

## On Partial Agreement and Oblique Case

*Abstract.* In many languages, overt case marking hides  $\varphi$ -features from agreement probes. In some languages, such as Hindi, this effect is absolute. But in Adıyaman Kurmanji, our focus here, the effect is partial: the number feature of third person oblique subjects can be registered on the verb. We account for the difference by saying that overtly case marked nominals are in fact agreed with in the syntax, but the actual transfer of  $\varphi$ -feature values happens at PF, where it is sensitive to post syntactic operations like Fusion. All and only heads that fuse with case (a K head) can feed valuation and thus be realized on the agreement probe. Adıyaman Kurmanji is a language where number fuses with K and this feeds agreement, resulting in partial agreement with overtly case marked nominals (in number but not person), whereas Hindi is not. The possibility of object agreement in these languages is, we claim, the result of Multiple Agree, which creates complex feature bundles on agreement probes that are only partially realized morphologically at PF. We further support our theory by applying it to Icelandic and Faroese, languages often thought not to have agreement with oblique subjects, but which may allow agreement in very specific situations which our theory elucidates.

**Keywords:** Partial Agreement, Oblique Case, Multiple Agree, Fusion, Case/Agreement Split

**1. Introduction**

In a number of languages, including Hindi, Tsez, Sakha, Tamil, and Kashmiri, overtly case marked nominals do not participate in agreement relations. In Hindi, for example, overt agreement is always with a bare nominative nominal; nominals overtly marked with ergative, accusative, or dative case are ignored for purposes of agreement on a verb. Thus, in (1a), the subject is unmarked (nominative) and the verb agrees with it in gender. In (1b), the subject has overt ergative case and the object is unmarked for case. In this situation, the verb agrees with the object *roṭii* ‘bread’. Finally, in (1c), both the subject and the object are overtly case marked. In this situation, the verb does not agree with either nominal; instead, it gets default masculine agreement, although both the subject and the object are feminine.

- (1) a. Siita        baazaar gayii.  
       Sita.FEM market go.PAST.FEM.SG  
       ‘Sita went to the market.’
- b. Raam-ne        roṭii        khyaayii        thii.  
       Raam.MASC-ERG bread.FEM eat.PERF.FEM be.PAST.FEM  
       ‘Ram had eaten bread.’ (Mahajan 1990:73)
- c. Siita-ne        larkii-ko        dekhaa.  
       Sita.FEM-ERG girl.FEM-ACC see.PERF.MASC  
       ‘Sita saw the girl.’ (Bobaljik 2008)

This type of data has interested linguists (Chomsky 2000; Bobaljik 2008; Baker 2008), because it points to an interaction between case and agreement, especially a negative correlation between a nominal having overt case marking and its being available for agreement purposes. One fundamental question, then, is why does the verb often fail to agree with overtly case marked nominals?

This question is a familiar one and various answers have been proposed in the literature. One proposal is the Activity Condition put forward by Chomsky (2000, 2001).

(2) *Activity Condition*

A goal G is eligible for Agree if and only if G has at least one uninterpretable feature.

According to the Activity Condition, a nominal is introduced into the syntax with an unvalued uninterpretable case feature. It is eligible for agreement as long as it has the uninterpretable case feature. Once it is valued for case, the uninterpretable case feature of the nominal is deleted to avoid crash at the LF interface and it is no longer available for agreement. In Chomskian (2000, 2001) Case-Agreement view, oblique case marked nominals (like Icelandic quirky dative subjects or Hindi ergative subjects), come to syntax already case marked. Therefore, they do not have the required uninterpretable case feature and cannot be agreed with.

Another influential view on the interaction of case and agreement has been proposed by Bobaljik (2008). He presents a model in which all forms of morphological case are assigned before agreement takes place. Depending on the language, agreement can be specified for certain types of morphological case. For example, in Hindi, agreement is specified for nominative; therefore, agreement finds a nominative nominal while ignoring nominals with other cases. In contrast, agreement in Nepali is compatible with ergative case as well as with nominative case, hence Nepali verbs can agree with ergative subjects, whereas Hindi verbs cannot. Agreement is not specified for morphological cases randomly in Bobaljik's system; rather, this is governed by an implicational hierarchy. Adopting Marantz's (1991) three-way distinction between lexical case, dependent case (ergative and accusative), and unmarked case (nominative/absolute), Bobaljik argues that these cases are arranged in the hierarchy in (3). Languages choose one of the case types as a threshold for which nominals can be accessible for agreement.

(3) Unmarked Case  $\leftarrow$  Dependent Case  $\leftarrow$  Lexical/Oblique Case

For example, if a language chooses to allow agreement with NPs in dependent case (like Nepali), then it automatically allows agreement with nominals that have unmarked case (nominative, absolute) as well. In contrast, allowing agreement with unmarked case NPs does not imply that there will also be agreement with NPs bearing dependent case or lexical case, as in Hindi.

Although Chomsky's Activity Condition and Bobaljik's agreement hierarchy differ in some important ways, they share a common property: they are both categorical. Depending on the

language, a given case-marked NP is either completely available for agreement or completely unavailable. For example, in Chomsky's system, a case marked NP is either ignored or causes defective intervention without valuing the agreement probe. Similarly, in Bobaljik's system, if a language chooses to agree with unmarked NPs only, NPs with dependent case are ignored.

There are, however, languages that challenge this categorical view. Adıyaman Kurmanji (AK) is one such language. AK is a dialect of Kurmanji, an Indo-Iranian language, spoken in the city of Adıyaman, in southeastern Turkey; it is similar to the standard/literary language (SK, Thackston 2006) in most relevant respects, but not all. Like SK, AK is a split ergative language based on tense. In present tense clauses, the subject has so-called direct case (DIR), which is morphologically unmarked, while the object has oblique case (OBL) – an accusative alignment pattern. In such clauses, the verb always agrees with the direct case subject (see (4) and (5)).

(4) Ez di-rv-ım-e.  
**I.DIR IMPF-run-1SG-COP**  
'I am running.'

(5) a. Ez te di-vun-ım-e.  
**I.DIR you.OBL IMPF-see-1SG.PRES.COP**  
'I see you.'

b. Tı mı di-vun-ê.  
**you.DIR me.OBL IMPF-see-2SG.PRES.COP**  
'You see me.'

In contrast, past tense clauses have an ergative alignment pattern: the transitive subject gets oblique case – the same marked case found on direct objects in present tense clauses – whereas intransitive subjects and direct objects get direct case. Full person-number agreement tracks the nominal in direct case, whether it is the subject or the object.

(6) a. Ez rvi-m.  
**I.DIR ran-1SG**  
'I ran.'

b. Tı rvi-yi.  
**you.DIR ran-2SG**  
'You ran.'

(7) a. Mı tı di-yi.  
**I.OBL you.DIR saw-2SG**  
'I saw you.'

b. Te ez di-m.  
**you.OBL I.DIR saw-1SG**  
'You saw me.'

Inasmuch as direct case is morphologically unmarked, it is analogous to nominative-absolutive case in other languages. In contrast, oblique case is usually marked by a suffix on the noun. It is used as both a kind of accusative in present tense clauses and as a kind of ergative in past tense clauses, as well as in canonically oblique positions like object of P, possessor of N, etc.

The examples in (4)-(7) show a well-behaved split system where agreement tracks the unmarked nominal. So far, then, AK looks just like Hindi. There is, however, an important fact about the AK ergative construction that motivates us to take a fresh look at the connection between oblique case and agreement. In AK, subjects are not entirely inert for agreement. It is possible for the verb to agree with a third person plural oblique subject in number, as in (8).<sup>1</sup>

- (8) a. Wana hew di-n.  
**they.OBL** him.DIR saw-PL  
 ‘They saw him.’
- b. Keçik-a hew di-n.  
**girl.PL.OBL** him.DIR saw-PL  
 ‘The girls saw him.’

This additional possibility is not recognized for standard Kurmanji in Thackston (2006), but it is well-attested in the dialects surveyed by Dorleijn (1996:119-119); she observed 125 instances of agreement with an oblique third plural subject; (see also Haig 2008:231-245, esp. 242). Indeed, we are not sure that it is ruled out in any actual spoken variety, although we do not study its distribution across dialects in any detail here.

At the same time, this agreement with the oblique subject is notably fragile and limited in AK. First, the plural agreement in (8) is possible only with third person nominals; when the subject is first or second person plural, there is no agreement with the subject at all, in number or in person, as shown in (9).

<sup>1</sup>The plural agreement with oblique subjects is optional in examples like (8). This might just be an instances of speakers controlling more than one dialect/style of Kurmanji (e.g. diglossia between AK and SK), or it may be a grammatical effect. See fn xx below for a conjecture about the latter option.



## 2. Background: Split Ergative Case Marking in AK

We begin, then, with our important background assumptions about the basics of split ergative case marking in AK, seen already in Section 1. The alignment patterns are summarized in (12).

(12)	INTRANSITIVE	TRANSITIVE	CONDITION
	DIR	DIR – OBL	<i>present tense</i>
	DIR	OBL – DIR	<i>past tense</i>

We suggest that split ergativity in AK can best be accounted by a configurational case theory like those of Marantz (1991), Bittner and Hale (1996), Baker (2015), and Levin and Preminger (2015), since this basically gives the most straightforward account of simple ergative case patterns, like the one seen in past clauses in AK. Building on a recent interpretation of Marantz (1991) in Baker (2015), we propose the rules in (13) below for AK.

- (13)
- a. DEPENDENT  
If NP1 c-commands NP2 at the spell out of a TP, assign NP1 OBL.
  - b. UNMARKED 1  
If NP has received no other case when a VP is spelled out, assign it OBL.
  - c. UNMARKED 2  
If NP has received no other case when a TP is spelled out, assign it DIR.

The system in (13) uses two important case assignment mechanisms from Marantz (1991): dependent case and unmarked case. Dependent case assignment is configurational; it happens when there are at least two NPs in a local domain. For Marantz (1991), this local domain for ergative case assignment is simply the clause: If NP1 c-commands NP2 and they are in the same clause, then NP1 gets ergative case. Baker (2015) recasts this analysis somewhat, arguing that dependent case assignment domains are essentially spell out domains within Chomsky's (2000, 2001) phase theory: the VP complements of phase head  $v$  and the TP complements of phase head C (and also the nominal complements of D).

The big question, then, is how to account for the fact that AK, like most varieties of Kurmanji, is

a *split* ergative language, not a uniformly ergative language, such that (13a) applies in past clauses but not in present clauses. Recent work on split ergativity has shown that splits can be attributed to phase theory domains (Baker 2015; Coon and Preminger 2017): in order for dependent case (here ergative) to be assigned, NP1 and NP2 must be in the same spell out domain, in accordance with Chomsky's Phase Impenetrability Condition (PIC). When they are in different spell out domains, one NP is not visible to the other, and dependent case is not assigned. This is what happens in Kurmanji present tense clauses, we claim: the object is spelled out along with VP, so the subject does not see it for purposes of case assignment. In contrast, VP is not a distinct spell out domain in past tense clauses, so the subject and object are visible to each other, and the ergative case assignment rule in (13a) does apply in these clauses.

What more precisely is the variable phase head that gives this result? For Coon and Preminger (2017), aspect is the crucial factor. Imperfective aspect splits the clause into two case domains resulting in the absence of dependent case assignment. Perfective aspect, on the other hand, does not cause such a bifurcation, permitting dependent case assignment to take place. However, this does not seem quite accurate for AK, in that aspect per se does not condition the case split in Kurmanji (Gündoğdu 2011). The most obvious aspectual head in AK is the imperfective prefix *dɪ-*, but this does not determine whether a clause is ergatively aligned or not: present imperfective is not ergative aligned, but past imperfective is.

- (14) a. Ez    nen       dɪ-k-ɪm.  
          I.DIR bread.OBL IMPF-do.PRES-1SG  
          'I make bread.'
- b. Mɪ    nan       dɪ-kɪr.  
          I.OBL bread.DIR IMPF-do.PAST  
          'I used to make bread; I was making bread.'

Conversely, clauses without the imperfective prefix can also be accusative aligned, as in the present subjunctive clause in (15), or ergatively aligned, as in simple past clauses (e.g. (7)). Neither does the mood prefix *bɪ-* seen in (15) determine the alignment.

- (15) Ez nen b1-k-1m.  
 I.DIR bread.OBL SUBNJ-do.PRES-1SG  
 ‘... that I make bread.’

Instead, it seems to be a lower head that plays the role of determining the alignment of the clause, namely the one that is realized as the suffix that attaches immediately to the verb root to form the so-called present stem ( $-\emptyset$ ) or the so-called past stem (common productive forms  $-i$  and  $-t$ , with many irregular and even suppletive forms), as argued in detail by Kalin and Atlamaz (2015). For example, (14a) and (15) have the present stem for ‘do’  $k-$  and do not have ergative subjects, whereas (14b) has the past tense stem for ‘do’  $k-ir$  with an irregular suffix and does have an ergative subject. The alignment-determining influence of the stem holds regardless of what other TAM morphology might be added on top of the stem - something that is true across a very broad range of split ergative Iranian languages (see Haig 2008).

We assume, then, in line with Baker (2015) and more generally with a phase based cyclic syntax, that split ergativity in AK is the result of whether the stem-forming affix is a phase head or not. We tentatively identify it as  $v$  (/Voice), which fits with it being an inner (=lower) morpheme, below aspect and mood, and with it sometimes being a phase head in a (fairly) standard phase theory (see also below).<sup>3</sup> Then in a simple past tense clause like (16),  $v$  is not a phase head, so VP is not spelled out, and the case rule in (13b) doesn’t apply. The structure is spelled out for the first time at the C-TP level. At this point, there are two NPs visible in the spelled out material, so oblique case is assigned to the higher one, the subject, by (13a). Meanwhile, direct case is assigned by default to the lower one by (13c). If, however, the verb is intransitive, then there is only one

<sup>3</sup> In contrast, Kalin and Atlamaz identify the stem suffix they isolate as T, because it seems to have the semantics of tense: root+ $i/-t/...$  appears in past perfective and past imperfective (and also in nonfinite participles and nominalizations; see below), whereas root+ $\emptyset$  appears in simple present, progressive, and present subjunctive (which the future is built out of periphrastically). They leave it as a puzzle how T can be so low in the clause in AK, contrary to the usual sequence of functional heads. If the stem suffix is identified as  $v$ , then its low position is expected and the possibility of its being a phase head but a comprehensive account would still need to specify exactly what it contributes to the compositional semantics, and come to grips with the possibility that it has a somewhat unusual meaning for a  $v$ , if that is confirmed to be the case. We cannot attempt a full compositional semantics of inflected verbs in AK here. (It is also possible that T is in its usual high position, and itself lacks any overt morphological expression, but T-Past conditions the appearance of  $v$ -Past in its domain, and T-pres conditions  $v$ -Pres – a theory that Kalin and Atlamaz consider, following Stowell (2007), although it is not their preferred option.

NP in the spelled out TP, the subject, so (13a) does not apply, and the subject gets unmarked direct case by (13c). The result is an ergative alignment.<sup>4</sup>

- (16) M<sub>1</sub> t<sub>i</sub> di-yi.  
 I.OBL **you.DIR** saw-2SG  
 ‘I saw you.’ (= (7))

In contrast, in a simple present tense sentence like (17), *v* is, by hypothesis, a phase head. Therefore, VP is spelled out in this situation. The VP contains one NP only the object, so dependent case assignment could not apply, but the unmarked case rule in (13b) does, marking the object as oblique.<sup>5</sup> Then, after more structure is built up, TP is eventually spelled out. Since VP has vanished from the representation, TP always has only one NP in it, the subject, regardless of whether the base verb was transitive or intransitive. Therefore, dependent case assignment ((13a) does not apply at this level either, and the subject is always in direct case, by the unmarked case rule in (13c). The result is an accusative alignment.

- (17) Ez te di-vun-im-e.  
**I.DIR** you.OBL IMPF-see-1SG.PRES.COP  
 ‘I see you.’ (= (5a))

It should not be a surprise from a theoretical perspective that some *vs* are phase heads and some are not. This has been a feature of phase theory from the beginning. For example, Chomsky (2000, 2001) assumes that active *vs* are phase heads (*v*\*), whereas passive *vs* and unaccusative *vs* are not.

<sup>4</sup> In contrast, in uniformly ergative languages, either active *v* is never a phase head which blocks ergative case assignment, or (more likely) it is a “soft” (or weak) phase head that triggers spell out of VP but not the removal of material inside VP from the syntactic representation; see Baker (2015Ch.4) for extensive discussion.

<sup>5</sup> The fact that unmarked case inside VP spell out domains is different from the unmarked case inside TP domains is not too familiar, but it is not unprecedented either. Marantz (1991) explicitly allows for unmarked case to be different in different contexts; indeed, this is what distinguishes unmarked case from default case for him. Baker (2015) combines Marantz’s idea with the claim that VPs can be spell out domains to account for the contrast between partitive case and nominative case in Finnish: partitive case is unmarked case at the spell out of a VP; nominative case is unmarked case at the spell out of a TP. (13b) vs. (13c) in AK is analogous. The fact that (13a) and (13b) happen to assign the same case value in Kurmanji (i.e. “partitive” is homophonous with “ergative”) is a historical quirk of this particular language (branch), the result of phonological erosion applying to what were originally different case affixes (see Haig 2008). Some other Iranian languages do have different case endings on transitive subjects in the past tense and transitive objects in the present tense, as one might expect.

What is different about AK (and other split ergative languages) is that the dividing line between *vs* that are phase heads and *vs* that are not seems to be drawn at a different point, with some active *vs* counting as phase heads and others not. We claim, however, following argumentation by Dorleijn (1996)<sup>6</sup>, that the past stem in Kurmanji is intrinsically passive – at least historically (see Haig (2008Ch. 2), Windfuhr (2009:31-32), xx Karimi (2010:702-703), and references cited there), and perhaps synchronically as well, whereas the present stem is not passive in any sense.<sup>7</sup>

There are several bits of evidence internal to AK that this is true. First, in addition to its various finite verb forms, AK has a participle consisting of the past stem plus the suffix *-i*. This can be used as an adjective, for example, to modify a noun. For example, the participle in (18b) is syntactically parallel to the adjective in (18a).<sup>8</sup>

- (18) a. beq-ê kesk  
frog-EZ green  
'(the) green frog' (see also Dorleijn 1996:106)
- b. beq-ê kuşt-i  
frog-EZ kill.PAST-PART  
'the killed frog' (the frog is dead, passive interpretation)
- Not: 'the frog which kills' (active interpretation)

This participle form is clearly a passive participle, in the sense that the modified noun must be the internal argument of the verb form – its theme, not its agent. This can be seen in the only possible interpretation of (18b). (To express an active meaning like 'the frog that killed' the complementizer *ki* 'that' must precede the participial verb form; we take this to be a full CP relative clause

<sup>6</sup> Dorleijn's (1996) use of this idea is quite different from ours, however. For Dorleijn, the "passive" past stem fails to assign accusative case, and this triggers ergativity within the theory of Bok-Bennema (1991).

<sup>7</sup> Haig (2008) argues that past stem verbs in middle Iranian and the modern Iranian languages come from resultative participles in Old Iranian (OI). OI was an accusative language, but these participles could not have accusative objects, could be predicated of theme subjects, and could realize the thematic agent as a genitive clitic. Haig discusses in detail whether the relevant OI construction was really a passive construction or not (his answer is yes and no), but it was certainly a type of nonactive. The old past tense of OI was then lost, the participial nonactive construction became the only way of expressing past tense, richer case distinctions eroded into a single oblique form, and OI was on its way toward Kurmanji.

<sup>8</sup> The morpheme glossed EZ in these examples is the so-called *ezafe* marker, which comes between a noun and its modifier or possessor, a famous property of Iranian languages. See Samiiian (1994), Ghomeshi (1997), Larson and Yamakido (2005), Karimi and Brame (2012), and Kahnemuyipour (2014) for discussion, among others.

containing higher functional heads, hence a less pure manifestation of a simple verb phrase with a past stem.) Thus, the participle built from the past stem in AK is like a passive/past participle in English (a murdered man) and not like an active/present participle (an eating man). In contrast, there is no participle form based on the present stem in Kurmanji, so there is no similar reason to say that the present stem is passive-like.

The past stem but not the present stem is also used in nominalizations in Kurmanji. These are formed by attaching the affix *-in* to the past stem, as seen in (19).

- (19) Kuşt-in-a            beq-ê    nê rınd-e.  
 kill.PAST-NOML-EZ frog-OBL not good-COP.PRES  
 ‘To kill (the) frog is not good.’ (Lit: ‘The frog’s killing is not good.’)

Not: ‘For the frog to kill is not good.’ (see also Dorleijn 1996:107)

These nominalizations are also intrinsically passive in that they allow the theme argument of the verb root to be expressed like a possessor in the larger nominal, but they do not allow an agent argument to be expressed. Hence ‘the killing of the frog’ in (19) means that the frog is killed, not that the frog has killed something. (In contrast, English nominalizations can be ambiguous between active and passive readings; see Grimshaw (1990).) Again, we have evidence that the past stem is intrinsically passive-like, whereas there is no evidence of this for the present stem.

One further construction to mention here is AK’s quasi-passive construction, used when the subject is unknown or not important. This is constructed by using the nominalized form of the transitive verb together with the verb *hatın* ‘to come’, the nominalization acting like a (directional) complement of ‘come’ and the theme argument realized as the subject of ‘come’.

- (20) Xanî        hat    firoṭ-in-ê.  
 house.DIR came sell.PAST-NOML-OBL  
 ‘The house was sold.’ (Lit: ‘The house came to selling.’) (also Dorleijn 1996:107)

So, nominalization is a crucial ingredient in Kurmanji’s version of a periphrastic passive, and the past stem (not the present stem) is a crucial element of the nominalization. This is another

indication that the past stem is passive in nature.

This, plus the fact that passive *vs* are expected not to be phase heads whereas active *vs* generally are phase heads, sheds light on why there is this difference between past *v* and present *v* in current AK. We leave open whether this is best taken to be a kind of historical explanation as to why past *vs* have the crosslinguistically marked property of not being phase heads, or whether it is a synchronic explanation, with past *vs* being inherently passive in nature even in the current language. Either view should work for our purposes, but we express ourselves in terms of the former view, for simplicity.<sup>9</sup> A similar account would hold for many of the split ergative languages in the broad region, not only in the Iranian languages, but also in Neo-Aramaic languages (Kalin and van Urk 2015), and in Indo-Aryan languages including Hindi, where tense-aspects descended from the passive participle are ergatively aligned and tense-aspects with other ancestries are accusatively aligned (see Butt and Deo (2005) for some remarks on the historical situation in Indo-Aryan.)

This then gives us a working view of why some subjects have oblique case in AK and some do not – and also why some objects have oblique case and some do not. We also assume crucially that at least ergative/oblique case assignment in (13a) happens before Agree is completed (i.e., at least before Agree-Copy happens; see below), so that this case can affect the outcome of agreement. This is the standard view for lexical/quirky case on all accounts, and also for dependent case in Bobaljik (2008), Baker (2015), and others. The phasehood of *v*.PRES but not *v*.PAST also plays a role in our account below of why verbs can agree with oblique subjects in number but not with oblique objects in AK. We can now proceed on to our main topic, which is why this oblique case hides  $\varnothing$ -features from agreement in some situations but not others.

<sup>9</sup> What would need to be worked out if *v*-PAST plus VP is always passive in synchronic AK is how the external argument in a sentence like (16) is assigned, since it could not be assigned by *v* as usual. One possibility is to say that it is assigned by some other functional head above *v* – perhaps a null version of the auxiliary ‘have’ seen in perfect clauses like ‘John has seen Mary.’ in English. We do not explore the pros and cons of such a view here.

If it is a marked situation for a language to have an active *v* that is not a phase head because it came from a passive *v* historically, we might expect there to be some tendency to lose this feature over time. In fact, although split ergativity has generally been quite stable in Kurmanji (Haig 2008), Dorleijn (1996:62, 118) reports some tendency for even past clauses to show accusative alignment in the dialect of Diyarbakır (under influence of Turkish, she claims, since contact was more extensive in this area).

### 3. Fusion, Agree-Copy, and The Visibility of $\phi$ -features on Nominals

#### 3.1 Case Marked NPs and KPs

We begin our discussion of our main topic by asking why oblique case normally blocks agreement in a wide variety of languages – always in Hindi, and often even in AK. For this, we adopt the widespread and plausible view that nominals with overt case in these languages are structurally more complex than easy-to-agree-with nominals in the language’s morphologically unmarked case (variously called direct, nominative or absolutive, depending on the language and its alignment). More specifically, oblique case in these languages counts as a syntactic head (K) that takes an NP or DP complement and projects a KP structure (Bittner and Hale (1996), Lamontagne and Travis (1986), and many others), similar in many respects to a PP structure. This is an attractive view for Hindi in particular, given its case inflection pattern shown in (21).<sup>10</sup>

(21)	PERSON	UNMARKED		ERGATIVE		ACCUSATIVE	
		SG	PL	SG	PL	SG	PL
	1	maĩ	ham	maĩ-ne	ham-ne	mujh-ko	ham-ko
	2 <sub>familiar</sub>	tum	tum-log/sab	tum-ne	tum-logõ-ne	tum-ko	tum-logõ-ko
	2 <sub>respectful</sub>	aap	aap-log	aap-ne	aap-logõ-ne	aap-ko	aap-logõ-ko
	2 <sub>intimate</sub>	tu	tu-log	tu-ne	tu-logõ-ne	tujh-ko	tum-logõ-ko
	3 <sub>familiar-prox</sub>	yah	ye	is-ne	inhõ-ne	is-ko	in-ko
	3 <sub>familiar-dist</sub>	wo	ve	us-ne	unhõ-ne	us-ko	un-ko

Note that ergative case is always expounded by *-ne* in Hindi, and accusative case is always *-ko*. Like canonical postpositions, these forms do not vary depending on the features of the complement; they are final, after the main NP/DP, as expected for a projecting head in a head final language; and they appear only once at the edge of the nominal as a whole (contrast this with (e.g.) case in Latin, which shows up on every declinable word within a complex nominal). We therefore adopt the view that ergative and accusative marked nominals are KPs in Hindi, with different case features assigned to the K head, whereas nominative/absolutive nominals with no overt case marker are simply NPs or DPs.<sup>11</sup> (Like Lamontagne and Travis and Bittner and Hale, we assume

<sup>10</sup>We thank xx (name omitted for anonymous review) for sharing this data with us.

<sup>11</sup>Note that the KP versus NP/DP distinction is not the same as the oblique versus structural case distinction. Accusative and ergative in the languages discussed here are structural cases (Baker 2015), but are like lexical/semantic/inherent cases in corresponding to a KP structure. In contrast, nominative (/absolutive/direct) case counts

that only one “case” in a language that has KP projections corresponds to caselessness, i.e. the absence of KP structure.) Given this, we can also assume that the KP structure conceals an NP/DP node contained in it so that it cannot be seen by an agreeing probe, much as NPs/DPs inside PPs are normally invisible for agreement. This then is pretty much the end of the story for Hindi and similar languages where case marking is morphologically very simple and forms an absolute barrier to agreement, including Tamil, Tsez, Sakha, and so on.<sup>12</sup>

But it is only the beginning of the story for AK, where oblique case blocks agreement only partially: number agreement with plural nouns and third person pronouns is available ((8)) while agreement is blocked with first and second oblique pronouns ((9). Why is AK different from Hindi in this? For starters, the KP hypothesis is plausible for AK too. In AK, oblique nouns are distinguished from direct nouns by means of an additional morpheme on oblique nouns. In regularly inflected nouns, the oblique form includes the suffix *-e* as well as a root, whereas the direct forms consist of a root alone, as seen in (22).

- (22) a. keçik  
girl.DIR
- b. keçik-e  
girl-OBL

So, we assume that nominals that are in oblique case in AK are KPs, but nominals that are in direct case are bare NPs/DPs. That can be used to account for why agreement is richer and less constrained with direct case nominals than with oblique case nominals.

What then is special about number, such that plural is visible on oblique nouns and third pronouns but not first or second pronouns in AK? Our leading idea about this comes from extending

---

as a structural case but does not correspond to a KP structure.

<sup>12</sup> There are, however, also languages with regular agglutinative ergative case marking in which ergative case does not block agreement at all either for person or number, such as Bobaljik’s (2008) Nepali and Baker’s (2008) Burushaski. Some parameter is needed, then, to capture the difference between languages in which non-nominative case has some influence on agreement – either total blocking, as in Hindi, or partial blocking, as in Kurmanji and Icelandic – and languages in which non-nominative case has no effect on agreement at all (some analog of Baker’s (2008) Case Dependence of Agreement Parameter). We take no stand on that type of variation here, concentrating on the finer grained variation within the class of languages in which agreement shows some degree of sensitivity to case; see Author (in progress) for some discussion.

the paradigm in (22) to include plural nouns and third person pronouns, as in (23).

(23)	NOUN <sub>girl</sub>	THIRD PRONOUN	CASE & NUMBER	LEXICAL ITEM
	keçik-e	w-e	OBL, SG	K = <i>e</i>
	keçik-a	wan-a	OBL, PL	NUM(PL) + K = <i>a</i>

Here we see that oblique plural is not the simple morphological sum of the oblique marker *-e* plus some distinct plural affix, the way it is in Hindi. Rather, a single morpheme *-a* expresses plurality and obliqueness simultaneously. More generally, AK is like many other Indo-European languages (Halle and Marantz 1993), in that the oblique case morpheme *fuses* with the plural feature under certain circumstances, in the sense of Distributed Morphology. We claim that this is what makes number visible for agreement in oblique nominals in AK.

The idea that agreement is sensitive to fusion patterns is further supported by the morphological details of local (first and second person) pronouns, which do not agree in either person or in number. The lack of agreement with oblique first or second person pronouns follows from the fact that in local pronouns, plural does not fuse with case. Instead, we observe a fusion of person and number excluding case. The result is special plural pronominal roots (*m-* and *w-*), but no special plural case marker like *-a*. Instead, the oblique plural forms in (24) have *-e*, the same suffix found with oblique singulars in (23) and the second singular pronoun in (24).<sup>13</sup>

(24)	PERSON	SINGULAR		PLURAL	
		DIR	OBL	DIR	OBL
	1	ez	min	em	<i>m-e</i>
	2	ti	t-e	un	<i>w-e</i>

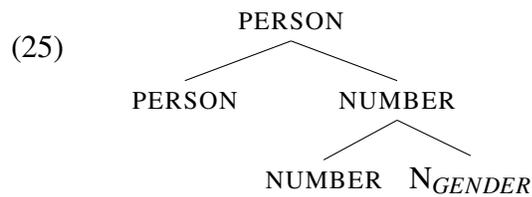
Based on (23) and (24), we argue that agreement in AK is sensitive to fusion patterns. The difference between local pronouns and other nominals follows from the differences in the particular fusion processes that apply. To execute this idea, we need an account of the fusion patterns in AK and a theory of agreement in which agreement can be sensitive to fusion patterns. We thus first

<sup>13</sup> First person singular pronouns *ez* and *min* are somewhat challenging to our hypothesis in that they may seem to be totally suppletive. We propose that first person singular direct pronoun *ez* is indeed totally suppletive, since it does not share anything common with the other first person pronouns *em* and *me*. However, we claim that first person singular oblique pronoun is bimorphemic, consisting of first person *m* (shared with *em* and *me*) and a morphologically conditioned form of oblique case *-in*. Given that *m-in* is bimorphemic, with a person morpheme and a distinct case morpheme, we don't expect agreement in person with the oblique subject *min*.

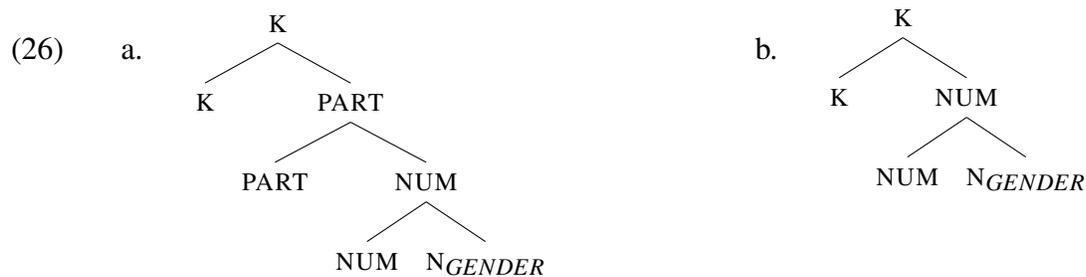
provide an analysis of Kurmanji fusion patterns within the Distributed Morphology framework, and then propose a theory of agreement that is sensitive to fusion patterns.

### 3.2 Fusion Process in AK

Based on (23) and (24), we propose that the difference between local pronouns and other nominals is due to different fusion patterns. Following Harley and Ritter (2002), we assume that  $\varphi$ -features are hierarchically organized inside the nominal according to the hierarchy in (25).



As a special case/adaptation of this, we assume that first and second person pronouns have a PARTICIPANT (PERSON) node which is absent in third person pronouns and NPs.<sup>14</sup> Thus, at PF, the initial (simplified) structure of local pronouns is as in (26a) and the (simplified) structure of non-local pronouns and common nouns is as in (26b).



Given the structures in (26), the morphological patterns in AK nominals can be generated by the following fusion rules applied disjunctively.<sup>15</sup>

<sup>14</sup> There are other theories about the hierarchy among  $\varphi$ -features that differ from (25); see, for example, xx Kramer (to appear) on the position of number within the extended nominal projection. For our purposes, the exact initial configuration of  $\varphi$ -features is not crucial, as long as the outputs of the fusion rules are what we say they are.

<sup>15</sup> An anonymous reviewer observes that all of our fusion rules in (27) involve NUM fusing with a structurally adjacent category, suggesting a more general statement that NUM always fuses in AK. We find this observation intriguing, but do not pursue it, leaving open whether there is a significant generalization here, or it is a coincidence.

(27) *AK Fusion Rules*

- a. Fuse PART and NUM if both are present.
- b. Otherwise, fuse NUM and K if both are present.
- c. Otherwise, fuse noun and NUM if both are present.

After fusion rules apply, (26a) becomes (28a) and (26b) becomes (28b).



The generalization that we arrive at is the following: When number (plural) fuses with the oblique case, plural agreement can show up on the verb; when number does not fuse with the oblique case, we do not get any agreement between an oblique subject and a verb. This is stated in the form of a generalization in (29):

- (29) Only the features at the outermost layer of a nominal can be agreed with.

Now that we have analyzed the fusion patterns in AK and stated that only outermost layer of a nominal contributes to agreement, we are in a position to consider a theory of agreement that is sensitive to the fusion patterns and thus derive the agreement facts of AK. We turn to this next.

### 3.3 *A Theory of Morphology-Sensitive Agreement*

The main question that we need to face then is this: given that Fusion is part of the apparatus of Distributed Morphology (Halle and Marantz 1993), a morphological operation that applies post-syntactically, how can agreement, widely assumed to be a syntactic operation (Chomsky 2000, 2001; Baker 2008; Béjar and Rezac 2009; Preminger 2014), be sensitive to the output of fusion operations?

Given the facts from AK, we are led to a view that part of agreement happens not in the

narrow syntax, but at PF, so that it can be fed by a process of Fusion that happens at that level. We thus follow Bhatt and Walkow (2013), Marušič, Nevins, and Badecker (2015), van Koppen (2007), and Benmamoun, Bhatia, and Polinsky (2009) in considering agreement to be a two-step process: it consists (adopting the terms of Marušič, Nevins, and Badecker (2015)) of *Agree-Link*, happening in the syntax and *Agree-Copy* which happens at PF. Since *Agree-Copy* happens at PF, it can be sensitive to the outcome of other morphological operations. Previous work in this vein has mostly been concerned with the special agreement properties of coordinated NPs, especially the phenomenon of closest conjunct agreement, in which agreement seems to be sensitive to linear order, a property often thought to be determined at PF only. This has motivated a two-step process, in which *Agree-Link* in the syntax determines roughly what a probing functional head can agree with according to structural factors in the usual way, but then *Agree-Copy* at PF determines exactly what the functional head agrees with – for instance, which conjunct inside a coordinated structure – after linear order has been fixed (e.g., after conjunct flattening as argued by Marušič, Nevins, and Badecker (2015)). For our analysis, we use essentially the same technology, but the PF process that crucially applies before the *Agree-Copy* component of agreement for us is Fusion, rather than fixing linear order and flattening structure. This allows the low-level, morphological properties of a given nominal to affect the realization of agreement, as happens in AK. (30) summarizes the order in which *Agree-Link*, *Agree-Copy* and some morphological processes can apply.<sup>16</sup>

(30) *Agree-Link*  $\prec$ <sup>17</sup> Fusion (also Flattening, Linear Ordering, etc.)  $\prec$  *Agree-Copy*

Let us then flesh out this proposal by spelling out the details of our agreement theory and applying it to the AK facts. Our proposal is specifically an elaboration of Marusic et al.'s (2015). We define

<sup>16</sup> In fact, Marušič, Nevins, and Badecker (2015) claim that *Agree-Copy* can apply before PF operations as well as after them, giving the difference between closest conjunct agreement and highest conjunct agreement in Slovenian. This idea could be used in AK too: if *Agree-Copy* happens before NUM fuses with K, then the verb will not show number agreement with the oblique subject, the number feature not (yet) being in the outermost layer of the nominal. This could explain why number agreement with oblique subjects is actually optional in AK (see fn. 1). We do not push this analysis, however, leaving open whether it is theoretically desirable to tinker with the order of operations in this way.

<sup>17</sup>  $\prec$  means “precedes”.

agreement and its components as follows. First we define “probe” and “goal”.

- (31) a. **Probe:** A probe P is a (functional) head with unvalued  $\varphi$ -features that needs a goal G with a [+N] feature to get its features valued.  
 b. **Goal:** A goal G is a maximal extended nominal projection (i.e. a projection identified with a [+N] feature).

Using these notions, we then define the syntactic aspect of agreement, Agree-Link, as follows:

- (32) Agree-Link is an operation that establishes a relation between a probe P and the closest goal G in the local c-command domain of P by adding a pointer ( $\rightarrow$ ) from P to G.<sup>18</sup> Schematically, this can be expressed as in (33).

- (33) Given P and G, Agree-Link returns:  $P_{[\rightarrow G]}$

Finally, Agree-Copy, the PF aspect of Agree, is defined as in (34).

- (34) Agree-Copy takes as input a substructure of the form  $P_{[\rightarrow G]}$  and returns  $P_{[\{\pi, \#, \gamma\}]}$  by replacing pointers associated with P with the  $\varphi$ -set at G.

The outputs of Agree-Link and Agree-Copy are sketched in (35).

- (35) Output of Agree-Link    Agree-Copy Applies    Output of Agree-Copy

$$P_{[\rightarrow G]} \qquad \text{Agree}_{Copy}(P_{[\rightarrow G]}) \qquad P_{[\{\pi, \#, \gamma\}]}$$

This two-step approach to agreement makes it possible to establish an agreement relation with a goal in the syntax – obeying familiar syntactic constraints like hierarchy and locality – and then modify the structure of a goal at the PF, finally transferring values from the modified goal. The

---

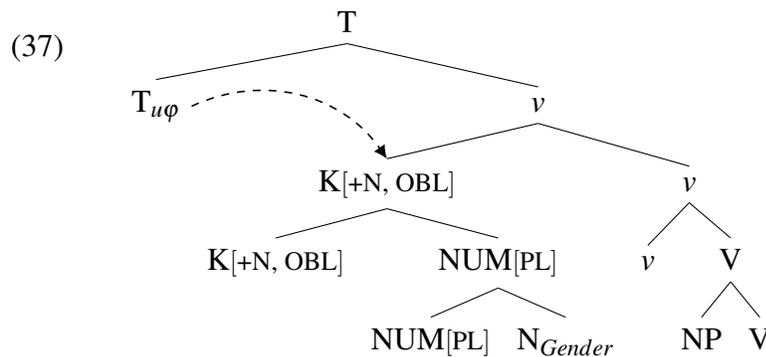
<sup>18</sup> By using the term “pointer” here, we have in mind an analogy to the computer science notion of a pointer as an object whose value refers to another value stored elsewhere in the memory. A pointer holds the address information of the object that stores some referenced values. Pointers can be replaced by the actual values stored in the recorded address via a procedure called dereferencing. In our two-step agreement theory, Agree-Link corresponds to the operation that puts a pointer with the address of the goal to a probe while Agree-Copy corresponds to the dereferencing procedure that returns the value in the address stored by the pointer (i.e. the goal).

result is a form of PF-sensitive agreement. This gives us the technology that we need to account for the partial agreement facts from AK.

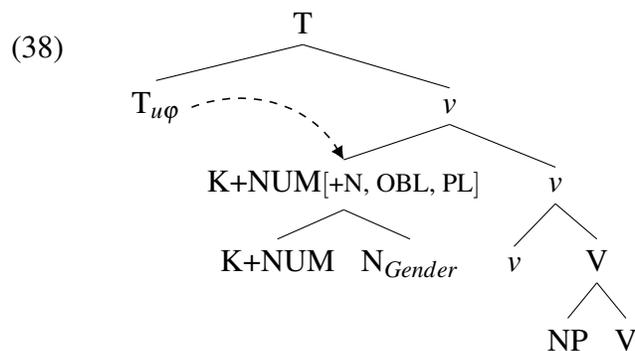
To see this, consider the crucial AK sentence in (8a) repeated below as (36):

- (36) Wana hew di-n.  
**they.OBL** him.DIR saw-PL  
 ‘They saw him.’

The subject is a third person plural pronoun that the verb agrees with in number. Given the structures of non-local pronouns in (26b), the relevant syntactic structure of (36) is as in (37), which shows output of the syntactic operation Agree-Link.



The structure in (37) then feeds into the morphological operation Fusion, which is stated in (27) for AK. Given that the subject has no participant features, K fuses with NUM by (27b), yielding the modified structure in (38).



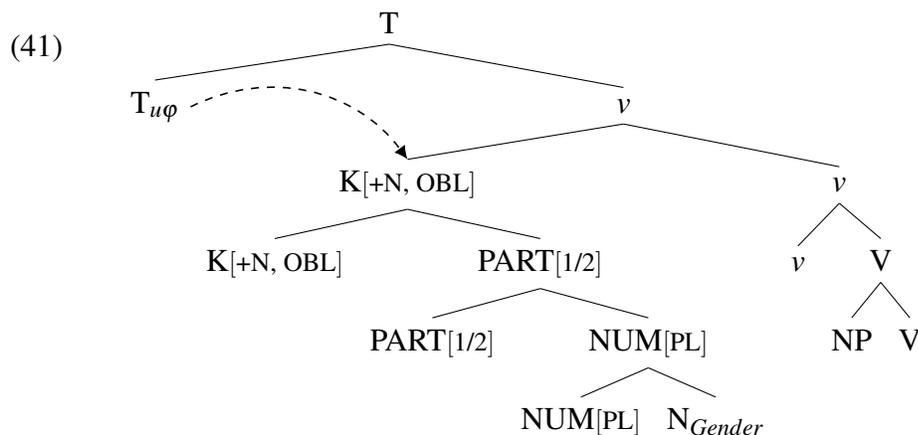
Next the output of fusion is further fed into the Agree-Copy operation, which replaces the pointer on the probe (the association arrow on tree in (38) with the phi values on the goal. In this case, Agree-Copy copies the phi value PL (and OBL) on [K+NUM] to the probe. The result is that we get a probe valued PL when (and only when) PL fuses with K. The derivations can be conveniently (but schematically) shown as in (39).

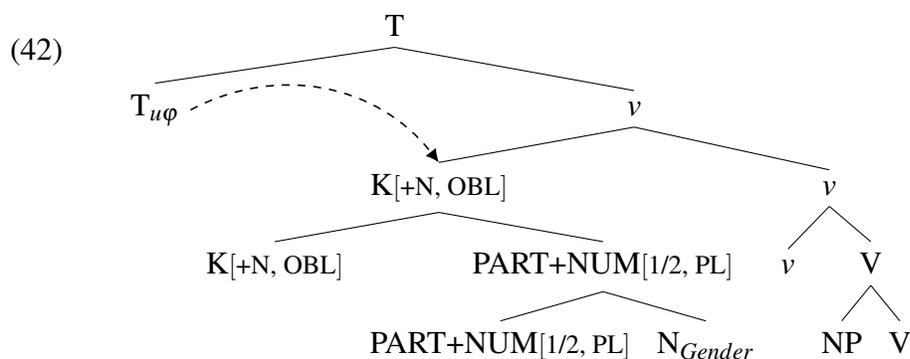
(39)	Agree-Link	Fusion	Agree-Copy Applies	Agree-Copy
	$T_{[\rightarrow K_{\{OBL\}}]}$	$T_{[\rightarrow K_{\{OBL, PL\}}]}$	$Agree_{Copy}(T_{[\rightarrow K_{\{OBL, PL\}}]})$	$T_{[\{OBL, PL\}]}$

For contrast, then, let us consider how the proposed theory accounts for non-agreement with plural local oblique pronouns as in sentences like (40).

(40)	Me/We	hew	di	/ *di-n.	
	<b>we.OBL/you(PL).OBL</b>	him.DIR	saw	/ saw-PL	
	‘We/You saw him.’				(=9))

In this case, the NUM component of the oblique subject does not fuse with K but rather with PART (see (27a)). As a result, there are no relevant  $\phi$ -features at the KP level (as always in Hindi). Hence, no agreement shows up on the verb in this situation. The relevant parts of the output of Agree-Link are shown in (41) and the output of Fusion is given in (42).





When Agree-Copy applies to the structure modified by Fusion in this case, it finds no  $\phi$ -features at the address pointed by the agreement pointer. Hence, we get no agreement with the oblique local pronoun, neither person nor number.

So far, we have accounted for why plural third person pronouns and nouns can be agreed with in number whereas first and second oblique pronouns cannot be agreed with: only those features at the outermost layer of a noun as a result of fusion can be transferred during Agree-Copy. For completeness, then, let us consider how this theory extends to non-oblique nominals in AK. The complete agreement patterns in AK nominals can be explained by the interaction of three factors: a) the initial (syntactic) structure of the nominal, b) the disjunctive fusion rules of Kurmanji given in (27), and c) the principle in (29) that Agree-Copy takes the  $\phi$ -features from the outermost layer of a nominal.<sup>19</sup> The table in (43) illustrates how direct and oblique nominals are established in AK and what the theory predicts regarding their agreement properties. Features at the outermost layer of each structure are bolded.<sup>20</sup>

We can now go through each row on the table in (43) to show how our proposed theory gets the right results. (43a) shows how 1.DIR and 2.DIR pronouns are structured. By (27a), participant

<sup>19</sup> “The outermost layer” corresponds to the maximal extended projection agreed with in the syntax: see the definition of a goal in (31b). Thus, Agree-Link/Agree-Copy cannot establish relations with other syntactic objects that could potentially maximize feature valuation by looking further down the KP structure.

<sup>20</sup> Note that all of these structures include a NUM node. An anonymous reviewer asks whether we should treat number privatively, just as we do PART and K, such that it is present in plural nominals, but absent in singulars. Our answer is that yes, we would probably assume that, but it doesn’t make an empirical difference one way or another (as far as we can see), given that default agreement is always homophonous with singular agreement. Hence in a form like [He-OBL her.DIR saw] one could say that the NUM node on “he” is present, fuses with K, and triggers singular agreement on the verb, or one could say that the NUM node is absent, nothing fuses with K, and default singular agreement appears on the verb. The result is the same either way.

(43)	INITIAL STRUCTURE	AFTER FUSION	PRODUCT
a.	[[NUM] PART]	[NUM+PART]	DIRECT LOCAL PRONOUN
b.	[[[NUM] PART] K]	[[NUM+PART] K]	OBLIQUE LOCAL PRONOUN
c.	[NUM]	[NUM]	DIRECT THIRD PRONOUN
d.	[[NUM] K]	[NUM+K]	OBLIQUE THIRD PRONOUN
e.	[[NOUN] NUM]	[NOUN+NUM]	DIRECT NOUN
f.	[[[NOUN] NUM] K]	[[NOUN] NUM+K]	OBLIQUE NOUN

features fuse with number features. Since there is no K layer in direct nominals, the outermost layer is the fusion of number and participant features. Thus, the theory predicts full person and number agreement with direct local first and second person pronouns. This is what we find as shown in (6) repeated in (44).

- (44) a. Ez rvi-m.  
**I.DIR ran-1SG**  
 'I ran.'
- b. T<sub>1</sub> rvi-yi.  
**you.DIR ran-2SG**  
 'You ran.'

In (43b), there is an extra layer of K in addition to the participant and number features. Again, by (27a), number and participant features fuse. However, K is not involved in this fusion. As shown in (24), the general oblique morpheme *-e* shows up on local pronouns, not the oblique plural morpheme *-a*, which shows up on oblique third person pronouns and plural oblique nouns. This supports the claim that K does not fuse with anything when number and participant features are both present. It therefore explains why oblique first and second pronouns cannot be agreed with, even in the plural, as shown above.

(43c) is straightforward as the only available feature is NUM, and we have already discussed the crucial case of (43d) in detail above.

Finally, (43e) represents the structure of direct nouns while (43f) represents the structure of oblique nouns. Nouns are essentially the same as third person pronouns, except for the fusion of number features with nouns as in (43e). This is the result of the fusion rule in (27c), not discussed

until now. In AK, singular and plural direct nouns have the same shape, the difference revealed only indirectly, by agreement on the verb. This differs from the situation in which the noun is oblique, plural is distinguished as it fuses with K yielding the *-a* morpheme.<sup>21</sup>

(45)	<b>NOUN</b> <sub>girl</sub>	<b>FEATURE</b>
	keçık	DIR, SG
	keçık	DIR, PL
	keçık-e	OBL, SG
	keçık-a	OBL, PL

The data in (45) motivates the fusion rule given in (27c), because NUM is not expounded by an affix different from the N root except where it has fused with K instead. (27c) has no crucial effect on agreement, however, since NUM is in the outermost layer of the nominal either way.

To sum up, the focus of this section has been partial agreement with oblique third pronouns and nouns in Kurmanji. We proposed that agreement has a post-syntactic component that is sensitive to PF processes like Fusion. When values are being transferred from an agreed with noun, only those features at the outermost layer of a noun are transferred. Depending on how features within a nominal fuse, features of a nominal can become available for agreement or not. In contrast, in a more purely agglutinative language like Hindi, the case head K doesn't fuse with any other category, and thus creates an absolute barrier to all agreement in  $\varphi$ -features.

#### 4. Agreement with Direct Objects in Kurmanji

In the previous section, we discussed agreement with subjects, including those that may be overtly case marked nominals. In this section, we turn our attention to complications that arise from the possibility of agreeing with a direct object instead of or in addition to the subject. There are several things about this that are interesting from the point of view of (partial) agreement being possible with the dative subject. The first is that agreement is even possible with the object, given that the subject is closer to T than the object and is eligible for (at least partial) agreement. The second is that person agreement with the object seems to render number agreement with the oblique subject impossible in past tenses (see (10)-(11)). The third is that, although number agreement is possible

<sup>21</sup> We note that this is one way in which AK differs from other dialects, including SK and MK.

with oblique subjects in past clauses, it is not possible with oblique objects in present clauses. In this section, we discuss how these facts can be fit into our account by combining the account given so far with the possibility of Multiple Agree.

#### 4.1 *Agreement with Objects in Direct Case (Past Clauses)*

In the introduction, we showed that in AK the transitive verb can agree with its direct object in person and number in past clauses when the subject is oblique. This is observable with third singular oblique subjects that themselves trigger no nontrivial agreement on the verb, as one might expect (see (46)). But it also carries over to examples with third plural oblique subjects and first or second person objects, as in (47). In such situations, agreement must be with the object; it is impossible for the verb to show plural agreement with the oblique subject in this context.

(46) Wi hew di.  
 he.OBL him.DIR saw  
 ‘He saw him.’

(47) a. Wana ez di-m.  
**they.OBL** I.DIR saw-1SG  
 ‘They saw me.’ (= (11))

b. \*Wana ez/ti di-n.  
**they.OBL** I.DIR/you.DIR saw-PL  
 ‘They saw me/you.’ (= (10))

So, object agreement is possible in the context of an oblique subject in AK, and sometimes it seems to bleed agreement with the oblique subject which would otherwise be possible.

A commonly invoked idea is that agreement with nominative/absolutive/unmarked objects is possible in constructions with oblique subjects because the  $\phi$ -features on the subject are invisible to T (Bhatt 2005, Bobaljik 2008, among others). Then, when T probes for something to agree with, it does not find the oblique subject, but finds instead the unmarked object – the next closest nominal probing downward. This relates the fact that object agreement is possible in such structures to the fact that subject agreement is not. But our AK data is somewhat problematic for this view of the

locality of agreement and intervention. We have seen that oblique subjects are active for agreement purposes in Kurmanji. Therefore, under the simplest standard assumptions, we would expect the subject to intervene and prevent agreement between T and the object. But this is clearly not what happens in AK.

The puzzle here deepens somewhat when one takes into account the fact that dialects of Kurmanji that are similar in other respects can differ significantly when it comes to agreeing with the object. Thus, the dialect spoken in Muş (MK), described and analyzed by Gündoğdu (2011), is like AK in having normal accusatively patterned case and agreement in present tense clauses, and having oblique case on the subject of transitive subjects in past clauses only.

- (48) a. Ez te di-bin-im.  
 I.DIR you.SG.OBL IMPF-see.PRES-1SG  
 ‘I see you.’ (Present transitive)
- b. Ez ket-im.  
 I.DIR fall.PAST-1SG  
 ‘I fell down.’ ((p. 77) Past intransitive)
- c. Min te dit.  
 I.OBL you.SG.OBL see.PAST-3SG  
 ‘I saw you.’ ((p. 81) Past transitive)

MK is also like AK in that it allows number agreement with oblique third person subjects, although not person agreement.

- (49) Wan wi dit-in.  
 They.OBL he.OBL see.PAST-PL  
 ‘They saw him.’ (MK, compare AK (8))

This is expected, given that nominal declension and verbal inflection do not differ from those in AK in any important way. In particular, number and case fuse into a single morpheme in MK too (and there is a default plural agreement marker; see below). Nevertheless, T in past clauses never agrees with the object in MK, the way that it does in AK.

- (50) Wi wan dit-(\*in)  
 He.OBL they.OBL saw-PL  
 ‘He saw them.’

Similarly, (48c) is bad with see.PAST-2SG. For MK, then, we might want to say that even oblique subjects block T from agreeing with the direct object. But then, there is no principled reason why oblique subjects shouldn’t block T from agreeing the direct object in AK either. In particular, there is no independently motivated difference in the feature structures of nominals, or in the fusion patterns (or in the inflectional morphology on verbs) to hang this difference on.<sup>22</sup>

In light of these problems for a relativized minimality style account of the possibility of object agreement, we adopt instead the other major way of getting object agreement that is known from the literature: the possibility of Multiple Agree in the sense of Hiraiwa (2005). We state this by revising the Agree-Link operation given in (32) such that it allows parametric variation between Single Agree-Link and Multiple Agree-Link ((51b) = (32) above).<sup>23</sup>

- (51) a. **Agree-Link<sub>Multiple</sub>** establishes a relation between a probe P and all goals  $\forall G$  within the local c-command domain of P by adding pointers ( $\rightarrow$ ) from P to each of the Gs. (For simplicity, we call this Multiple Agree in the following.)

Schematically, given a probe P and goals  $\{G_1, \dots, G_n\}$ , Multiple Agree returns:

$$T \begin{bmatrix} \rightarrow G_1 \\ \rightarrow G_{\dots} \\ \rightarrow G_n \end{bmatrix}$$

- b. **Agree-Link<sub>Single</sub>** establishes a relation between a probe P and the closest goal G in the local c-command domain of P by adding a pointer ( $\rightarrow$ ) from P to G.

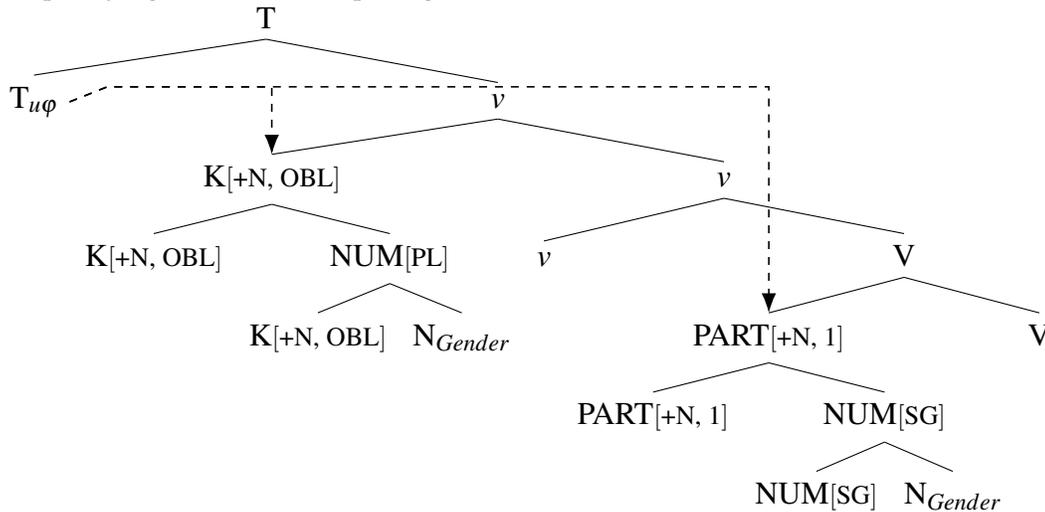
<sup>22</sup> There is one other obvious difference between MK and AK here: the objects of past tense clauses are in oblique case in MK, giving a rare double oblique case pattern found only in some Iranian languages (cf. Comrie 1981:xx). We are inclined to think of this as an effect of the difference in agreement between MK and AK, rather than a cause: if T agrees with the object, then it has direct case, but not otherwise (this statement would replace the treatment of direct case as unmarked case in assigned in TPs given in (13c)). Of course, it is not hard to imagine an account that goes the other way, saying that MK has a case rule that assigns OBL to objects in past clauses, and this makes the object inaccessible to agreement. But this would only follow automatically for deriving the lack of person agreement in (48c); it does not automatically carry over to explaining the lack of plural number agreement in (50), given that oblique case does not intrinsically rule out number agreement in MK (see (49)).

<sup>23</sup> More specifically, we assume that AK (and Icelandic) employ Hiraiwa’s mirror-symmetric form of Multiple Agree, rather than his centro-symmetric form. See fn. 34 below for some discussion.

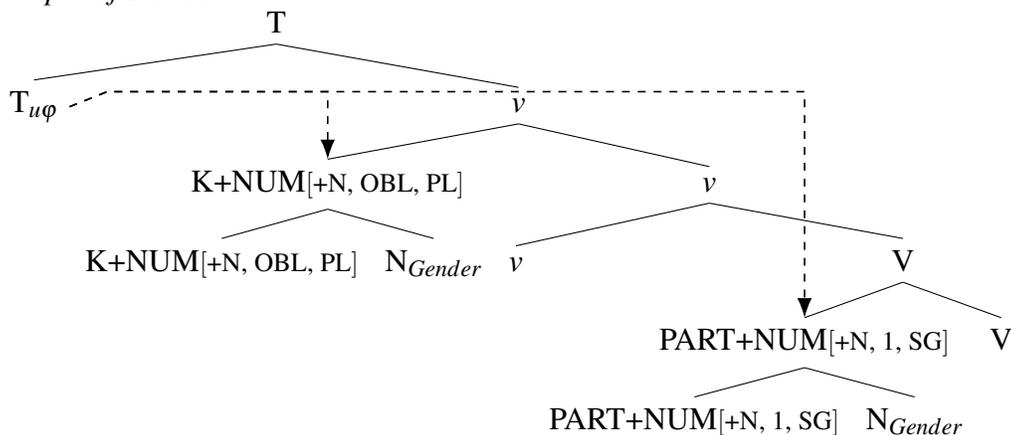
The statement in (51a) simply renders moot relativized minimality considerations for purposes of agreement.<sup>24</sup> Since all the NPs in T's c-command domain are considered for agreement, one NP does not intervene to block a relation between T and another NP. This explains why direct objects in past clauses in AK are available for agreement despite the availability of the oblique subject which is structurally closer to the probe on T. In contrast, MK would be set as having single Agree-Link only – a basic parameter that we don't necessarily expected to be grounded in the morphology or syntax in any intrinsic way. This is parallel to how Ussery (2013) explains a similar contrast between different varieties of Icelandic, some of which allow agreement with a nominative object past a dative subject, and some of which do not (see below).

Reconsidering AK clauses like (47a), then, Multiple Agree-Link returns the structure in (52) which is further fed into fusion to return (53).

(52) *Output of Agree-Link (Multiple Agree)*



<sup>24</sup> Minimality might still hold for purposes of movement however; see, for example, Hiraiwa (2005). (We thank an anonymous reviewer for pointing this out.)

(53) *Output of Fusion*

The Multiple Agree-Link proposal by itself does not, however, explain why agreement with direct first and second person objects is preferred over agreement with oblique subjects in examples like (47a). The Multiple Agree-Link view does not make any distinction between two nominals in a clause, simply agreeing with all the visible nominals within the domain. The structure in (53) is further fed into Agree-Copy which replaces the pointers with  $\varphi$ -sets from the goals. In this configuration, the output of (53) yields the probe valued as in (54).

$$(54) \quad T \left[ \begin{array}{l} \{PL\} \\ \{1, SG\} \end{array} \right]$$

The complex feature bundle in (54) raises a conflict when it comes to lexical insertion. How does the grammar deal with complex feature bundles like (54)? We defer a full discussion of this question until the next section where we discuss similar facts from Icelandic. However, we provide AK's answer here. Following van Koppen (2007), we argue that the resolution is dependent on the lexical inventory of a given language and general vocabulary insertion principles like the Elsewhere Principle (Anderson 1992:132).

(55) *Elsewhere Principle*

Application of a more specific rule blocks that of a later more general rule.

When the structure in (54) is fed into Vocabulary Insertion, the most specific vocabulary item that

can be inserted is picked. The inventory of AK agreement morphemes is given in (56).

(56) *AK disjunctive rule block for agreement*

Agr  $\longleftrightarrow$  *-m* / 1SG

Agr  $\longleftrightarrow$  *-i* / 2SG

Agr  $\longleftrightarrow$  *-ni* / 1PL (optional)

Agr  $\longleftrightarrow$  *-n* / PL

Agr  $\longleftrightarrow$  *-e / Ø* / ELSEWHERE

On this list, both *-m* but and *-n* match parts of the feature bundle on T in (54). However, *-m* is chosen over *-n* because it is the more specific rule in the sense that it refers to the values of two features, person and number, whereas *-m* refers to number only. This accounts for (47a) and all other situations in which the object is first or second person and hence agreement with the object is realized on the verb. It also accounts for the cases when the object is third person plural and the subject is third person singular. In such cases, the verb shows plural agreement with the object because *-n* ‘PL’ is more specific than the elsewhere forms *-e/Ø*: it refers to the number feature, whereas the elsewhere form does not refer to any features. Similarly, it also accounts for sentences where the subject is third person plural and the object is third singular (see (8)).

Our Multiple Agree analysis explains the seemingly contradictory facts about agreement in Adıyaman Kurmanji. On the one hand, oblique subjects are available for agreement. On the other hand, direct objects are also available for agreement and they seem to block agreement with oblique subjects when direct case objects are first or second person. We claim that both arguments are agreed with in the syntax. This voids any relativized minimality concerns about agreeing with the object even when agreement with the subject is possible. The choice of which feature set is realized overtly at PF is resolved by a mechanism that refers to the inventory of vocabulary items available in AK and the very general Elsewhere Principle.

4.2 *No Agreement with Oblique Objects (Present Clauses)*

For the most part, we have focused on agreement in AK clauses in which tense is past and hence the alignment is ergative (OBL-DIR), because that is where we see the theoretically interesting phenomenon of partial agreement with an oblique nominal. For completeness, there is one further fact to explain in this domain. We have seen in detail that 3PL.OBL subjects are available for agreement and can provide an agreement probe with the plural feature. Now given that 3PL.OBL nominals are visible for agreement and the fact that AK employs Multiple Agree, we might expect to see agreement with oblique objects in a present-tense sentence like (57).

- (57) Hew wana di-vun-(\*in)-e.  
 he.DIR them.OBL IMPF-see-PL-COP  
 ‘He sees them.’

When considered in terms of the goals that are present, (57) is identical with the past tense sentence (58), discussed in the previous section: in both sentences, the NPs are *wana* and *hew*.

- (58) Wana hew di-n.  
 they.OBL he.DIR saw-PL  
 ‘They saw him.’ (= (8a), (36))

Given Multiple Agree, one might thus expect to get the same feature bundles on probes in both sentences (although ordered differently, perhaps). If so, we would expect plural agreement to be possible on the verb in (57). Yet, this is sharply ungrammatical.<sup>25</sup>

In fact, a straightforward explanation for this is available to us in terms of phase theory. Recall from Section 2 that in order to explain the split ergative case pattern in Kurmanji, we assumed, following Baker (2015) and Coon and Preminger (2017), that some *vs* are phase heads in AK, whereas others are not. In particular, we argued that *v.PRES*, an ingredient in the present tense stem, is a phase head, whereas the *v.PAST* component of the past stem is not, because of its passive

---

<sup>25</sup> Again, this is seen in a somewhat noisy way in Dorleijn’s (1996) survey. She observes 125 instances of agreement with 3PL oblique subjects, but only 18 instances of agreement with plural oblique objects (p. 119). She generalizes that “Agreed-with OBL subjects are markedly more frequent than agreed-with OBL objects” (p. 123).

nature (diachronic, and perhaps also synchronic). Now given that *v*.PRES is present in sentences like (57), the oblique object inside *v*'s VP complement is not visible to T as a result of the Phase Impenetrability Condition (Chomsky 2000, 2001). In contrast, T can agree with the object (as well as with the subject) in past clauses, since *v*.PAST is not a phase head.

This phase-based approach explains a number of interrelated facts compactly. In the present clauses, the object is spelled out in the *v*P phase. Therefore, it is no longer accessible for either case computations or agreement probing. This is why subjects are never “ergative” (OBL) in present clauses, and why there is no agreement with oblique objects. In past clauses, this phase boundary is absent. Thus, the object is visible to trigger dependent case on the subject. At the same, it is also available for agreement purposes. Overall, then, the same assumption about phase boundaries that accounts for split ergative case marking also accounts for the differences in object agreement across these clauses.<sup>26</sup>

This completes our discussion of AK case and agreement interactions. In the next section, we extend our analysis to Icelandic, another language where oblique (e.g. dative) subjects arguably can be agreed with, but only under some very specific circumstances.

## 5. Extension to Icelandic

### 5.1 Agreement with oblique subjects in Icelandic and Faroese

Icelandic is an interesting language to compare with AK, since the languages have both similarities and differences when it comes to the interaction between case and agreement. It is normally said that finite verbs do not agree with their dative case subjects in Icelandic, and with good reason. For most speakers/in the standard language, the dative subject in an example (59) does not agree with the verb in person, nor does the one in (60) agree with it in number.<sup>27</sup>

<sup>26</sup> We also note that AK does not have differential object marking (DOM): all objects are oblique in present clauses, and all are in direct case in past clauses regardless of factors like specificity or animacy. Some Iranian languages do have DOM, including some Diyarbakır Kurmanji speakers (Dorleijn 1996). We leave open how this is to be accounted for.

<sup>27</sup> But see xx below for brief discussion of some reported dialectal or idiolectal variation in this.

- (59) Mér býð-ur við setningafræði.  
me.DAT loathes against syntax  
'Syntax makes me sick.' (1SG would be býð)
- (60) Þeim líð-ur vel.  
them.DAT feels good  
'They feel fine.' (3PL would be líð-a) (Thráinsson 2007:159)

The fact that there is no agreement in person in (59) is like AK, but the fact that there is no agreement in number in (60) is different from AK. What then can be said about this?

On our account, the K node that realizes cases other than unmarked nominative should hide the  $\varphi$ -features of the nominal from Agree-Copy at PF, unless something happens. So, nothing special needs to be said about (59). The main thing that can happen to change the situation, according to our hypothesis, is fusion of heads at PF. And this is relevant, because Icelandic is like AK – and different from Hindi – in that case and plural number are normally exponed together in Icelandic. This can be seen in the sample partial paradigm in (61).

- (61) Number fuses with K (*hest* “horse”)
- a. hest-ur NOM, SG
  - b. hest-ar NOM, PL
  - c. hest-i DAT, SG
  - d. hest-um DAT, PL
- (Thráinsson 1994:153)

Here the dative plural ends in *-um*, and this is not a sequence of a plural morpheme (e.g. *-ar* from (61b) followed by a dative case morpheme like *-i* from (61 c). (Dative singular and nominative plural are different with different genders and declension classes, but they never add up to dative plural *-um*, used with all common nouns.) So, probably there is a rule that fuses NUM and K in Icelandic, too, making number on dative subjects potentially available in Icelandic. Nevertheless, we do not see number agreement with dative subjects in Icelandic in (60). Why not?<sup>28</sup>

<sup>28</sup>Note that *-um* does not appear as a dative plural marker on Icelandic personal pronouns, just as *-a(n)* does not in Kurmanji (*okkur* ‘we.DAT’, *ykkur* ‘you.PL.DAT’, *þeim* ‘they.DAT’). Thus, we can say that person blocks fusion of number and case in Icelandic too.

In general, pronoun declension is quite irregular in Icelandic (Thráinsson 2007). This raises a question of whether

To explain this, we appeal to a difference in verbal inflection between AK and Icelandic. We claim that Icelandic dative subjects are, in fact, agreed with. Yet, agreement is not realized in any discernible way on the surface because of properties of the verbal morphology in Icelandic. The table in (56) showed that differences in person are not (systematically) expressed on the verb in the plural in AK: 1PL, 2PL, and 3PL can all trigger the same suffix */-n/*. Hence, the relevant vocabulary insertion rule clearly does not refer to person; rather it is just  $AGR \leftrightarrow /n/ /PL$ . As such, it automatically applies also to the {PL} feature set contributed by oblique subjects, which contains a number value, but no person value. Icelandic paradigms are different from AK's in this way: in all the major paradigms, 1PL, 2PL, and 3PL are exponed by three distinct morphemes. (62) shows this for the present indicative; the same is true for the indicative past, and subjunctive present and past (Thráinsson 2007:8).

- (62) Present Indicative
- |    |              |                 |
|----|--------------|-----------------|
| a. | Ég bit.      | ‘I bite.’       |
| b. | Ðú bit-ur.   | ‘You bite.’     |
| c. | Hann bit-ur. | ‘He bites.’     |
| d. | Við bít-um.  | ‘We bite.’      |
| e. | Ðið bit-ið.  | ‘You all bite.’ |
| f. | Þeir bit-a.  | ‘They bite.’    |

Therefore, the vocabulary insertion rules for this Icelandic tense should be as in (63):

---

number, person, and case all fuse into a single node in Icelandic. If that were true, then person and number might be accessible to agreement in dative pronouns after all – contrary to what we observe. However, despite the irregularity, pronouns in Icelandic still show signs of being (at least) bimorphemic. Take *mér*, 1SG.DAT in (59), for example. This seems to share the root */m/* with *mig* 1SG.ACC and *mín* 1SG.GEN, and to share the dative affix */r/* with *þér* 2SG.DAT. So person and case do not fuse into a single head, where only one vocabulary item can be inserted; rather each conditions the realization of the other, by rules of contextual allomorphy. Since the person head is not fused with the case head (but only with number), person features are not accessible to agreement.

(63) *Agreement morphology for present indicative in Icelandic*Agr  $\longleftrightarrow$  *-um* / 1PLAgr  $\longleftrightarrow$   $\emptyset$  / 1SGAgr  $\longleftrightarrow$  *-ið* / 2PLAgr  $\longleftrightarrow$  *-a* / 3PLAgr  $\longleftrightarrow$  *-ur* / ELSEWHERE

What is important here is that all of the vocabulary items that mention plural also mention a person feature in Icelandic. Therefore, assuming that fusion puts a number feature but not a person feature on the outermost layer of the nominal in Icelandic as in Kurmanji, none of these plural morphemes can be inserted, in accordance with Halle and Marantz's (1994) subset principle given in (64). Instead, only the true default morpheme */-ur/* (used also for 3SG and 2SG) shows up on the verb in examples like (59) and (60).<sup>29</sup>

(64) *Subset Principle*

(Halle and Marantz 1993:276)

In order for a vocabulary item to be inserted at a terminal node, the identifying features of the vocabulary item must be a subset of the features at the terminal node.

Although our explanation of why there is no agreement with oblique subjects in Icelandic is different from our explanation for why there is no agreement with oblique subjects in Hindi, there is a significant point of similarity: in both cases, PF-oriented factors are crucial. For the Hindi/AK contrast, the crucial PF difference is whether NUM fuses with K or not. For the Icelandic/AK contrast, the crucial PF difference is whether the rules that exponence PL also crucially refer to person features or not. A connecting thread is that the details of how syntactic features are realized in PF are important in both cases. This then is a domain where we definitely expect to see microparamet-

---

<sup>29</sup> There are some nontrivial assumptions to note here. First, we must assume that all nominals other than first and second person pronouns must actually bear a third person feature in Icelandic; third person is not just absence of person here (cf. Nevins 2011). Second, this seems to imply that underspecification is used in Vocabulary Insertion rules only when it gives positive effects in terms of capturing syncretism, like the */ur/* rule in (63) does. The simple examples would work fine if (63) had the rule Agr  $\leftrightarrow$  *a* / PL (ordered after the 1PL and 2PL rules) rather than 3Agr  $\leftrightarrow$  *a* / 3PL, but apparently the grammar does not use the minimal conceivable feature specifications in situations like this.

ric variation, potentially very sensitive to small differences in the declension and inflection patterns in one variety as compared to another variety.

And it seems that such microparametric variation is indeed found. Consider in this light Faroese, a language closely related to Icelandic. Faroese is slightly but systematically different from standard Icelandic in relevant respects, according to research by Jónsson (2009) (we thank an anonymous reviewer for bringing this to our attention). First, a large fraction of Faroese speakers do allow plural agreement with a subject in oblique (dative) case, as shown in (65). In this example 20/41 speakers (48.8%) allowed plural agreement, whereas only 10 accepted the sentence with default singular agreement (see also Jónsson 2009:156).<sup>30</sup>

- (65) Nógvum kvinnum dáma mannfólk við eitt sindur av Búki.  
 many.DAT women.DAT like.3PL men.ACC with a bit of belly.  
 ‘Many women fancy slightly fat men.’

In contrast, person agreement with a dative subject is not attested in Jónsson’s study, and he gives the following example as bad (Jónsson 2009:159).

- (66) \*Mær dámi Hasa bókina.  
 I.DAT like.1SG this.ACC book.DEF.ACC  
 ‘I like this book.’

Finally, Jónsson observes that “it appears that number agreement with a dative subject in first or second person plural is less acceptable in Faroese”, although he notes that this requires further investigation. In these three respects, agreement with dative subjects in Faroese is very similar to agreement with oblique subjects in AK, and it is somewhat different from standard Icelandic in the wide acceptance of (65).

Our theory predicts, then, that there should also be inflectional paradigms in Faroese that are

<sup>30</sup> Note that, unlike standard Icelandic, the objects of dative subject verbs are normally accusative in Faroese, and as such they never trigger agreement on the finite verb. Hence there is no question of T agreeing with the object in (65), even though it is also plural. Jónsson draws a potential link between Faroese allowing agreement with dative subjects and it having accusative objects in the context of dative subjects, but we do not necessarily see a connection here (cf. Baker (2015) for a possible view of the case difference, which is also seen Dravidian and Australian.)

like those of AK and different from those of standard Icelandic. And indeed there are. Case paradigms in Faroese do not seem to be different in any significant way from Icelandic: for example, the cognate suffix *-um* in (65) expones both dative and plural in a fused synthetic morpheme. But verb inflection in Faroese is impoverished compared to Icelandic, as shown in (67); in particular, there are no person distinctions in the plural (Jónsson 2009:159, fn.15) .

(67) Inflection of *dáma* ‘like’ in present tense

dámi 1SG      dáma 1PL

dámar 2SG     dáma 2PL

dámar 3SG     dáma 3PL

(68) Vocabulary Items

Agr  $\longleftrightarrow$  *-a* / PL

Agr  $\longleftrightarrow$  *-i* / 1SG

Agr  $\longleftrightarrow$  *-ar* / ELSEWHERE

In this respect, too, Faroese is like AK but different from more closely related Icelandic. It is clear that the agreement affix */a/* spells out plural number regardless of person; thus, it is also triggered by a feature structure that has PL but no person feature at all, such as what one gets from agreeing with a dative subject in these languages. This systematic contrast between Faroese and standard Icelandic thus supports our theory.<sup>31</sup>

---

<sup>31</sup> There are also innovative (mostly young) Icelandic speakers who do sometimes allow plural agreement with dative subjects, according to Árnadóttir and Sigurðsson (2013) (also pointed out to us by an anonymous reviewer). However, this seems to be notably rarer for Icelandic than for Faroese: it is fully accepted by 8 out of 36 speakers surveyed (p. 129-131). We are not able to discuss every microvariation that may be attested in these varieties – in part, because the case and agreement paradigms of the speakers surveyed are not reported.

The innovative Icelandic phenomenon may be different in nature from the Faroese phenomenon anyway. Árnadóttir and Sigurðsson (2013) report that they found even person agreement with oblique subjects, whereas that is not attested in Faroese (or AK). They claim that agreed-with NPs really bear nominative case in the syntactic representation for these speakers; the NPs are spelled out as dative only at PF. This view would work within our theory too (if PF is allowed to change case specifications so radically, and it does so after Agree-Copy).

## 5.2 Multiple Agree in Icelandic

Finally, we turn to object agreement and how it interacts with the features of subjects, which is a famous topic in Icelandic studies. We cannot account for every detail in every variety, but we can show that our main ideas have legs in this area too. It is widely observed that many Icelandic speakers – although not all – do allow agreement with the nominative object past the dative subject. This has been taken to be a classic case of feature sensitive relativized minimality in some accounts (e.g. Bobaljik 2008). In particular, for many speakers the verb shows plural agreement with its nominative object in much-discussed examples like (69).

- (69) Henni höf-ð-u leiðst þeir.  
 her.DAT had-3PL bored.at they.NOM  
 ‘She had found them boring.’ (Schütze (2003:295), Sigurðsson (2000:87))

However, we join an alternative tradition of work according to which (69) is actually the result of the verb agreeing with the dative subject as well as with the nominative object, albeit in a reduced set of features (see Boeckx 2000, Anagnostopoulou 2003, Hiraiwa 2005, Schütze xxxx, Ussery 2013). As such, the examples are relevant to our primary theme, the conditions under which oblique subjects can be agreed with. However, the details of how Multiple Agree is realized morphologically in Icelandic is instructively different from how it is in AK.

Almost as famously, agreement with objects past dative subjects is quite restricted in Icelandic. In that one cannot, in many cases, agree with a first or second person nominative object (see (74b) below for an exception). (70), for example, is ungrammatical for all speakers.

- (70) \*Henni leiddumst við.  
 her.DAT bored.at.1PL we.NOM  
 ‘She is bored with us.’

Like others before us, our hypothesis is that agreement with objects in oblique subject constructions is a result of Multiple Agree, not of feature sensitive relativized minimality. From this perspective, the object agreement in (69) implies that Icelandic is a multiple agree language, like AK. We are

led to say, then, that T actually agrees with both the subject and the object in these Icelandic examples. This is not implausible theoretically since these quirky subject constructions famously do not have canonical agentive subjects (Marantz 1984, Sigurdsson 1989, Wood (2015ch. 5)). Hence it is reasonable to say that they do not have an active agent-assigning  $v$ , the kind that is a phase head. There is no phase head internal to the clause, and T can agree into the VP without violating the PIC in a way that it cannot in ordinary active nominative-accusative clauses. The fact that  $v$  is a phase head in active agentive clauses but not in clauses with experiencer subjects bearing quirky case in Icelandic is parallel to the fact that  $v$  is a phase head in present clauses but not in past clauses with ergative subjects in AK. What causes  $v$  not to be a phase head may be somewhat different in the two languages, but the effect that this has on both the case of the subject and the possibility of agreeing with the object is analogous.

Recall that whether a language allows Multiple Agree or only Single Agree (for a given head) is a basic parameter, on which dialects can vary: AK has Multiple Agree; otherwise similar MK has only Single Agree. We might then expect to find the same kind of variation in varieties of Icelandic, and indeed we do. Sigurðsson and Holmberg (2008), Árnadóttir and Sigurðsson (2013), and Ussery (2013)xx all report that there are speakers of Icelandic (Icelandic C) which never allow agreement with the object in oblique subject constructions like (69). Following Ussery (2013)xx, we analyze this as a reflection of the choice between Multiple Agree and Single Agree in the grammar of Icelandic: “Standard” Icelandic allows Multiple Agree; “Icelandic C” allows only Single Agree, such that T agreeing with the direct object is never possible, the oblique subject intervening regardless of its feature content.<sup>32</sup>

Indeed, there is empirical evidence in favor of Multiple Agree in Icelandic which is not available in AK. One bit of evidence for this comes from Holmberg and Hróarsdóttir (2004): for some

---

<sup>32</sup> Interesting questions arise, though, about the relationship of case and agreement. In MK, where agreement with the object is blocked, the object has oblique case, not nominative. In Icelandic, the object that cannot be agreed with can nevertheless be nominative (although there is some tendency to shift to having an accusative object in these varieties, as has happened more generally in Faroese; see Árnadóttir and Sigurðsson 2013.) So, our suggestion that T assigns direct case to the object in AK (fn. 22) would not carry over to Icelandic. There are many proposals about how to handle the partial dissociation of agreement and nominative case in Icelandic, ranging from Ussery’s (2013) proposal that nominative is assigned by Agree with a different probe to Bobaljik’s (2008) proposal that nominative is really an unmarked case that has nothing to do with agreement. We do not pursue the matter here.

Icelandic speakers T actually can show plural agreement if both the dative subject and the lower nominative NP are plural. Thus, (71) is acceptable, even though (72) and (73), where one NP is singular and the other NP is plural, are not.<sup>33</sup>

- (71) Það finnast mörgum stúdentum tölvurnar ljótar.  
EXPL seem.PL many student.PL.DAT computer.THE.PL.NOM ugly  
'Many students find the computers ugly.'
- (72) \*Það finnast einhverjum stúdent tölvurnar ljótar.  
EXPL seem.PL some student.SG.DAT computer.THE.PL.NOM ugly  
'Some student finds the computers ugly.'
- (73) \*Það finnast mörgum stúdentum tölván ljótar.  
EXPL seem.PL many student.PL.DAT computer.THE.SG.NOM ugly  
'Many students find the computer ugly.' (Holmberg and Hróarsdóttir 2004)

The generalization here, then, (for this variety) is that the verb is plural only if both the dative and the nominative NPs are plural. That is consistent with a form of Multiple Agree.<sup>34</sup>

A second piece of evidence pointing toward Multiple Agree in standard Icelandic is an observation attributed to Sigurðsson (1990-1991), as reported and analyzed by Schütze (2003) and Ussery (2013). We saw above in (70) that a verb with a dative subject often cannot agree with a first or second person nominative object. This leads essentially to ineffability. However, sometimes in Icelandic a verb with first or second person agreement is morphologically indistinguishable from

<sup>33</sup> Holmberg and Hróarsdóttir (2004) document this effect only in a very specific environment (and do not explain it): when the dative subject has not raised to Spec TP (rather an expletive is inserted there) and the nominative NP is the subject of an embedded clause. Ussery (2013)xx however shows that some speakers have the same effect in other dative subject constructions as well. There is also cross-speaker variation in these matters, as an anonymous reviewer reminds us. In addition to the "Icelandic C" speakers who do not have agreement in (71), others allow it even in (72) ("Icelandic A" speakers, Sigurðsson and Holmberg 2008, Ussery 2013). About this latter group, we have nothing to say, beyond raising the possibility that they may have a different rule for resolving multiple features on T at PF, perhaps treating singular without a person feature as the absence of any number feature.

<sup>34</sup> Our analysis of Icelandic facts involves Mirror-symmetric Multiple Agree (Hiraiwa 2005) in which both goals value the same probe. Hiraiwa analyzes the same sets of facts given in (71)-(73) through what he calls Centro-symmetry in which the lower goal values the higher goal and the probe. He argues that PL agreement is impossible in a Mirror-symmetric Multiple Agree while it is possible in Centro-symmetric Multiple Agree. This follows from his particular assumption about dative arguments. For Hiraiwa, dative arguments do not provide any  $\phi$ -features. In our view, dative arguments can provide number features, if and only if the right sort of fusion takes place, which makes a Mirror-symmetric analysis possible. See Hiraiwa (2005ch. 2) for a more detailed discussion of the two types of Multiple Agree.

one with third person agreement. For example, in the present indicative paradigm in (63), second singular agreement is the same as third singular agreement: both are *-ur*. In past indicative, first singular agreement is syncretic with third singular agreement, and it is second singular that is different Thráinsson (1994:159). The Sigurðsson/Schütze observation, then, is that a first or second person nominative object is allowed only in the special case that the agreement it would trigger is homophonous with third singular agreement. Thus, in the present tense, a second singular object is acceptable (more or less), although a first singular one is not.

- (74) a. \*Henni hef-ur leiðst ég.  
her.DAT has-3S bored I  
'She has been bored with me.'
- b. (?)Henni hef-ur leiðst þú.  
her.DAT has-3SS/2SS bored you  
'She has been bored with you.'
- (Thráinsson 2007:237)

Schütze's insight is that the verb needs to show agreement with both the dative subject (third singular) and the nominative object (second singular): this is possible if both trigger the same vocabulary item, but not otherwise (see also Ussery 2013 for a version of the same idea). This too is compatible with our general idea that oblique subject constructions have Multiple Agree, not Single Agree past an NP that is itself inert for agreement. More generally, it is consonant with our theme that PF matters influence when and how agreement is manifest.

Although there is evidence for Multiple Agree in both AK and Icelandic, there is a difference too. In AK, the verb can manifest agreement with either the subject or the object, depending on which vocabulary item expones more features. In Icelandic, the verb has to show up with a single agreement suffix that is compatible with both the subject and the object. Schütze (2003) and Ussery (2013) see this clearly, saying that the bundle of features that came from the subject must trigger the same vocabulary item as the bundle of features that came from the object. This might be worked out as follows. In (74b), one gets the following set of sets of feature in (75). Neither set triggers one of the specific vocabulary items in (63). Therefore, each one independently triggers



conjunctively in Icelandic. One could ask what is the nature of this crosslinguistic variation. It would be strange to build this into the VI rules themselves. It may be better to say that there is some general operation on feature bundles in one language but not the other that applies prior to the vocabulary insertion rules; perhaps something like set union happens in AK but not in Icelandic. More generally, one can imagine other logical possibilities which languages might adopt: they might pool the features, so that a (third person) plural subject plus a first person (singular) object triggers first person plural agreement on the verb; they might have vocabulary items that make specific reference to different values of the same features, resulting in a kind of portmanteau agreement form; they might fission off a new morpheme, so that two affixes can be inserted rather than just one. Perhaps there are other possibilities as well, logical and/or empirically attested. We simply don't know (yet) whether this is an area with tight UG constraints, or one with a good deal of parametric freedom. Exploring the logic and typology of how multiple agree can be realized at PF is a worth topic, and some have undertaken aspects of it (REFS), but it goes far beyond what we can undertake here [ref to AUTHOR in progress].<sup>38</sup>

## 6. Comments on Some Alternative Analyses

In this final section, we return to AK, to discuss briefly some alternative theories that might be candidates for explaining the partial agreement with oblique subjects that we analyzed using Two Step Agree and Fusion, with the second step of Agree (Agree-Copy) potentially following Fusion at PF. We consider two such: the idea of having distinct probes for number and person, and the idea of Cyclic Agree in the sense of Rezac (2003) and Béjar and Rezac (2009).

---

<sup>38</sup> There are other much discussed complexities to agreement in Icelandic that we do not consider here. For example, some speakers are less likely to have agreement with the nominative NP in expletive constructions of the form [There verb-PL NP-DAT NP.PL-NOM...] than in structures of the form [NP-DAT verb-PL NP.PL-NOM...], and some speakers are less likely to have agreement with nominative NPs that are subjects of an embedded clause as opposed to those that are theme arguments of the dative subject verb itself (Sigurðsson and Holmberg's (2008) "Icelandic B"). However, Ussery (2013) shows that none of these effects is categorical: there are speakers who allow agreement even in the more complex structures ("Icelandic A"), and there are speakers who do not allow it even in the simpler structures ("Icelandic C"). We take this as a good excuse for not making these factors an integral part of our theory, tentatively agreeing with Ussery 2013 that agreement simply becomes less likely as the structure becomes more complex, – either for reasons of linguistic theory, or reasons of language use.

### 6.1 Split Probe Systems

In our analysis, we have assumed that there is a single functional head - T - that counts as a probe and can recover any  $\varphi$ -features that its Goal(s) may have, including both number features and person features. In contrast, many(xx) have assumed that the T probe is actually split into two, one probe seeking a value for a number feature, and a different probe seeking a value for a person feature. This view has been taken for Icelandic in particular, in a tradition that begins with Taraldsen (1995); see also Sigurðsson and Holmberg (2008) for a clear example [list some others? Mention Nevins 2011 as a case in point]. One might well think that this idea would be useful for partial agreement with oblique subjects in Kurmanji as well.

First, we observe that this view would be more tempting if number agreement were realized in AK separately from person agreement, as a distinct morpheme in AK the way it is in some other languages (e.g. Georgian, Mohawk). But that is not what we see. There is only one agreement slot in AK, and it spells out a combination of number and person; nor can one ever get person agreement with one NP and number agreement with a different one, as one might expect in a true split probe system. In order to describe the surface paradigmatic facts, one would have to say something like the number head (exponed *-n* if plural) must delete if it is adjacent to an overt realization of the person head (e.g. *-m* for 1SG). That is not out of the question, certainly, but the facts are captured more directly if one says that there is only one head, which can be replaced by one and only one morpheme, as we do.

Assuming this is not a deal-breaker, how might a split probe system be fleshed out to account for our facts? One version, in the spirit of Sigurðsson and Holmberg (2008), would be to say that the person probe and the number probe are in different positions relative to the oblique subject (see also Preminger xxx, others?). More specifically, one could suppose that the person probe is lower than the position of the ergative/oblique subject, whereas the number probe is higher than the oblique subject. Then it would follow from the geometry of the clause that the number probe could agree with the oblique subject, but the person probe could not. However, we know of no independent evidence for this structural assumption. More awkward still, such a theory

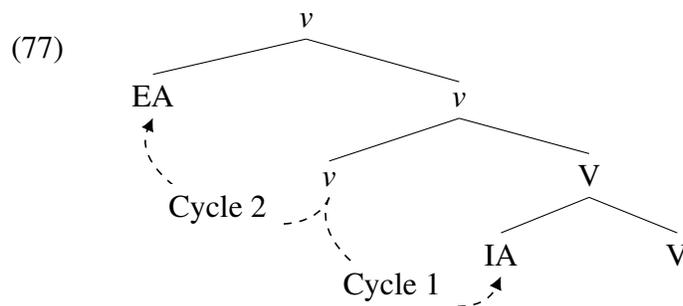
might have to say that direct case subjects are in a different position (at the crucial point in the derivation), below the person head as well as the number head, to get the fact that those subjects trigger agreement in person as well as number. That seems quite ad hoc; all the available evidence from Kurmanji suggests that oblique subjects and direct case subjects are in the same structural position (see Haig 2008, Atlamaz 2012, etc.).

Another version – not proposed by anyone that we know of, but readily imaginable – would be to combine the split probe hypothesis with Bobaljik’s (2008) idea that probes can be set parametrically for what morphological case(s) their goals can have. Then one could say that the number probe allows agreement with both dependent case NPs and unmarked case NPs, whereas the person probe allows agreement with NPs in unmarked case only, in accordance with the hierarchy in (3). The problem we see with this view is that it seems to overgenerate typologically. It should be equally possible, on this view, for a language to allow person agreement but not number agreement with an oblique subject. Yet in our (admittedly small) sample of languages, this doesn’t happen: AK, Faroese, and Icelandic all allow some degree of number agreement with oblique subjects, but none of them allow person agreement (no variety of Kurmanji known to Dorleijn 1996 or Haig 2008; no variety of Icelandic in the literature cited). Something important is arguably missed here.

In contrast, we do have an account of why number and not person on oblique NPs is visible to T in these languages, which appeals to something independently observable: it is because NUM fuses with K but PART does not. This works for the languages in view here, and it relates agreement patterns to declension patterns in a substantive way. It is also possible that this will always hold true: that the universal structure of nominal projections and universal locality constraints on fusion are such that NUM can always fuse with K more easily than PART can. If so, then the fact that oblique NPs can trigger number agreement but not person agreement would hold true crosslinguistically. That would be a great discovery, compatible with our theory, although we do not try to take that extra step here.

## 6.2 Cyclic Agree

The second alternative theory that we consider is Cyclic Agree in the sense of Rezac (2003) and Béjar and Rezac (2009). The main idea behind Cyclic Agree is that a probe can agree more than once until it finds what it is looking for. For example, if an agreement probe is looking for a number feature, it can try finding it on one argument. If that argument fails to provide a number value, the probe can initiate a second or a third agreement cycle until it finds the number feature it is looking for. Once it finds the relevant feature, it stops further probing. An agreement probe starts looking down into its c-command domain (i.e., its complement) in the first cycle. If this fails, then it extends its domain by looking up. Given this architecture, the optimal candidate for the agreement probe is  $v$ , the head that is between the external argument and the internal argument. It can first look into its domain (VP) to agree with the internal argument. Then, it can look up to agree with the external argument if the internal argument fails to provide the relevant features, as shown in (77).



As a result, the internal argument is in a privileged position for triggering agreement, taking precedence over the external argument, and Béjar and Rezac (2009) provide detailed discussion and data to support this.

There are two aspects of AK agreement that one might try to get from this theory. One is an account of why there is object agreement in past clauses, as an alternative to our use Multiple Agree. According to Cyclic Agree, it is actually expected that agreement with the object would take precedence over agreement with the subject, as we observed in examples like (10) and (11).

Instead, what might be a challenge for a Cyclic Agree account is the other side of the split ergativity coin: the fact that agreement in present tense clauses in AK is only with the subject, never with the object. Our account of this within a Multiple Agree theory appeals to the idea that  $v$  is a phase head in present clauses but not in past clauses, so agreement of T into the VP is blocked by the PIC in present tense sentences. This idea cannot readily be translated into the Cyclic Agree approach, because there the probing head  $v$  is the same as the phase head, and the PIC does not prevent the phase head itself from agreeing into its complement, according to standard Chomskian assumptions. So on this point Cyclic Agree needs to adopt some other difference in the structure of present clauses and past clauses: either there is a more complex structure for the  $v$ -space, with multiple  $v$ -like heads, or the agreement probe is in a different position, above the subject, in present tense clauses. These additional assumptions are not impossible, but we do not know of any empirical evidence in their favor. For example, present verbs are not overall more complex morphologically than past verbs, nor is agreement in a different position within the verbal complex in the two types of clauses.

The second and more germane issue is whether Cyclic Agree could offer a distinctive idea about why the probe can agree with an oblique subject in AK, but only in number. The answer is potentially yes. Béjar and Rezac (2009) develop the idea that the agreeing head  $v$  can agree with the subject after agreeing with the object, and the features of  $v$  might be changed somewhat as a result of that first agreement. So, we can imagine a derivation like this:  $v$  agrees with the direct case object, and this values some of its features but not all. Then it goes on to agree with the oblique subject to value only its remaining features. This could be made to work with the very particular assumption that third person “singular” NPs and pronouns in AK have a marked person feature but are formally not marked for number, the [-plural] value being filled in later by default. Then  $v$  always gets a person value from the object, but it can look to the subject for a number value if and only if the object is third person singular. It would follow from that that  $v$  can agree with the subject in number at most.<sup>39</sup>

---

<sup>39</sup> It is worth noting that this analysis would be sort of a strange converse of the Boeckx-Anagostopoulou story about Icelandic, where T gets a 3rd person from the dative subject, so that it can at most agree with the nominative

Our concerns about this line of analysis are similar to those we have for the split probe theory. First, the  $\varphi$ -features that it assigns to the direct object seem a bit ad hoc: why say that the person feature is always fully valued, whereas there is underspecification of the number feature? It seems more natural to handle both feature types in the same way, either underspecifying third person, or fully specifying singular number. But neither of those more consistent approaches to markedness gets the right result: specifying [-plural] on the object would make agreement with the subject completely impossible; leaving third person unspecified on the object would make it possible to agree with the subject in first or second person too, contrary to fact. Furthermore, the Cyclic Agree proposal is like the split agree proposal in that no substantive connection is drawn between the fact that the verb can agree with plural on oblique subjects in AK (and Faroese, but not Hindi) and the fact that PL fuses with K in AK (and Faroese, but not Hindi). Therefore, it does not explain why Kurmanji is more amenable to partial agreement with oblique subjects than Hindi is, for example. Our theory attempts to be deeper in this respect.

## 7. Conclusion

In this paper, we presented a theory of agreement with overtly case marked nominals. Focusing on Adıyaman Kurmanji, Hindi, Faroese, and Icelandic, we argued that in some languages overt case marking hides  $\varphi$ -features from agreement probes. Following Bhatt and Walkow (2013) and Marušič, Nevins, and Badecker (2015), we claimed that valuation is sensitive to post-syntactic PF processes like fusion. Those features that fuse with K can be transferred to the probe at PF by Agree-Copy. In addition, we proposed that AK, like Icelandic employs Multiple Agree (Hiraiwa 2005), thus accounting for the existence of object agreement in oblique subject constructions. Agreement with more than one nominal yields probes with complex feature bundles and leads to conflicts for vocabulary insertion. Such conflicts can be resolved in different ways. While AK chooses the feature bundle provided by one nominal as determined by the Elsewhere Condition, Icelandic requires that there be no conflict between the VIs that the two feature bundles cause to

---

object in number. But here it is the oblique subject that is limiting how agreement happens with the nonoblique object, not vice versa, and it is the subject that is agreed with first. So although there is a family resemblance between the two analyses, it seems unlikely that one could really get a unified theory along these lines.

be inserted. In cases of conflict, Icelandic resorts to a default strategy or ineffability.

We believe that the theory we presented here can account for a larger number of languages where overt case blocks agreement with a nominal. However, there are still some unanswered questions about languages (like Nepali (Bobaljik 2008)) where overt case does not block agreement with a nominal (even though there is no fusion). See (xx forthcoming<sup>40</sup>) for an analysis that extends to such languages.

## References

- Anderson, Stephen R. 1992. *A-Morphous Morphology*. Cambridge University Press.
- Árnadóttir, Hlíf, and Einar Freyr Sigurðsson. 2013. Case in Disguise. In *Variation in Datives: A Microcomparative Perspective*, ed. Beatriz Fernández and Etxepare Ricardo, 96–143. Oxford University Press.
- Atlamaz, Ümit. 2012. Ergative as Accusative Case: Evidence from Adıyaman Kurmanji. MA thesis, Boğaziçi University.
- Baker, Mark C. 2015. *Case: Its Principles and its Parameters*. Cambridge University Press.
- Baker, Mark C. 2008. *The Syntax of Agreement and Concord*. Cambridge University Press.
- Béjar, Susana, and Milan Rezac. 2009. Cyclic Agree. *Linguistic Inquiry* 40 (1): 35–73.
- Béjar, Susana, and Milan Rezac. 2003. Person Licensing and The Derivation of PCC Effects. In *Romance Linguistics: Theory and Acquisition*, ed. Ana Teresa Pérez-Leroux and Yves Roberge. John Benjamins Publishing.
- Benmamoun, Elabbas, Archana Bhatia, and Maria Polinsky. 2009. Closest Conjunct Agreement in Head Final Languages. *Linguistic variation yearbook* 9 (1): 67–88.
- Bhatt, Rajesh. 2005. Long Distance Agreement in Hindi-Urdu. *Natural Language & Linguistic Theory* 23 (4): 757–807.

---

<sup>40</sup> Omitted for anonymous review.

- Bhatt, Rajesh, and Martin Walkow. 2013. Locating Agreement in Grammar: An Argument from Agreement in Conjunctions. *Natural Language & Linguistic Theory* 31 (4): 951–1013.
- Bittner, Maria, and Ken Hale. 1996. The Structural Determination of Case and Agreement. *Linguistic inquiry*: 1–68.
- Bobaljik, Jonathan. 2008. Where is Phi? In *Phi Theory: Phi-Features Across Modules and Interfaces: Phi-Features Across Modules and Interfaces*, ed. Daniel Harbour, David Adger, and Susana Béjar. Oxford: Oxford University Press.
- Bok-Bennema, Reineke. 1991. *Case and Agreement in Inuit*. Vol. 38. Walter de Gruyter.
- Butt, Miriam, and Ashwini Deo. 2005. Ergativity in Indo-aryan. *Ms., Konstanz and Stanford*.
- Chomsky, Noam. 2001. Derivation by Phase. In *Ken Hale: A Life in Language*, ed. Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In *Step by Step. Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.
- Coon, Jessica, and Omer Preminger. 2017. Split Ergativity is not about Ergativity. In *Oxford Handbook of Ergativity*, ed. Jessica Coon, Diane Massam, and Lisa Travis. New York: Oxford University Press.
- Dorleijn, Margreet. 1996. *The Decay of Ergativity in Kurmanci*. Tilburg University Press.
- Ghomeshi, Jila. 1997. Non-projecting nouns and the ezafe: construction in Persian. *Natural Language & Linguistic Theory* 15 (4): 729–788.
- Grimshaw, Jane. 1990. *Argument Structure*. the MIT Press.
- Gündoğdu, Songül. 2011. The Phrase Structure of Two Dialects of Kurmanji Kurdish. MA thesis, Boğaziçi University.
- Haig, Geoffrey LJ. 2008. *Alignment Change in Iranian Languages: A Construction Grammar Approach*. Walter de Gruyter.

- Halle, Morris, and Alec Marantz. 1993. Some key features of Distributed Morphology. *MIT working papers in linguistics* 21 (275): 88.
- Harley, Heidi, and Elizabeth Ritter. 2002. Person and Number in Pronouns: A Feature-geometric Analysis. *Language* 78 (3): 482–526.
- Hiraiwa, Ken. 2005. Dimensions of Symmetry in Syntax: Agreement and Clausal Architecture. PhD thesis, MIT.
- Holmberg, Anders, and Thorbjörg Hróarsdóttir. 2004. Agreement and movement in Icelandic raising constructions. *Lingua* 114 (5): 651–673.
- Jónsson, Jóhannes Gíslí. 2009. Covert nominative and dative subjects in Faroese. *Nordlyd* 36 (2): 142–164.
- Kahnemuyipour, Arsalan. 2014. Revisiting the Persian Ezafe construction: A roll-up movement analysis. *Lingua* 150:1–24.
- Kalin, Laura, and Ümit Atlamaz. 2015. “Reanalyzing Indo-Iranian “stems”: A case study of Adıyaman Kurmanji”. In *Turkish, Turkic and the languages of Turkey*. UMass Amherst.
- Kalin, Laura, and Coppe van Urk. 2015. Aspect splits without ergativity. *Natural Language & Linguistic Theory* 33 (2): 659–702.
- Karimi, Simin, and Michael Brame. 2012. A generalization concerning the EZAFE construction in Persian. *Linguistic Analysis* 38 (1): 111.
- Lamontagne, Greg, and Lisa Travis. 1986. The case filter and the ECP. *McGill Working Papers in Linguistics* 3 (2): 51–75.
- Larson, Richard, and Hiroko Yamakido. 2005. “Ezafe and the deep position of nominal modifiers”. In *Barcelona Workshop on Adjectives and Adverbs*. Barcelona.
- Levin, Theodore, and Omer Preminger. 2015. Case in Sakha: are two modalities really necessary? *Natural Language & Linguistic Theory* 33 (1): 231–250.
- Mahajan, Anoop. 1990. The A/A-bar distinction and movement theory. PhD thesis, MIT.

- Marantz, Alec. 1991. *Case and licensing*. Ms.
- Marantz, Alec. 1984. *On The Nature of Grammatical Relations*. Cambridge, MA: MIT Press.
- Marušič, Franc, Andrew Nevins, and William Badecker. 2015. The Grammars of Conjunction Agreement in Slovenian. *Syntax* 18 (1): 39–77.
- Nevins, Andrew. 2011. Multiple agree with clitics: Person complementarity vs. omnivorous number. *Natural Language & Linguistic Theory* 29 (4): 939–971.
- Preminger, Omer. 2014. *Agreement and its failures*. Vol. 68. MIT Press.
- Preminger, Omer. 2017. What the PCC tells us about 'abstract' agreement, head movement, and locality. *Manuscript*.
- Rezac, Milan. 2003. The fine structure of cyclic Agree. *Syntax* 6 (2): 156–182.
- Samiian, Vida. 1994. The Ezafe construction: Some implications for the theory of X-bar syntax. *Persian Studies in North America*: 17–41.
- Schütze, Carson Theodore. 2003. Syncretism and double agreement with Icelandic nominative objects.
- Sigurðsson, Halldór Ármann. 1990-1991. Beygingarsamræmi. *Íslenskt mál og almenn málfræði* 12 (13): 31–77.
- Sigurðsson, Halldór Ármann. 2000. *The Locus of Case and Agreement*. Tech. rep. Working papers in Scandinavian syntax.
- Sigurðsson, Halldór Ármann, and Anders Holmberg. 2008. Icelandic dative intervention: Person and number are separate probes. In *Agreement Restrictions*, ed. Roberta D'Alessandro, Susan Fischer, and Gunnar Hrafn Hrafnbjargarson, 251–280. Mouton De Gruyter.
- Stowell, Tim. 2007. The syntactic expression of tense. *Lingua* 117 (2): 437–463.
- Taraldsen, Knut Tarald. 1995. On agreement and nominative objects in Icelandic. In *Studies in comparative Germanic syntax*, 307–327. Springer.

- Thackston, Wheeler M. 2006. *Kurmanji Kurdish:-A Reference Grammar with Selected Readings*. Renas Media.
- Thráinsson, Höskuldur. 1994. Icelandic. In *The Germanic Languages*, ed. Ekkehard König and Johan Van der Auwera, 142–189. London: Routledge.
- Thráinsson, Höskuldur. 2007. *The Syntax of Icelandic*. Cambridge University Press.
- Ussery, Cherlon. 2013. Variability in Icelandic agreement: An interaction of DP licensing and Multiple Agree. *Proceedings of the 40th Annual Meeting of the North East Linguistic Society*.
- van Koppen, Marjo. 2007. Agreement with Coordinated Subjects: A Comparative Perspective. *Linguistic variation yearbook* 7 (1): 121–161.
- Windfuhr, Gernot. 2009. *The Iranian Languages*. Psychology Press.
- Wood, Jim. 2015. *Icelandic Morphosyntax and Argument Structure*. Springer.