAT = {δ}

v probes, finds DP$_R$
DP$_R$ has no F ∈ INT, SAT
v continues, probes DP$_T$
DP$_T$ has δ+φ ∈ INT, SAT
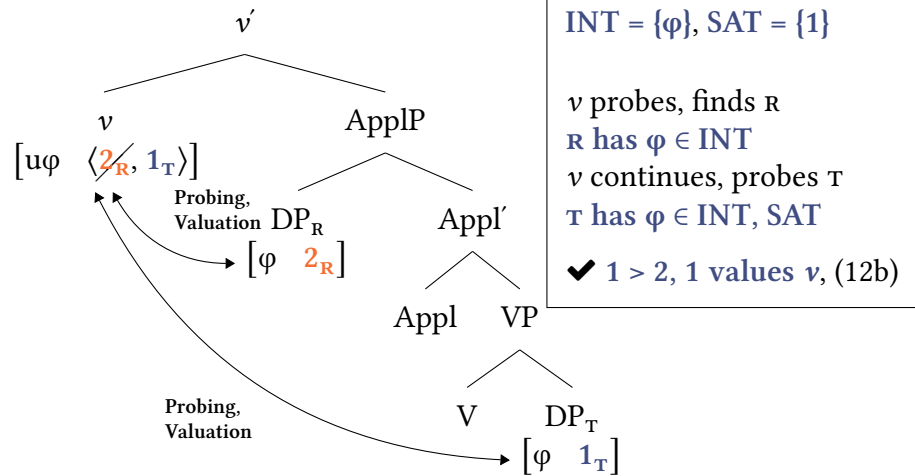
❏ **v is valued, stops, (9b)**

8

Alutor/Chukchi/Koryak object agreement

In Alutor, Chukchi, and Koryak, person determines agreement (with *give*)

(12) a. *əlləɣ-a*   Ø-***ina**-jəl-i*   [$_R$ **ɣəmək-əŋ**] [$_T$ **ɣəttə**]   [Alutor]
          father-ERG   3SG.SBJ-1SG.OBJ-give-3SG.SBJ   1SG-DAT   2SG.ABS
          'Father gave you as a wife to me.'

      b. *əlləɣ-a*   Ø-***ina**-jəl-i*   [$_R$ **ɣənək-əŋ**] [$_T$ **ɣəmmə**]
          father-ERG   3SG.SBJ-1SG.OBJ-give-3SG.SBJ   2SG-DAT   1SG.ABS
          'Father gave me as a wife to you.'

      c. *əlləɣ-a*   Ø-*jəl-**nina**-wwi*   [$_R$ **ənək-əŋ**] [$_T$ **şininkina-wwi**
          father-ERG   3SG.SBJ-give-3.OBJ-PL   he-DAT   his-PL.ABS

          ŋavakka-wwi]
          daughter-PL.ABS
          'Father gave his daughters as wives to him.'   (Mel'čuk 1988: 294–295)

(13) a.

INT = {φ}, SAT = {1}

v probes, finds R
R has φ ∈ INT
v continues, probes T
T has φ ∈ INT, SAT

✔ 1 > 2, 1 values *v*, (12b)

      b.

INT = {φ}, SAT = {1}

v probes, finds R
R has φ ∈ INT
v continues, probes T
T has φ ∈ INT

❓ 3 = 3, *v* chooses *last* φ?, (12c)

The INT/SAT model allows probes to agree several times

- φ-features of different arguments can be ordered $\langle \varphi_R, \varphi_T \rangle$ (cf. Deal 2015)
- For Alutor, Chukchi, and Koryak, I assume that …
- … generally the higher φ-feature values v (1 > 2 > 3)
- ⚠ But what about 3–3 configurations like (12c)?

Dealing with 3–3 configurations

If both R and T are third person, R should be the only target

⚠ It is the T that controls agreement, however (e.g. Alutor (14), repeated from (12c))

(14) *əlləγ-a   Ø-jəl-**nina**-wwi*   [R ***ənək-əŋ***]   [Alutor]
     father-ERG   3SG.SBJ-give-3.OBJ-PL   he-DAT

   [T ***şininkina-wwi ŋavakka-wwi***   ]
      his-PL.ABS   daughter-PL.ABS
   'Father gave his daughters as wives to him.'   (Mel'čuk 1988: 294–295)

? Probe chooses *last* target? **No: overgenerates!**

? Appl probes, not v? **No: overgenerates!**

? Movement of T over R?

Abramovitz (2019): wh-direct objects (DOs) in Koryak move through Spec$v$P

(15) a. [T *jej-**u**ᵢ*   ] { *γə-**nan*** / **γətčtçi* } **tᵢ** *valom-na-w,*   [Koryak]
          what-ABS.PL   2SG.ERG   2SG.ABS   hear-3.OBJ-3PL

       *əno ʔewŋəto-na-**k**   j-ə-t͡ɕim-aw-nin   tᵢ*
       that Hewngyto-OBL.SG-ERG   CAUS-EP-break-VB-3SG.A>3.OBJ
       'What all did you hear that Hewngyto broke?'

    b. ***yəmmo*** *t-ə-valom-ək,   əno ʔewŋəto-na-**k***
        1SG.ABS 1SG.S/A.-EP-hear-EP-1SG.S that Hewngyto-OBL.SG-ERG

       *j-ə-t͡ɕim-aw-nin   [T *kojŋ-**no***]
       CAUS-EP-break-VB-3SG.A>3.OBJ   cup-ABS.PL
       'I heard that Hewngyto broke cups.'

✔ In (15a), *jeju* 'what' must move through Spec$v$P to trigger ERG

"Apparent" exceptions

? Why are these only apparent exceptions?

- In Itelmen, Alutor, Chukchi etc. non-local agreement is only an option
- Agreement with T across R requires something additional: φ-features, TOP, …?

- In Alutor, Chukchi, and Koryak, **movement** could reverse structural relations
- ♀ φ-features and TOP **introduce asymmetry**: relativised minimality/probing
- ✔ No language **only** allows agreement with T across an accessible R

A possible extension to differential, asymmetric object agreement

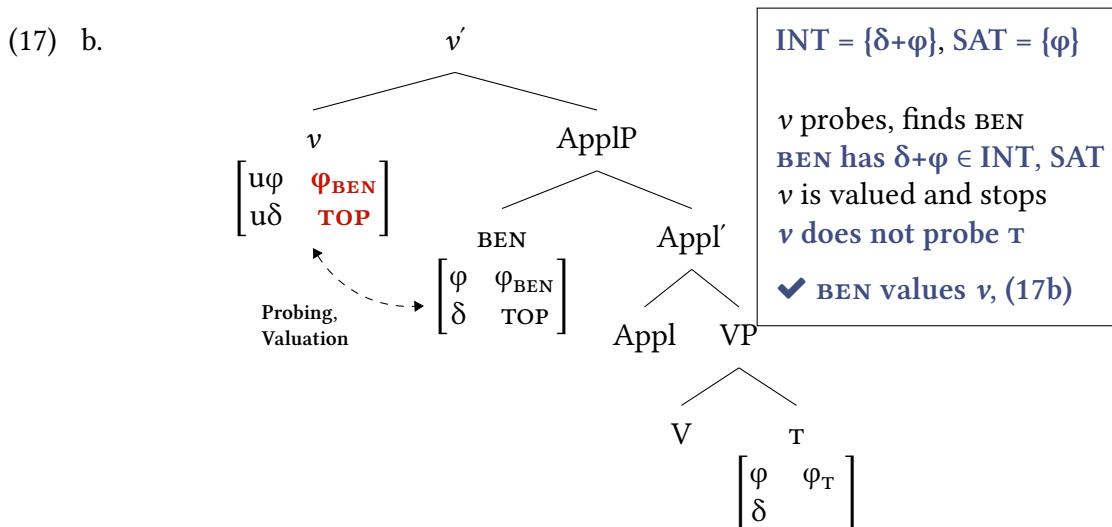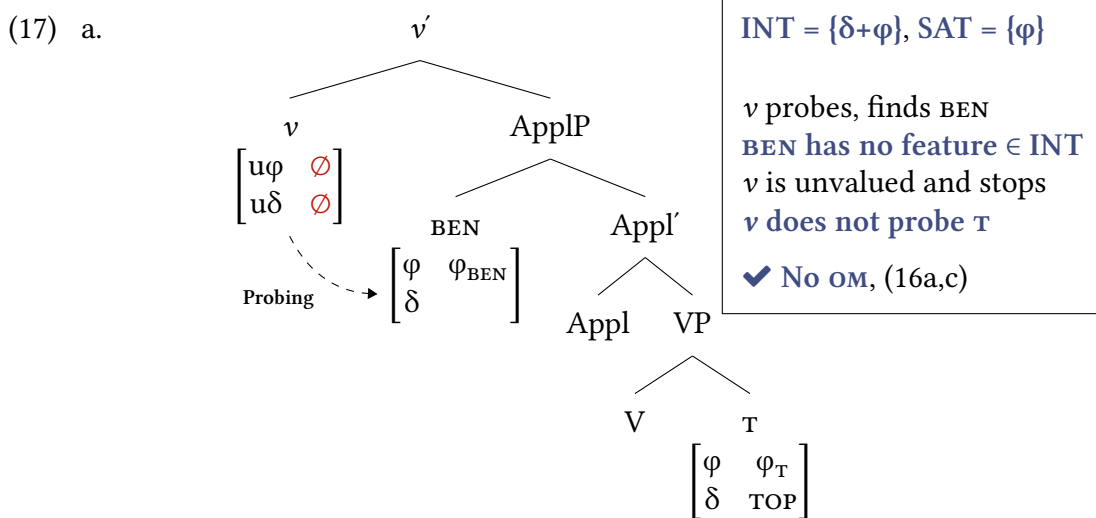Bresnan & Mchombo (1987) argue that OMs in Chichewa are sensitive to topicality

(16) a. *Alenje*   *a-ku-phík-íl-á*   [BEN ***anyaní***] [T ***zítúmbûwa***].   [Ch.]
2.hunters 2.SM-PRS-cook-APPL-FV   2.baboons   8.pancakes
'The hunters are cooking (for) the baboons some pancakes.'

   b. *Alenje*   *a-ku-**wá**-phík-íl-á*   [T ***zítúmbûwa***] ([BEN ***anyáni***]).
2.hunters 2.SM-PRS-2.OM-cook-APPL-FV   8.pancakes   2.baboons
'The hunters are cooking (for) them (the baboons) some pancakes.'

   c. **Alenje*   *a-ku-**zí**-phík-íl-á*   [BEN ***anyáni***] ([T ***zítúmbûwa***]).
2.hunters 2.SM-PRS-8.OM-cook-APPL-FV   2.baboons   8.pancakes
(Mchombo 2004: 80, 83)

♀ INT/SAT can account for both symmetric and asymmetric object agreement

(17) a.

INT = {δ+φ}, SAT = {φ}

v probes, finds BEN
BEN has no feature ∈ INT
v is unvalued and stops
v does not probe T

✔ No OM, (16a,c)

(17) b.

INT = {δ+φ}, SAT = {φ}

v probes, finds BEN
BEN has δ+φ ∈ INT, SAT
v is valued and stops
v does not probe T

✔ BEN values *v*, (17b)

5 Analogues in monotransitives

A gap in monotransitives

Moravcsik (1978), Bobaljik (2008) point out an analogous gap in monotransitives

- In ERG-ABS languages, not all ERG subjects can agree
- In NOM-ACC languages, the subject always agrees

	Accusative case	Ergative case
Accusative agreement	✔ (English, Finnish)	✔ (Shipibo, Nepali)
Ergative agreement	✘	✔ (Tsez, Hindi)

- Bobaljik (2008), Coon (2017), Coon & Parker (2019) have analyses of the gap
- **?** Are there apparent exceptions to the monotransitive generalisation?

Exceptions to Moravcsik/Bobaljik's generalisation: person

Verbs can agree with SBJ *or* OBJ, based on their person

(18) a. ***ni-wa:bam-a:-ina:n***   [Algonquin]
          1-see-3.OBJ-1PL
          '**We** see her.'

  b. ***ni-wa:bam-igw-ina:n***
          1-see-INV-1PL
          'She sees **us**.'   (Oxford 2019: 964)

  ✔ Inverse agreement, generally, can represent "apparent" exceptions in person

Exceptions to Moravcsik/Bobaljik's generalisation: IS

In Dzamba theme inversion, the verb agrees with a topical OBJ

(19) a. Agreement with A, SVO order   [Dzamba]
          [_A *Omwana*]   *a-tom-aki*   [_P *imukanda*].
              1.child   1.SM-send-PFV   5.letter
          'The child sent a letter.'

  b. Agreement with P, OVS order
          [_P *Imukanda*]   *mu-tom-aki*   [_A *omwana*].
              5.letter   5.SM-send-PFV   1.child
          'The letter, *the child* sent it.'   (Henderson 2011: 743)

  ⚠ But: theme inversion is not very productive?

  💡 Are Dinka and some Austronesian languages of this type (cf. van Urk 2015)?

6 Conclusions

Conclusions and outlook

- Case and agreement in ditransitives do not vary freely
- ✔ With secundative or neutral case, **secundative agreement is always possible**
- ✔ Locality, case, person, and information structure determine controllers
- ✔ Parallels between higher (T) and lower (*v*) agreement domains
- ✔ **Solid typological evidence** compatible with R c-commanding T

Acknowledgements

Abbreviations

1 = first person, 2 = second person, 3 = third person, A = agent-like argument of a canonical transitive verb, ABS = absolutive, ACC = accusative, APPL = applicative, AUX = auxiliary, BEN = benefactive, CAUS = causative, DAT = dative, DEF = definite, DO = direct object, DOC = double object construction, DOM = differential object marking, EP = epenthetic vowel, ERG = ergative, F = feminine, FV = final vowel, GEN = genitive, HOD = hodiernal past, IA = indirective agreement, IC = indirective case, INT = interaction features, INV = inverse, IPFV = imperfective, IS = information structure, M = masculine, NC = neutral case, NOM = nominative, OBJ = object, OBL = oblique, OM = object marker, P = patient-like argument of a canonical transitive verb, PDC = prepositional dative construction, PFV = perfective, PL = plural, POSS = possessive, PRS = present, PST = past, R = recipient-like argument of a ditransitive verb, REM = remote, S = single argument of a canonical intransitive verb, SA = secundative agreement, SAT = satisfaction features, SBJ = subject, SC = secundative case, SG = singular, SM = subject marker, T = theme- or patient-like argument of a ditransitive verb, TOP = topic, VB = verbaliser?, WCO = weak crossover.

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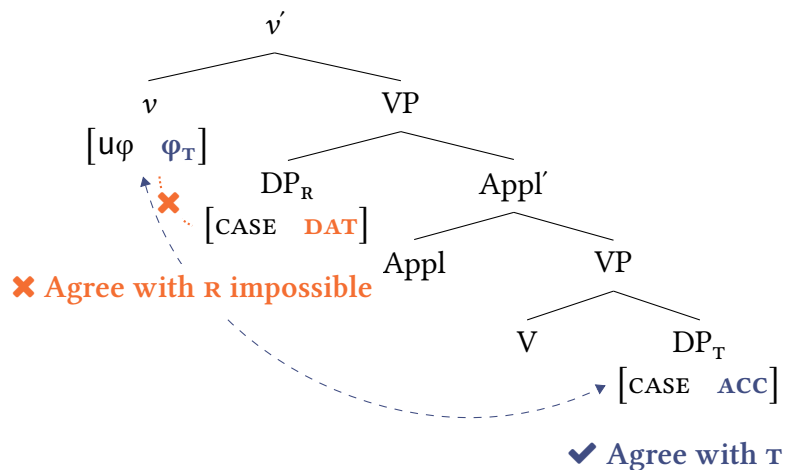
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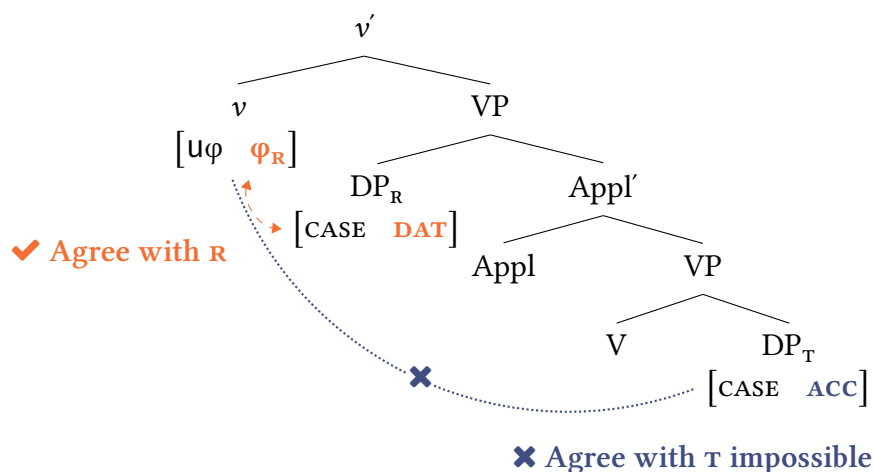
A Appendix

Modelling indirective case and indirective agreement

In ICIA languages, the verb can only agree with ACC/ABS T, not DAT R
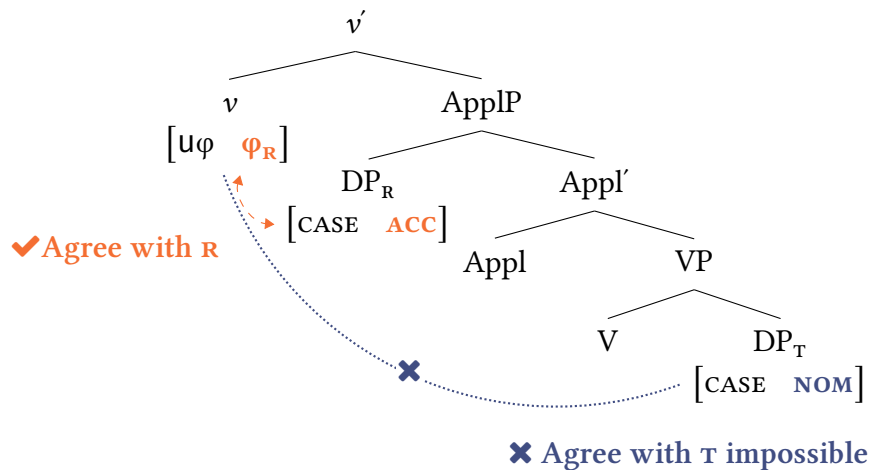

Modelling indirective case and secundative agreement

If DAT arguments can control agreement, the verb will agree with R rather than T

Modelling secundative case and secundative agreement

In SC, R's case is the same as P's: R can control agreement, but not T

v'

v $[u\varphi \quad \varphi_R]$

ApplP

DP_R $[\text{CASE} \quad \text{ACC}]$

Appl'

✔ Agree with R

Appl

VP

V

DP_T $[\text{CASE} \quad \text{NOM}]$

✖

✖ Agree with T impossible

Accessibility and the case hierarchy

Only certain (morphological) cases are accessible for agreement in each language

- Case "accessibility" (Bobaljik 2008), "discrimination" (Preminger 2014), "opacity" (Rezac 2008, Keine 2010), "VIVA" (Anand & Nevins 2006)
- Accessibility follows a hierarchy or sequence (Caha 2009, 2013, Harðarson 2016)
- Effects of the case hierarchy are also found in other domains (see e.g. Smith et al. 2019, Zompì 2019)

(20) **Cumulative case decomposition** (Caha 2009, 2013)
NOM/ABS = {A} ⊂ ACC = {A, B} ⊂ GEN = {A, B, C} ⊂ DAT = {A, B, C, D} ⊂ …

(21) **Blocking of agreement** (Bárány 2015: 230, 2017: 161)
If a given set κ of case features includes a feature [α] which blocks agreement, any superset of κ will block agreement as well. Sets not including [α] do not block agreement.

List of languages (genera; families)

Orange languages have some form of non-local agreement.

ICIA (10 languages/10 genera) Gorwaa (Southern Cushitic; Afro-Asiatic), Hungarian (Ugric; Uralic), Khwarshi (Avar-Andic-Tsezic; Nakh-Daghestanian), Mekens (Tupari; Tupian), Moksha (Mordvin; Uralic), Puinave (Puinave; Puinave), Tiriyó (Cariban; Cariban), Ughele (Oceanic; Austronesian), Xavánte (Ge-Kaingang; Macro-Ge), Yanomama (Yanomam; Yanomam)

ICSA (19 languages/16 genera) Alutor (Northern Chukotko-Kamchatkan; Chukotko-Kamchatkan), Amharic (Semitic; Afro-Asiatic), Arramba (Tonda; Yam), Bantawa (Mahaki-ranti; Sino-Tibetan), Burushaski (Burushaski; Burushaski), Chukchi (Northern Chukotko-Kamchatkan; Chukotko-Kamchatkan), Gidar (Biu-Mandara; Afro-Asiatic), Ika (Arhuacic; Chibchan), Itelmen (Southern Chukotko-Kamchatkan; Chukotko-Kamchatkan), Jingulu (Jin-

gulu; Mirndi), Kanuri (Western Saharan; Saharan), Komnzo (Morehead and Upper Maro Rivers; Yam), **Koryak** (Northern Chukotko-Kamchatkan; Chukotko-Kamchatkan), Kwomtari (Kwomtari; Kwomtari-Baibai), Mauwake (Madang; Trans-New Guinea), Menya (Angan; Trans-New Guinea), **Ngkolmpu** (Morehead and Upper Maro Rivers; Yam (Morehead-Maro)), Podoko (Chadic; Afro-Asiatic), Yauyos Quechua (Quechuan; Quechuan)

SCSA (16 languages/12 genera) Aguaruna (Jivaroan; Jivaroan), Awa Pit (Barbacoan; Barbacoan), Greenlandic (West) (Eskimo; Eskimo-Aleut), Jaqaru (Aymaran; Aymaran), Kham (Mahakiranti; Sino-Tibetan), Khanty (Eastern) (Ugric; Uralic), Khanty (Northern) (Ugric; Uralic), Kwaza (Kwaza; Kwaza), Mansi (Northern) (Ugric; Uralic), Nez Perce (Sahaptian; Sahaptian), Nlaka'pamux (Interior Salish; Salishan), Selkup (Samoyedic; Uralic), Squamish (Central Salish; Salishan), Tundra Nenets (Samoyedic; Uralic), Wari' (Chapacua-Wanham; Chapacua-Wanham), Yup'ik (Central) (Eskimo; Eskimo-Aleut)

NCSA (54 languages/45 genera) Alamblak (Sepik Hill; Sepik), Apurinã (Purus; Arawakan), Bagirmi (Bongo-Bagirmi; Central Sudanic), Barai (Koiarian; Trans-New Guinea), **Beja** (Beja; Afro-Asiatic), **Bembe** (Bantu; Niger-Congo), **Bininj Gun-Wok** (Gunwinygic; Gunwinyguan), Chayahuita (Balsapuerto) (Chayahuita; Cahuapanan), †Chimariko (Chimariko; Hokan?), Chintang (Mahakiranti; Sino-Tibetan), Cree (Plains) (Algonquian; Algic), Huichol (Corachol; Uto-Aztecan), Itonama (Itonama; Itonama), **Jaminjung** (Jaminjungan; Mirndi), Jumjum (Western Nilotic; Nilotic), Keres (Laguna/Western) (Keresan; Keresan), Ket (Yeniseian; Yeniseian), Korumu (Kesawai) (Madang; Trans-New Guinea), Kunama (Kunama; Kunama), Lango (Nilotic; Eastern Sudanic), Maba (Maban; Maban), Malakmalak (Northern Daly; Northern Daly), Mapudungun (Araucanian; Araucanian), Mawng (Iwaidjan; Iwaidjan), Miskito (Misumalpan; Misumalpan), **Mooré** (Gur; Niger-Congo), Mosetén (Mosetenan; Mosetenan), Motuna (East Bouganville; East Bouganville), Movima (Movima; Movima), Murle (Surmic; Eastern Sudanic), Nabak (Finisterre-Huon; Trans-New Guinea), Nahuatl (Huasteca) (Aztecan; Uto-Aztecan), Nahuatl (Orizaba) (Aztecan; Uto-Aztecan), Nandi (Nilotic; Eastern Sudanic), Nasioi (East Bouganville; East Bouganville), Oaxaca Chontal (Lowland) (Tequistlatecan; Tequistlatecan) Ojibwa (Central) (Algonquian; Algic), Palauan (Palauan; Austronesian), Pima Bajo (Tepiman; Uto-Aztecan), Pipil (Nawat) (Aztecan; Uto-Aztecan), **Purépecha** (Tarascan; Tarascan), Sentani (Sentani; Sentani), Tauya (Madang; Trans-New Guinea), Teop (Oceanic; Austronesian), Turkana (Nilotic; Eastern Sudanic), Tzotzil (Mayan; Mayan), Wambaya (Wambayan; Mirndi), Wampis (Jivaroan; Jivaroan), Waray (Warayic; Gunwinyguan), Wichi (Mataguayo; Matacoan), Yakkha (Mahakiranti; Sino-Tibetan), Yukulta (Tangkic; Tangkic), Yurok (Yurok; Algic), **Zulu** (Bantu; Niger-Congo)

SCIA (0), **NCIA (0)**

NB: the total number of genera in the sample is smaller than summing genera per alignment type because languages from the same genus can be in different categories (e.g. Ugric in ICIA and SCSA).