

The Unity of Anti-Agreement and Wh-Agreement*

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1 Introduction

- In many languages, clausal morphology is sensitive to \bar{A} -extraction. One variety of this phenomenon is sensitivity of φ -agreement targets to \bar{A} -movement of their agreement controller.¹

- (1) a. *pro_i* *pro_k* *y_k-p-s_i-qə-d* [Abaza]
 1SG 3SG.I 3SG.I-PFV-1SG-break-DYN
 ‘I broke it’ (O’Herin 2002:16)
- b. *s-k^ltap* *dəzda* *y-na-z-ax^w* [Abaza]
 1SG-book who 3SG.I-PFV-ERG.WH-take
 ‘Who took my book?’ (O’Herin 2002:252)
- (2) a. *t-zra* *tamghart* Mohand [Tarifit Berber]
 3SG.F-see.PFV woman Mohand
 ‘The woman saw Mohand’ (Ouhalla 1993:479)
- b. *man tamghart_i* *ay* *yzrin* *—_i* Mohand [Tarifit Berber]
 which woman C see.PFV.PART Mohand
 ‘Which woman saw Mohand?’ (Ouhalla 1993:479)
- (3) a. *Quante ragazze gli ha* *parlato con te?* [Fiorentino]
 how.many girl.PL 3SG.M have.3SG spoken with you
 ‘How many girls (it) has spoken to you?’ (Brandi and Cordin 1989:124)
- b. **Quante ragazze le hanno* *parlato con te?* [Fiorentino]
 how.many girl.PL 3PL.F have.3PL spoken with you
 ‘How many girls (it) has spoken to you?’ (Brandi and Cordin 1989:124)

- In Abaza, (1), verbs exhibit a specialized agreement morpheme to index extracted arguments.
 - ▷ This has been referred to as **wh-agreement** in the literature (Chung and Georgopoulos 1988)
- In Berber, (2), and Fiorentino, (3), extracted subjects cannot control full φ -agreement on the verb.
 - ▷ This has been referred to as **anti-agreement** in the literature (Ouhalla 1993).

*I am grateful to Peter Jenks, Line Mikkelsen, Amy Rose Deal, David Pesetsky, Norvin Richards, Jessica Coon, Michelle Yuan, Kenyon Branam, Mitcho Erlewine and Jason Ostrove for feedback about aspects of the research presented here. All mistakes are of course my own. Feedback and comments can be sent to nbaier@berkeley.edu. For the sake of clarity and consistency, I have occasionally adjusted glosses and translations in examples cited from other sources, following the Leipzig Glossing Rules wherever possible. Abbreviations used include: 1 = first person, 2 = second person, 3 = third person, AAE = anti-agreement, ABS = absolutive, CL = class, DEF = definite, DEM = demonstrative, DYN = dynamic, ERG = ergative, F = feminine, FV = final vowel, I = inanimate, IND = indicative, M = masculine, PART = participle, PFV = perfective, PL = plural, PRS = present, PST = past, REL = relative, SBJ = subject, SG = singular, WH = wh-related morpheme. Plain numerals in Bantu examples indicate noun class.

¹I use theory-neutral terminology from Corbett (2006) to describe participants in an agreement relationship. The agreement *controller* is the element that determines the agreement. The agreement *target* is the element whose form is determined by agreement. In examples and glosses, **agreement targets** are bolded and underlined, while **agreement controllers** are bolded and underlined with a wavy line.

- Though they are both triggered by the extraction of an agreement controller, these effects have previously been treated as distinct:

(4) Wh-agreement

- ‘Normal’ agreement process
- The special exponent in (1b) is the form a probe takes when it has agreed with an operator (Chung 1994, 1998; Chung and Georgopoulos 1988; Georgopoulos 1991a; Watanabe 1996, a.o.)

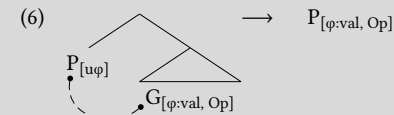
(5) Anti-agreement

- Disruption of agreement in the syntax
- Results from a restriction on \bar{A} -movement of certain arguments (Diercks 2010; Henderson 2013; Ouhalla 1993; Ouali 2008, Schneider-Zioga 2007, a.o.)

- I argue that this traditional wisdom is incorrect, and that (4) and (5) are two instantiations of the same phenomenon.

- The core empirical proposal is that both effects are the result of φ -probe agreeing with an operator.

- ▷ When a φ -probe agrees with a goal bearing an Op(erator)-feature, I propose that the resulting feature bundle on the probe includes both φ - and Op-features.



- I argue that when Op-features and φ -features cooccur in the same feature bundle, partial or total *impoverishment* of φ -features may take place.

- ▷ In a language like Abaza, impoverishment may allow for the insertion of a morpheme exponing the remaining Op-feature.
- ▷ In languages like Fiorentino and Tarifit, impoverishment leads to an apparent lack of φ -agreement.

- I show further that possible φ -feature impoverishment rules are constrained by the hierarchy in (7).

(7) PERSON \gg GENDER \gg NUMBER

- ▷ Person features always are deleted before gender features, which in turn are always deleted before number features.

• Roadmap:

- §2 Wh-agreement in Abaza
- §3 Constraining impoverishment
- §4 Extending the account to anti-agreement
- §5 Conclusions

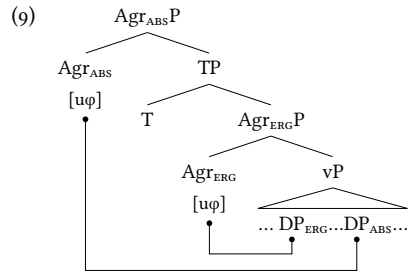
2 Wh-agreement in Abaza

- Verbs in Abaza (ISO: abq, Northwest Caucasian) display an absolutive-ergative agreement pattern. Agreement is for person, gender, and number.

- (8) a. $\int^{w}ara_i \int^{w}_i\text{-}\int^{w}a\text{-}y\text{-}d$
 YOU.PL 2PL-RUN-PRS-DYN
 'You(PL) run.' (O'Herin 2002:64)
- b. $pro_i pro_k \int^{w}a_k\text{-}I_i\text{-}ba\text{-}t'$
 3SG.F 2PL 2PL-3SG.F-see-IND.DYN
 'She saw you(PL)' (O'Herin 2002:66)
- c. $pro_i pro_k y_k\text{-}p\text{-}s_i\text{-}qa\text{-}d$
 1SG 3SG.I 3SG.I-PFV-1SG-break-DYN
 'I broke it' (O'Herin 2002:16)

- ▷ Intransitive subjects and objects control one agreement paradigm; transitive subjects control a different paradigm.
- ▷ Absolutive is distinguished from ergative by position in the verb, (8b-c), and by the form of 3rd person exponents².

- Following O'Herin (2002), I assume that agreement prefixes spell out ϕ -features hosted on dedicated Agr-projections. For verbal agreement, there are two AgrPs in the clausal spine flanking TP:³



- ▷ Each Agr head hosts a ϕ -probe⁴.
- ▷ The lower ϕ -probe agrees with the ergative argument.
- ▷ The higher ϕ -probe agrees with the absolutive argument.

- Each paradigm also includes a morpheme that indexes extracted controllers: *y-* for absolutives, (10); *z-* for ergatives, (11).

- (10) **Absolutive wh-agreement: y-**
- a. a-č^wwal $dzač^{w}əya$ $yə\text{-}ta\text{-}wa$
 DEF-sack what ABS.WH-in-PRS
 'What is in the sack?' (O'Herin 2002:252)
- b. Izmir *pro* $dzač^{w}əya$ $yə\text{-}r\text{-}ba\text{-}k^{w}a\text{-}z$
 Izmir 3PL who ABS.WH-3PL-see-PL-PST
 'Who did they see in Izmir?' (O'Herin 2002:252)

²The ergative agreement prefixes are also used to index possessors and the object of post-positions. See O'Herin (2002) for discussion.

³Alternatively, the ϕ -probes could be hosted by other heads in the clausal spine, such as T and v. Nothing crucial rests on the identity of the specific heads that host these probes. What is crucial is that there are two separate heads in the clausal spine which host agreement. I have drawn the structure in (9) as head initial for ease of exposition.

⁴O'Herin (2002) assumes that these heads also assign Case to the argument they agree with. This is not a crucial part of the theory developed here.

- (11) **Ergative wh-agreement: z-**
- a. $dəzda$ s-axč^la $zə\text{-}γəč^j$
 who 1SG-money ERG.WH-steal
 'Who stole my money?' (O'Herin 2002:252)
- b. a-fač^ləγ^w a-finj^lan a-pnə $dəzda$ y-na-z-ax^w
 DEF-sugar DEF-cup 3SG.I-at who 3SG.I-PFV-ERG.WH-take
 'Who took the sugar out of the cup?' (O'Herin 2002:252)

- I argue that *wh*-agreement in Abaza is the result of an Agr head agreeing with a DP bearing an Op(erator)-feature.

- ▷ I assume that \bar{A} -movement is driven by heads which probe for an Op(erator)-feature. Thus, all XPs undergoing \bar{A} -movement will have an Op-feature.
- ▷ This analysis of *wh*-agreement is supported by the fact that the relevant morphemes occur in the same morphological slots as ϕ -agreement.

	1	2F	2M	3F	3M	3I	Op
SG	s-	b-	w-	l-	y-	a-	z-
PL	h-	ɸ ^w -	ɸ ^v -	r-	r-	r-	z-

Table 1: Abaza Ergative Agreement

	1	2F	2M	3F	3M	3I	Op
SG	s-	b-	w-	d-	d-	y-	y-
PL	h-	ɸ ^w -	ɸ ^v -	y-	y-	y-	y-

Table 2: Abaza Absolutive Agreement

- An important observation regarding Abaza *wh*-agreement is the following:
 - ▷ Ergative *wh*-agreement *z-* does not occur elsewhere in the paradigm.
 - ▷ Absolutive *wh*-agreement *y-* **does** occur elsewhere in the paradigm.
- In fact, examining the distribution of *y-* in tables 1-2, we come to the following conclusion:

(12) **Conclusion 1**
 The prefix *y-* is a morphological default.

 - ▷ Absolutive 'wh-agreement' doesn't spell out any operator features at all.
 - ▷ In fact, it is better described as 'anti-agreement'.
- On the other hand, ergative *wh*-agreement can be said to spell out an operator feature.
 - ▷ The prefix *z-* only occurs when the ergative agreement probe has targeted an operator.

- Another important observation regarding Abaza *wh*-agreement is that it is highly syncretic.
 - ▷ *Wh*-agreement only expresses that a given Agr head has agreed with an operator.
 - ▷ No other ϕ -feature contrasts are expressed.

- Assuming syncretism arises from underspecification, we come to the following conclusion:

- (13) **Conclusion 2**
 The prefixes *z-* and *y-* are highly underspecified. They spell out a very small number of features.

- Taking (13) seriously, I assume that there are basically three types of agreement vocabulary items (VIs) in Abaza, shown in table 3:

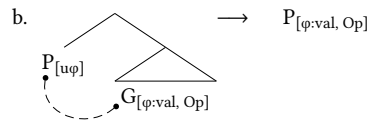
Features	Vocabulary item
Full agreement [PERS:VAL, NUM:VAL, GEN:VAL, Agr _(ERG/ABS)]	↔ /s-/, /b-/, /ʃ ^w -/, etc.
Wh-agreement [Op, Agr _{ERG}]	↔ /z-/
Elsewhere [Agr]	↔ /y-/

Table 3: Abaza Agreement VIs

- ▷ Full agreement VIs spell out some combination of person, gender, and number features.
 - ▷ The ergative *wh*-agreement prefix *z*- spells out an operator feature.
 - ▷ The prefix *y*- spells out an Agr head for which no other VI is appropriate.
- I argue that operator agreement is an option in the first place because of the mechanism sketched in (14):

(14) **Piggybacking Operator Agreement**

- When a ϕ -probe finds a DP with both Op-features and ϕ -features, Op-features are copied along with ϕ -features to the probe.⁵



- ▷ Given (14), an Agr head that enters into an Agree relation with a *wh*-word or relative operator will always have (at least) the features in (15).⁶

(15) **Form of Agr after Agree:**

[Agr, PERS:VAL, NUM:VAL, GEN:VAL, Op]

- However, if (15) is the form of an Agr bundle at spell-out, we run into a problem:
 - ▷ If vocabulary insertion is constrained by the Subset Principle (Halle and Marantz 1993), *z*- and *y*- should never be inserted
- (16) **Subset Principle**
A VI is inserted into a terminal node N iff it realizes a subset of the features of N. If multiple VIs meet this condition, the VI which realizes the most features of N is inserted.
 - ▷ Full agreement VIs will always realize more features of the feature bundle in (15) than *z*- or *y*-. Therefore, they should always be inserted.

⁵This idea could be formally implemented in a number of ways. See Appendix A for an account following ?, who argues that probes have separate satisfaction and interaction requirements. Deal's system allows for probes to be valued by supersets of the features that they search for.

⁶I assume that category features are part of the feature bundle of a head (Arregi and Nevins 2012).

- I argue that this pattern can be derived by appealing to the post-syntactic operation of **impoverishment** (Bonet (1991); Noyer (1992, 1997); Halle and Marantz (1993))

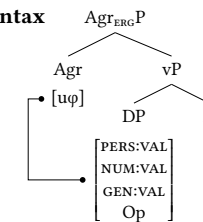
- ▷ Specifically, I argue that the impoverishment rule in (17) applies prior to vocabulary insertion.

(17) **Abaza ϕ -feature impoverishment**

a. [PERSON, NUMBER, GENDER] → \emptyset / [Agr, __, Op]

- ▷ This rule deletes all ϕ -features on an Agr head when there is an Op-feature in the same feature bundle (such as the one in 15, above).
- ▷ In doing so, it blocks insertion of an otherwise appropriate, more highly specified VI.

- Consider how this rule derives *wh*-agreement when an ergative Agr head has Agreed with a 3rd person feminine singular operator:

(18) a. **Agree in the Syntax**b. **In the morphology**

- Feature bundle on Agr_{ERG}: [Agr_{ERG}, PERSON:3, NUM:SG, GEN:F, Op]
- Impoverishment: [Agr_{ERG}, PERSON:3, NUM:SG, GEN:F, Op] → [Agr_{ERG}, Op]
- Vocabulary insertion: [Agr_{ERG}, Op] ↔ /z-/

- This analysis centers the explanation for *wh*-agreement squarely in the morphology.

- ▷ The same fundamental sequence of operations underlies both *wh*-agreement and ϕ -agreement.
 - Agree in the syntax
 - Vocabulary insertion in the morphology
- ▷ Copying of an Op-feature to an Agr head results in a feature bundle subject to impoverishment.
- ▷ Impoverishment captures captures the underspecification of the morphemes that surface in *wh*-agreement.

3 **Patterns of Impoverishment**

- In the previous section, we saw that *wh*-agreement in Abaza results from an impoverishment rule that deletes all ϕ -features located in a feature bundle with an operator feature.

(19) **Total ϕ -impoverishment triggered by Op**

[PERSON, GENDER, NUMBER] → \emptyset / [__, Op]

- Total φ -impoverishment is not the only possibility; **partial φ -impoverishment** is also possible.
- In a cross-linguistic survey of 37 languages exhibiting φ -agreement target sensitivity to \bar{A} -extraction, the possible patterns of impoverishment were found to be extremely limited (Baier 2014, 2016). The results of this survey are summarized in table 4.⁷

	Normal Agreement			Impoverished Agreement		
	Person	Gender	Number	Person	Gender	Number
Type 1	✓	(✓)	✓			
Type 2	✓	(✓)	✓			✓
Type 3	✓	✓	✓		✓	✓

Table 4: Feature Impoverishment Patterns

- ▷ In type 1, all normal agreement features are neutralized.
- ▷ In type 2, all normal agreement features other than number are neutralized.
- ▷ In type 3, only person agreement is neutralized.

- This suggests that there is a limited set of possible φ -feature impoverishment rules triggered by the presence of Op.

(20) Impoverishment rules (that we've seen)

- [PERSON] $\rightarrow \emptyset / [-, \text{Op}]$
- [PERSON, GENDER] $\rightarrow \emptyset / [-, \text{Op}]$
- [PERSON, GENDER, NUMBER] $\rightarrow \emptyset / [-, \text{Op}]$

- Descriptively, then, the set of possible φ -impoverishment rules of the schematic form in (21) is constrained by the implicational hierarchy in (22):

(21) Schematic impoverishment rule

$[\subseteq\varphi] \rightarrow \emptyset / [-, \text{Op}]$

(22) Feature Impoverishment Hierarchy

PERSON \gg GENDER \gg NUMBER

- The Feature Impoverishment Hierarchy is an important result of this survey.
 - ▷ It has been noticed before that some anti-agreement languages suppress person features while leaving other features intact (Henderson 2007, 2013; Ouhalla 2005).
 - ▷ However, the relationship between person, gender and number, however, has not previously been noticed.
 - ▷ This hierarchy is an important explanandum for any general theory of anti-agreement.

⁷See Appendix C for a more detailed overview of the results of this survey.

4 Extending the account to anti-agreement

- The core claim of this talk is that the difference between 'wh-agreement' and 'anti-agreement' is illusory.
 - Both are instantiations of φ -feature impoverishment in the context of Op-features.
- 'Anti-agreement' occurs when there is no morpheme specified to spell out an operator feature. A default or \emptyset form turns up instead.
- In fact, the type of impoverishment rule a language uses is completely independent of whether or not that language has VIs that can spell-out an operator feature. That is, all four of the options in table 5 are attested:

	Op-exponence	No Op-exponence
Total impoverishment	Abaza (§2)	Tarifit Berber (§4.1)
Partial impoverishment	Abo (§4.4)	Lubukusu (§4.3)

Table 5: Possible languages

- In this section, I discuss patterns of total and partial impoverishment in 'anti-agreement' languages.
- We'll see that these data further reinforce the conclusion that 'wh-agreement' and 'anti-agreement' are fundamentally the same phenomenon.

4.1 Tarifit Berber: total anti-agreement

- Verbs in Tarifit Berber (ISO: rif) agree with their subject in person, gender, and number, as shown in (23):

(23) t-zra tamghart Mohand
 3SG.F-see.PFV woman Mohand
 'The woman saw Mohand.' (Ouhalla 1993)

- \bar{A} -extraction of a subject in Tarifit Berber requires the verb to be in a non-agreeing form, the participle, (24a). Full agreement is impossible, (24b):

(24) a. man tamghart_i ay yzrin _{-i} Mohand (Ouhalla 1993)
 which woman C see-PFV.PART Mohand
 'Which woman saw Mohand?'

b. *man tamghart_i ay t-zra _{-i} Mohand (Ouhalla 1993)
 which woman C 3SG.F-see.PFV Mohand

- This pattern is also found in subject relative clauses and subject focus constructions, (25):

(25) a. tamghart_i nni yzrin _{-i} Mohand [RC]
 woman C see-PFV.PART Mohand
 'the woman who saw Mohand' (Ouhalla 1993)

b. tamghart-a_i ay yzrin _{-i} Mohand [Focus]
 woman-DEM C see-PFV.PART Mohand
 'It's this woman that saw Mohand.' (Ouhalla 1993)

- That person features are suppressed in subject extraction contexts is shown in (26):

- (26) shək_i ay iuggurn _{-i} (Ouhalla 2005:675)
 you.SG.M C leave-PART
 'You are the one who left.'

- Non-subject \bar{A} -extraction does not trigger suppression of subject agreement, as seen in (27):

- (27) ma_i ag iswa Mohand _{-i} (Ouali 2011)
 what C drink.PFV.3SG.M Mohand
 'What did Mohand drink?'

- Like *wh*-agreement in Abaza, this effect is specifically tied to extraction of an agreement controller, in this case the subject.
- The Tarifit pattern involves a complete leveling of φ -feature contrasts when the subject has been \bar{A} -extracted, just like in Abaza.

	SG	PL
1	V-y	n-V
2M	t-V-m	t-V-d
2F	t-V-nt	t-V-d
3M	t-V	V-n
3F	n-V	V-nt

Table 6: Berber φ -agreement

	SG	PL
1	V-in	V-in
2M	V-in	V-in
2F	V-in	V-in
3M	V-in	V-in
3F	V-in	V-in

Table 7: Berber anti-agreement

- I argue that the Berber pattern can be derived by the same logic employed above to derive Abaza *wh*-agreement.
 - ▷ I propose that the Tarifit 'participle' suffix *-in* is the spell out of an Agr head lacking φ -features, much like the *y*-morpheme in Abaza.

- (28) **Tarifit participle suffix**
 [Agr] \leftrightarrow /-in/

- I propose that the same impoverishment rule that is active in Abaza is active in Tarifit.

- (29) **Tarifit Berber φ -feature impoverishment**
 a. [PERSON, NUMBER, GENDER] \rightarrow \emptyset / [-, Op, Agr]

- Abaza 'wh-agreement' and Tarifit 'anti-agreement' are thus results of the **exact same process**:

1. A φ -probe Agrees with a DP bearing both φ - and Op-features.
2. Both sets of features are copied to the probe.
3. In the morphology, the Op-feature triggers an impoverishment rule which deletes all φ -features on the probe.
4. An underspecified morpheme is inserted.

- Analyses of anti-agreement that treat it as a distinct phenomenon from *wh*-agreement miss this similarity.

4.2 Tashlhit Berber: [person, gender] deleted

- Another variety of Berber, Tashlhit, displays a similar pattern to that of Tarifit, but with a slight twist: **number agreement is retained under subject extraction**:

- (30) irgazn_i nna ffegh-n-*(in) _{-i}
 man.PL C_{REL} left-PFV.PART-PL
 'the men who left.' (Tashlhit; Ouhalla 2005 citing Chafiq 1990:123)

- Example (30) is a relative clause with a masculine plural head noun.

- ▷ Like Tarifit, the verb appears with the 'participle' suffix.
- ▷ Unlike Tarifit, the verb in (30) must obligatorily bear the plural suffix *-in*.

- I propose that this is derived by a different φ -impoverishment rule for Tashlhit than the one that is active in Tarifit and Abaza.

- (31) **Tashlhit Berber φ -feature impoverishment**
 a. [PERSON, GENDER] \rightarrow \emptyset / [-, Op, Agr]

- ▷ The rule in (31) deletes PERSON and GENDER from an agreement feature bundle that also contains an Op-feature.
- ▷ Because NUMBER features are left intact, they are still spelled out.

- Theories of anti-agreement that link it to a lack of φ -agreement *in the syntax* must posit some additional mechanism to account for (30).

- ▷ For example, an additional NUMBER-probe that is not affected by \bar{A} -extraction.
- ▷ This leaves open the question as to why the PERSON-probe and not the NUMBER-probe is affected by extraction.

- The impoverishment account derives this pattern in a more straight forward way.⁸

4.3 Lubukusu: only [person] deleted

- Lubukusu (Bantu; ISO: bxx), verbs take an agreement prefix that indexes the person, gender, and number of their subject.

- (32) a. pro n-a-bona o-mu-seecha (Diercks 2010:113)
 1SG 1SG-PST-see CL1-CL1-man
 'I saw the man who stole the bicycle.'
- b. o-mwa-ana a-a-tim-a (Diercks 2010)
 CL1-CL1-child CL1.SBJ-PST-run-FV
 'The child ran.'
- c. si-si-indu sy-a-kwa
 CL7-CL7-thing CL7.SBJ-PST-fall
 'The thing fell.'

⁸There is of course nothing in my account of anti-agreement to rule out such a configuration. In fact, an interesting prediction of my system is that both partial impoverishment in the morphology and multiple agreement in the syntax can give rise to partial anti-agreement.

- ▷ Following Carstens (1991, 2010), I assume that gender and number features are spelled out as portman-teaux morphemes, i.e. **noun classes**.

	SING	PLUR	
PERS:1, GEN:A	n-	khu-	1SG/PL
PERS:2, GEN:A	o-	mu-	2SG/PL
PERS:3, GEN:A	a-	ba-	3SG/PL & CL1/2
PERS:3, GEN:B	ku-	ki-	CL3/4
	
PERS:3, GEN:D	si-	bi-	CL7/8

Table 8: Lubukusu ϕ -agreement (partial list)

- \bar{A} -extraction of a class 1 subject requires replacement of the normal subject marker *a-* with the morpheme *o-* (here realized as [w]):⁹

(33) **naanu** o-w-a-tim-a (Diercks 2010)

CLIwho CLI-CL1AAE-PST-run-FV
'Who ran?'

- Henderson (2009, 2013) and Diercks (2009, 2010) have argued that anti-agreement in Bantu suppresses the feature PERSON, while leaving other ϕ -features, GENDER and NUMBER, intact.¹⁰

(34) **Lubukusu: Person distinctions leveled**

a. **Nise** o-w-onak-e kumulyango kuno (Diercks 2010:135)
1SG CLI-CL1AAE-PST-damage-PST CL3-CL3-door CL3.DEM
It is I who damaged the door'

b. **Nifwe** ba-b-onak-e ku-mu-lyango kuno (Diercks 2010:133)
1PL CL2-CL2.SBJ-damage-PST CL3-CL3-door CL.DEM
It is us who damaged the door' (Diercks 2010:133)

(35) **Lubukusu: Cl7 subjects don't change** (Diercks 2010)

a. **si-si-indu** si-sy-a-kwa
CL7-CL7-thing CL7.SBJ-PST-fall
'the thing which fell'

- Compare the baseline Lubukusu agreement paradigm in table 8 to the corresponding forms that occur with \bar{A} -extracted subjects:

	SING	PLUR	
PERS:1, GEN:A	o-	ba-	1SG/PL
PERS:2, GEN:A	o-	ba-	2SG/PL
PERS:3, GEN:A	o-	ba-	3SG/PL & CL1/2
PERS:3, GEN:D	si-	bi-	CL7/8

Table 9: ϕ -agreement under subject extraction (partial list)

⁹Subject relativization in Lubukusu involves an additional agreeing prefix to the verb. Diercks (2010) labels this prefix 'C-agreement', arguing that it is an agreeing complementizer. I ignore this prefix for purposes of this talk.

¹⁰The facts described in this section for Lubukusu hold more generally across Bantu languages. See Henderson (2013) and Diercks (2010) for discussion.

- ▷ The 3PL/Class 2 agreement prefix *ba-* replaces the baseline 1PL/2PL agreement prefixes.
- ▷ The agreement prefix *o-* replaces the baseline 1SG/Class 1 agreement prefixes.

- My analysis of the Lubukusu pattern builds off that of Diercks (2010). I adopt his analysis of Lubukusu agreement VIs:

	Features	Vocabulary item
Fully Specified	[PERS:1, GEN:A, NUM:SG, Agr]	↔ /n-/
	[PERS:1, GEN:A, NUM:PL, Agr]	↔ /khu-/
	[PERS:3, GEN:A, NUM:SG, Agr]	↔ /a-/
	[PERSON:2, GEN:A, NUM:PL, Agr]	↔ /mu-/
Underspecified	[GEN:A, NUM:SG, Agr]	↔ /o-/
	[GEN:A, NUM:PL, Agr]	↔ /ba-/
	[GEN:D, NUM:SG, Agr]	↔ /si-/

Table 10: Lubukusu Agreement VIs

- We again have a pattern of syncretism in Lubukusu.
 - ▷ The VIs *o-* and *ba-* are underspecified for PERSON, but specified for GENDER and NUMBER.
 - ▷ Under subject extractions, these are the morphemes which generalize.

- I propose that impoverishment is again at play in Lubukusu. The necessary rule is given in (36):

(36) **Lubukusu ϕ -feature impoverishment**

a. [PERSON] $\rightarrow \emptyset$ / [Agr, $_$, Op]

- When this rule applies, no prefix that realizes the feature PERSON] will be able to be inserted.

- ▷ If the subject is of abstract gender A, only *o-* or *ba-* will be inserted.

(37) *o-* \rightarrow [GEN:A, NUM:SG, Agr]
ba- \rightarrow [GEN:A, NUM:PL, Agr]

- ▷ If the subject is of another abstract gender, the regular agreement prefix will be inserted, as these VIs are always underspecified for PERSON.

(38) *si-* \rightarrow [GEN:D, NUM:SG, Agr]

- So, **the exact same process** leads to the insertion of underspecified agreement morphology in Lubukusu, Berber, and Abaza.

- The differences between these languages lies squarely in the morphology:

- ▷ Languages can differ in which features are impoverished in the context of an Op-feature.
- ▷ Languages can differ in the vocabulary items available in such contexts.

4.4 Abo: [person] deletion and Op-exponence

- Abo (ISO: abb) is a Bantu language spoken in southwestern Cameroon. Verbs agree with their subject for class or person and number if the subject is a speech act participant.

(39) a. m-ǎn à jè kó
 CL1-child CL1.SBJ eat.PST 9.chicken
 ‘The child ate chicken.’ (Burns 2013:132)

b. pro mè bák í kí-sùkùlù
 1SG 1SG.SBJ be.PST LOC CL7-school
 ‘I was at school.’ (Burns 2011:33)

- Subject \bar{A} -extraction triggers a replacement pattern similar to Lubukusu.

(40) a. m-ǎn, (nù là) -i nú jé kó
 CL1-child CL1.REL C AAE eat.PST 9.chicken
 ‘The child who ate chicken.’ (Burns 2013:133)

b. mé nù là -i nú kó
 1SG CL1.REL C AAE fall.PST
 ‘I, who fell.’ (Burns 2011:15)

c. ǎs ǎà là -i ǎá kó
 1SG CL2.REL C CL2.SBJ fall.PST
 ‘We, who fell.’ (Burns 2011:15)

- The Abo pattern is given in tables 11 and 12.

	SING	PLUR	
PERS:1, GEN:A	mé	sá	1SG/PL
PERS:2, GEN:A	ǎè	mu	2SG/PL
PERS:3, GEN:A	á	ǎá	3SG/PL & CL1/2

Table 11: Abo φ -agreement (partial list)

	SING	PLUR	
PERS:1, GEN:A	nú	ǎá	1SG/PL
PERS:2, GEN:A	nú	ǎá	2SG/PL
PERS:3, GEN:A	nú	ǎá	3SG/PL & CL1/2

Table 12: abo φ -agreement with \bar{A} -subject

- Agreement for 1PL/2PL is leveled to 3PL/CL2 agreement
- Agreement for 1SG/2SG/CL1 is leveled, but a new, unique marker *nú* appears:

- So, the Abo pattern is the same as the Lubukusu pattern, but with the twist.

- I propose that Abo has the same impoverishment rule as Lubukusu

(41) Abo φ -feature impoverishment

a. [PERSON] \rightarrow \emptyset / [Agr, \rightarrow , Op]

- In addition, in Abo, the operator feature is spelled out with singular gender A subjects. Specifically, I propose the following VI for *nú*:

(42) Abo *nú*

[Agr, GEN:A, NUM:SG, Op] \leftrightarrow /nú/

- The VI in (42) will always be realized in contexts where a singular subject of gender A has undergone \bar{A} -extraction

- The difference between Lubukusu and Abo supports the conclusion that impoverishment is independent of morphological operator agreement.

- The same φ -impoverishment is active in both Lubukusu and Abo
- Only in Abo is the operator feature that triggers impoverishment spelled out.

5 Conclusion

- The take away message of this talk is that the apparent difference between ‘wh-agreement’ and ‘anti-agreement’ is **illusory**.

- Both are derived via **φ -feature impoverishment** in the morphology.
- Impoverishment is triggered when φ -feature and Op-features occur in the same feature bundle.

- We have seen that operator feature exponence and φ -impoverishment are indeed independent phenomena:

	Op-exponence	No Op-exponence
Total impoverishment	Abaza	Tarifit
Partial impoverishment	Abo	Lubukusu

Table 13: Possible languages

- Furthermore, both Op-exponing and non-Op-exponing effects can occur in the same language.

- Abaza *z-* spells out an operator feature.
- Abaza *y-* does not; instead, it is a default morpheme.
- Both have previously been thought to be morphological operator agreement (cf. O’Herin 2002).

- Impoverishment can be **total** or **partial** and that the set of possible φ -impoverishment rules is constrained by an implication hierarchy.

(43) Feature Impoverishment Hierarchy

PERSON \gg GENDER \gg NUMBER

- We have seen that all the impoverishment rules allowed by this hierarchy are attested cross-linguistically.

(44) Possible impoverishment patterns

a. [PERSON] \gg GENDER \gg NUMBER [Abo, Lubukusu]

b. [PERSON \gg GENDER] \gg NUMBER [Tashlhit Berber]

c. [PERSON \gg GENDER \gg NUMBER] [Tarifit Berber, Abaza]

- An open question is whether the Feature Impoverishment Hierarchy in (43) is a primitive or should be derived from other independently motivated principles.

- ▷ Many authors have argued that the set of φ -features is internally organized (Bejar 2000; Béjar and Rezac 2009; Campbell 2012; Harley and Ritter 2002; Preminger 2014).
- ▷ These authors suggest that φ -features are geometrically structured. This opens up the following possibility

(45) The set of possible φ -feature impoverishment rules is constrained by dependencies among nodes in a φ -feature geometry.

- ▷ If this idea is on track, it has the broader implication of offering a way to constrain powerful morphological operations like impoverishment.

- By locating this process in the morphology, my analysis departs from most other accounts of anti-agreement, which are centered in the syntax proper (though see Baker 2008).

- An important implication of this approach is following:

(46) The syntactic position of an agreeing argument should *not* affect its potential to trigger anti-agreement.

- ▷ In other words, all that should matter is that an operator is an agreement configuration.

- Thus, a strong implication is that **anti-agreement cannot be a subject/non-subject extraction asymmetry**.

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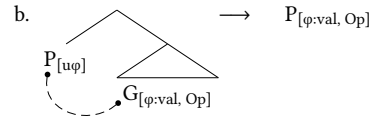
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Appendix A: Deriving Op-feature Piggybacking

- A core component of the theory developed here is what I have called Op-feature ‘piggybacking’:

(47) Op-feature Piggybacking

- When a φ -probe finds a DP with both Op-features and φ -features, Op-features are copied along with φ -features to the probe.



- Deal (2015, 2016) argues features transferred to a probe by Agree need not be confined to those for which the probe is specified.

- Specifically, she proposes that we must distinguish a probe’s **interaction** condition(s) and **satisfaction** condition(s).

(48) A probe H may interact with feature set F even if it may only be satisfied by feature set G, $G \subseteq F$.

- Interaction:** Probe H interacts with feature F by copying F to H.
- Satisfaction:** Probe H is satisfied by feature G if copying G to G makes H stop probing.

- Deal’s system allows for probes to get ‘more than they bargain for’ during the course of Agree.
- Probes may end up with a superset of the features they search for via interaction.

- Deal (2016) further conjectures that there is no variation in interaction conditions for φ -agreement (the type of agreement she is concerned with):

(49) No variation in interaction

φ -probes always interact with all φ -features. Variation is in satisfaction conditions only.

- Suppose that φ -features and Op(erator)-features belong to a larger set of formal features, \mathcal{F} .

(50) $\mathcal{F} = \{\varphi, Op\}$

- If we take the spirit of (49) seriously, and there is no variation in interaction, then both φ -probes and Op-probes will both have the same interaction conditions: \mathcal{F} .

- Consider the consequence that this has for φ -probes:

- A φ -probe will be satisfied by (some subset) of φ .
- The same probe will interact with all features that belong to the set \mathcal{F} .
- Op-features belong to the set \mathcal{F} , therefore, φ -probes will interact with Op-features.
- Op-features will be copied to φ -probes in the course of Agree.

- Thus, this slight amendment to Deal’s system elegantly predicts that φ -probes should end up with Operator features, even if they do not probe for them.

Appendix B: On Subject-Object Asymmetries in Anti-Agreement

- An explicit assumption of most of the anti-agreement literature is that the phenomenon displays a **subject/non-subject asymmetry**.

(51) Only subjects are capable of triggering anti-agreement

- To my knowledge, all existing analyses of anti-agreement are built to account for this assumption.
- This is a reason that anti-agreement has generally been analyzed different from *wh*-agreement.

- Such accounts predict (in one or another) that in languages with multi-argument agreement, only one of those arguments should be capable of trigger anti-agreement.

- A major result of the survey reported upon here is that **this prediction is not borne out**. Consider Abaza:

- Both ergative and absolutive arguments control φ -agreement.
- In addition, both ergative and absolutive arguments trigger alternative agreement morphology when they are \bar{A} -extracted.
- Furthermore, absolutive ‘*wh*-agreement’ is actually **default agreement**.

- The counter evidence to the idea that anti-agreement is a subject/non-subject asymmetry is in fact very robust. Table 14 presents an overview of patterns of which arguments can trigger impoverishment.

A	S	O	Example	Source
NOM	NOM	ACC	Fiorentino	Brandi and Cordin (1989)
NOM	NOM	ACC	Lubukusu	Diercks (2010)
NOM	NOM	ACC	Ndebele	Asia Pietraszko, p.c.
NOM	NOM	ACC	??	
ERG	ABS	ABS	Karitiana	Storto (1999)
ERG	ABS	ABS	Selayarese	(Finer 1997)
ERG	ABS	ABS	Halkomelem	(Gerds 1980)
ERG	ABS	ABS	Abaza	O’Herin (2002)
ERG	ABS	ABS	Tundra Yukaghir	Finer (1997)

Table 14: Impoverishment Triggers Crosslinguistically

- A = transitive subject, S = intransitive subject, O = transitive object.
- The first set of rows are for languages with nominative-accusative alignment.
- The second set of rows are for languages with ergative-absolutive alignment.
- Boxed case abbreviations (i.e. NOM) indicate which arguments can trigger anti-agreement.
- Unboxed case abbreviations (i.e., ERG) indicate that the argument controls agreement, but does not trigger anti-agreement.
- Crossed out case abbreviations (i.e., ~~ACC~~) indicate that a given argument does not trigger agreement in that language

Appendix C: Survey of Impoverishment Patterns

- The table in this appendix summarizes the results of a survey of 37 languages exhibiting φ -agreement target sensitivity to \bar{A} -extraction.
- Each language is listed with the following information:
 - ▷ **Agreement:** φ -features indexed in ‘normal’ agreement contexts.
 - ▷ **Impoverishment:** φ -features that are deleted when an agreement controller is \bar{A} -extracted.
 - ▷ **Op?:** Whether or not the language has overt operator feature exponence. *n* indicates that it does not; *y* indicates that it does; and (*y*) indicates that either operator exponence is variable or that the situation is unclear.

Language	Agreement	Impoverishment	Op?	Family	Source(s)	
Matsigenka	[PERS, GEN, NUM]	[PERS, GEN]	→ \emptyset	N	Arawak	Z. O’Hagan, p.c.
Caquinte	[PERS, GEN, NUM]	[PERS, GEN]	→ \emptyset	N	Arawak	Z. O’Hagan, p.c.
Nanti	[PERS, GEN, NUM]	[PERS, GEN]	→ \emptyset	N	Arawak	Michael (2008)
Yine	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ \emptyset	N	Arawak	Aikhenvald (1995)
Bare	[PERS, NUM]	[PERS, NUM]	→ \emptyset	(Y)	Arawak	Aikhenvald (1995)
Lubukusu	[PERS, GEN, NUM]	[PERS]	→ \emptyset	N	Bantu	Diercks (2010)
Luganda	[PERS, GEN, NUM]	[PERS]	→ \emptyset	N	Bantu	Diercks (2010)
Kilega	[PERS, GEN, NUM]	[PERS]	→ \emptyset	N	Bantu	Diercks (2010)
Bemba	[PERS, GEN, NUM]	[PERS]	→ \emptyset	N	Bantu	Henderson (2013)
Abo	[PERS, GEN, NUM]	[PERS]	→ \emptyset	Y	Bantu	Burns (2011, 2013)
Ibibio	[PERS, NUM]	[PERS, NUM]	→ \emptyset	(Y)	Niger-Congos	Baker (2008)
Tarifit Berber	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ \emptyset	N	Afro-Asiatic	Ouhalla (1993)
Tamazight Berber	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ \emptyset	N	Afro-Asiatic	Ouali (2011)
Tashlhit Berber	[PERS, GEN, NUM]	[PERS, GEN]	→ \emptyset	N	Afro-Asiatic	Ouhalla (2005)
Ouargli Berber	[PERS, GEN, NUM]	[PERS]	→ \emptyset	N	Afro-Asiatic	Ouhalla (2005)
Chamorro	[PERS, NUM]	[PERS, NUM]	→ \emptyset	Y	Austronesian	Chung (1998)
Palauan	[PERS, NUM]	[PERS, NUM]	→ \emptyset	N	Austronesian	Georgopoulos (1991)
Selayarese	[PERS, NUM]	[PERS, NUM]	→ \emptyset	N	Austronesian	Finer (1997)
Maasai	[PERS, NUM]	[PERS, NUM]	→ \emptyset	N	Nilotic	Tucker and Mpaayei (1955)
Dinka	[PERS, NUM]	[PERS]	→ \emptyset	(Y)	Nilotic	van Urk (2015)
Abaza	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ \emptyset	(Y)	NW Caucasian	O’Herin (2002)
Adyghe	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ \emptyset	(Y)	NW Caucasian	Caponigro and Polinsky (2015)
Halkomelem	[PERS, NUM]	[PERS, NUM]	→ \emptyset	N	Salish	Gerdtts (1980)
Comox	[PERS, NUM]	[PERS, NUM]	→ \emptyset	N	Salish	Kroeber (1999)

Language	Agreement	Impoverishment	Op?	Family	Source(s)	
Squamish	[PERS, NUM]	[PERS, NUM]	→ ∅	N	Salish	Kroeber (1999)
N. Straits Salish	[PERS, NUM]	[PERS, NUM]	→ ∅	N	Salish	Kroeber (1999)
Lushootseed	[PERS, NUM]	[PERS, NUM]	→ ∅	N	Salish	Kroeber (1999)
Lillooet	[PERS, NUM]	[PERS, NUM]	→ ∅	(Y)	Salish	Kroeber (1999)
Thompson	[PERS, NUM]	[PERS, NUM]	→ ∅	(Y)	Salish	Kroeber (1999)
Shuswap	[PERS, NUM]	[PERS, NUM]	→ ∅	(Y)	Salish	Kroeber (1999)
Bella Coola	[PERS, NUM]	[PERS, NUM]	→ ∅	(Y)	Salish	Kroeber (1999)
Somali	[PERS, GEN, NUM]	[PERS]	→ ∅	N	Cushitic	Saeed (1993)
Gawwada	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ ∅	N	Cushitic	Tosco (2002, 2007)
Sheko	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ ∅	N	Omotic	Hellenthal (2010)
Ben Tey	[PERS, NUM]	[PERS, (NUM)]	→ ∅	N	Dogon	Heath (2013)
Lelemi	[PERS, NUM]	[PERS, (NUM)]	→ ∅	(Y)	Kwa	Schwarz and Fielder (2006)
Fiorentino	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ ∅	N	N. Italian Dialect	Brandi and Cordin (1989)
Trentino	[PERS, GEN, NUM]	[PERS, GEN, NUM]	→ ∅	N	N. Italian Dialect	Brandi and Cordin (1989)