How to satisfy probes: person/number hierarchy effects in Äiwoo*

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1. Introduction

In Äiwoo (Oceanic, Austronesian; Solomon Islands) the verb system in undergoer voice shows a split in how the object is realized. In both examples in (1), the subject's features are uniformly realized by a marker on the verb (*-mu* 2MIN[1] in (1a); *-nee* 1MIN in (1b)). The object, on the contrary, shows different behaviour in the two examples. In (1a) it is realized by an independent pronoun (*iu* 1MIN); this is the default construction, the one occurring in most cases. In (1b), on the other hand, the object is realized by a marker on the verb (*-mu*) in addition to the subject's, and there is no corresponding pronoun.

(1) a. i-togulo-**mu** **iu**
PFV-hit-**2MIN** **1MIN**
'You hit me'

b. i-togulo-**nee-mu**
PFV-hit-**1MIN-2MIN**
'I hit you'

The first goal of this work is to give a principled account of when the object is realized as a pronoun vs. as an affix. Descriptively, this variation depends on the combination of φ-features of both arguments. My empirical claim is that this distribution can be captured

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[1]Äiwoo has a so-called minimal-augmented number system, where the pronominal form meaning 'you and I' patterns with the other three semantically strictly singular forms. 'Minimal' is used as the number term referring to the four forms 'I', 'you and I', 'you' and 's/he', whereas 'augmented' represents the "pluralization" of these: 'I and others/we (excl.)', 'you and I and others/we (incl.)', 'you (pl.)', and 'they'. In addition, Äiwoo has a third number labelled 'unit-augmented', denotating the minimal "plus one": 'I and another person/we two (excl.)', 'you and I and another person/we three (incl.)', 'you two', 'they two'. Unit-augmented forms behave exactly like augmented ones for the purpose of the agreement system, so I will not discuss them further. I follow the existing literature on Äiwoo in using the terms '1st person' and '1st+2nd person' (glossed "12") for respectively '1st person exclusive/inclusive'. For details, see Næss 2006, Harbour 2016.

in terms of a direct/inverse split – more known from Algonquian languages (Zúñiga 2006) – based on two hierarchies, one of person ($2 > 1 > 3$) and one of number (AUG > MIN).

I present an Agree-based analysis of this phenomenon which exploits the notions of *interaction* and *satisfaction* (Deal 2015). I propose that Äiwoo has a complex φ-probe above both arguments, which is satisfied disjunctively, that is, it halts when it matches either of two specific features. This mechanism correctly predicts the cases in which the probe agrees only with the subject (giving rise to the pattern in (1a)) vs. those in which it agrees with the object as well (giving rise to the pattern in (1b)).

2. Data and empirical generalizations

2.1 Background facts about Äiwoo

Äiwoo has a so-called symmetrical voice system (Næss 2015b), essentially similar to the one found in better studied languages such as Tagalog or Indonesian (for more details, see a.o. Chen and McDonnell 2019, and references therein). The phenomenon with which this paper is concerned is only present in undergoer voice; the (possible) relevance of the voice system is discussed in section 4. Actor voice verbs and intransitive verbs have a different person marking system, consisting of prefixes instead of suffixes, and consistently marking only the subject.

As in many languages of the area, in Äiwoo all subjects and 3rd person objects can be freely dropped, seemingly only depending on retrievability from discourse (Næss 2015a). Finally, for simplicity I use the terms 'subject' and 'object' pre-theoretically (see the extensive discussion of grammatical relations in Äiwoo in Næss 2015a). Essentially, these terms could be substituted by 'external' vs. 'internal argument', 'agent' vs. 'theme', or by the labels 'A' vs. 'O'/'P' commonly used in the typological literature (Comrie 1989).

2.2 Overview of the relevant data

In what follows, the notation 'X $\rightarrow$ Y' is to be read as 'the subject has features X and the object has features Y'. As mentioned, objects in Äiwoo do not show uniform morphosyntactic behaviour. In one case, the object is realized as an independent pronoun. Some examples are shown in (2) (this is not meant to be a complete paradigm).

(2) a. i-togulo-**i** **iu**
PFV-hit-**3AUG** **1MIN**
'They hit me'

b. i-togulo-**no**[2] **ijii**
PFV-hit-**1MIN** **3AUG**
'I hit them'

c. i-togulo-**i** **iude**
PFV-hit-**3AUG** **12AUG**
'They hit us (incl.)'

d. i-togulo-**ngopu iumu**
PFV-hit-**1AUG** **2MIN**
'We (excl.) hit you'

[2]The 1MIN suffix's default realization is *-no*, but it surfaces as *-nee* before a 2nd person object suffix (see (1b), (3)). Some vocabulary items in Äiwoo present variation between /o/ and /e(:)/, such as *okenyi~okonyi* 'wash', *singedâ~singodâ* 'woman', etc. These alternations are as yet poorly understood (Åshild Næss, p.c.).

In the other construction, there is no pronoun corresponding to the object, and the verb shows object agreement instead.[3] This happens in the following cases: (i) 1MIN → 2nd person (of any number), as in (3); (ii) 3MIN → anything-else-than-3MIN, as in (4) (again, this set of examples is not exhaustive). The 3MIN → 3MIN case does not fit neatly in either grouping, and will be temporarily excluded from the discussion; it will be dealt with independently in section 3.5.

(3) a. i-togulo-**nee-mu**
PFV-hit-**1MIN-2MIN**
'I hit you'

b. i-togulo-**nee-mi**
PFV-hit-**1MIN-2AUG**
'I hit you (pl.)'

(4) a. i-togulo-**gu-mu**
PFV-hit-**3MIN-2MIN**
'S/he hit you'

b. i-togulo-**gu-i**
PFV-hit-**3MIN-3AUG**
'S/he hit them'

Table 1 summarizes the patterns shown so far. In the third column, "V" represents the verb stem; "-S" and "-O" represent the affixes realizing respectively the subject's and the object's features. "Elsewhere" is meant to identify any combination of φ-features not cove by the two previous lines (again, with the exception of the 3MIN → 3MIN case).

Table 1: Overview of verb marking patterns

Subject	**Object**	**Verb marking**
1MIN	2nd person	V-S-O
3MIN	non-3MIN	V-S-O
Elsewhere		V-S

2.3 Descriptive generalization: a direct/inverse split

Given the distribution of patterns shown in Table 1, neither person nor number features can predict alone the distribution of object agreement vs. object pronouns. On one hand, person features alone would not explain why 1MIN/3MIN subjects behave differently from 1AUG/3AUG subjects, since the former (can) trigger object agreement, whereas the latter block it. On the other hand, number features alone would not explain why 1MIN/3MIN subjects do not pattern together with 2MIN subjects.

As previously mentioned, I propose to account for this by using two different hierarchies at once, one of person ($2 > 1 > 3$) and one of number (AUG > MIN).[4] The cases

[3] I do not take any stance as to whether these verbal affixes are better analyzed as true agreement markers or pronominal clitics (my calling them "affixes", following the existing literature, is purely grounded on morphophonological bases, according to the classical criteria from Zwicky and Pullum 1983). This question is partially orthogonal to my purposes, at least in a theory where cliticization is parasitic on agreement (Anagnostopoulou 2017, Preminger 2019).

[4] Note that, in alignment with with most recent literature about hierarchy effects—subsuming thus direct/inverse systems, Person Case Constraint effects, copular inversion, etc. (see, a.o., Coon and Keine to appear

with object agreement can be characterized in terms of these two hierarchies. All of them, in fact, involve the subject being ranked lower than the object on some combination of the two hierarchies.[5] In the 1MIN → 2nd person cases: 1st person is ranked lower than 2nd person, and MIN is the lower-ranked number out of the possible values. As for the 3MIN → non-3MIN cases: 3MIN is the lowest possible ranked type of argument, and therefore anything else will be ranked above it. (Once again, the reader is reminded that the 3MIN → 3MIN case is excluded from this generalization, and will be discussed independently).

The Äiwoo split is therefore readily characterizable in terms of the notions of "direct" and "inverse" alignment, mostly known from the Algonquian language family (Zúñiga 2006, Coon and Bale 2014). In these languages, a default construction (the 'direct' one) is used as long as the subject is ranked higher than the object on some hierarchy (e.g., 1/2 > 3, animate > inanimate, etc.). When the subject is ranked lower, some non-default morphosyntactic phenomenon occurs (the 'inverse'). Exactly what this special marking is varies considerably: in several Algonquian languages there is a special morpheme (Zúñiga 2006); Paraguayan Guaranì uses a different inflectional set (Zubizarreta and Pancheva 2017); Kashmiri shows a distinct case marking pattern (Béjar and Rezac 2009). In Äiwoo, a distinction is made in terms of how many arguments the verb agrees with: only the subject in the direct ("default") case, and both the subject and the object in the inverse ("marked") case.

3. Theoretical analysis

3.1 Framework: the interaction and satisfaction model of agreement

I adopt the model of Agree presented in Deal 2015 and further developed in Deal 2020. The core idea is that probes are not only specified as to what features they will copy from a goal (their *interaction* condition), but also for what features will halt their search (their *satisfaction* condition); as long as a probe has not matched the feature(s) that satisfy it, it will keep searching for more goals to agree with on subsequent cycles. Importantly, these two conditions need not make reference to the same feature(s). For illustration, let us posit a probe in (5) which has [F] and [G] as its interaction features, and only [F] as its satisfaction feature: it will target goals carrying [F] and/or [G], but only [F] is enough to make it halt. In the scenario in (5a), the closest goal XP carries the feature [G]; the probe will therefore agree with this goal. However, matching the feature [G] does not *satisfy* the probe, which then continues to probe: it will target the next closest goal, YP, which does in fact carry the feature [F]. Agreeing with [F] satisfies therefore the probe (represented by the exclamation

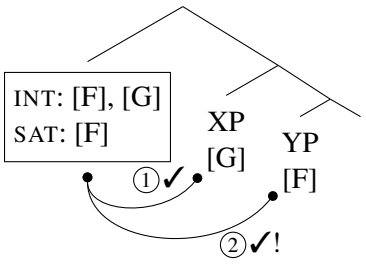
and references therein)—I only use these hierarchies as a descriptive tool: they are not a primitive of the grammar, but they emerge as epiphenomena due to how exactly the mechanics of Agree(ment) are formulated.

[5] A more precise formulation of "some combination" can be as follows. Object agreement occurs iff:

(i) a. subject $\leq$ object on all hierarchies, and
b. subject $<$ object on at least one hierarchy, and
c. subject $\neq$ a top-ranked category on any hierarchy (2nd person or plural)

mark), which halts. In (5b), for comparison, the two goals are reversed. In this case, the probe agrees with YP first, and its feature [F] satisfies the probe. Therefore, agreement with XP is bled. (The symbol ⊣| is meant to highlight the complete lack of interaction between the probe and the goal).

(5) a.



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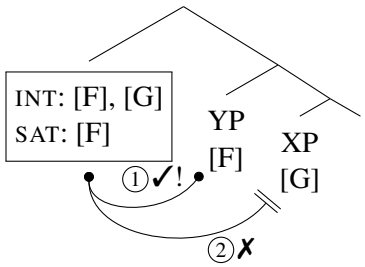


I adopt a privative geometrically-organized feature system, following Harley and Ritter (2002), Béjar (2003). In order of growing featural make-up: 3rd person is the least specified one, carrying only [φ]; 1st person carries [φ] and [PART(ICIPANT)]; 2nd person carries both these and [ADDR(ESSEE)]; finally, 1st+2nd person carries all these three and [SPKR] ('speaker'). The number feature [AUG(MENTED)] is shared by all the augmented forms, to the exclusion of the minimal ones (which thereby do not have any number feature).

Another step is determining what interaction and satisfaction conditions can contain, whether only one feature (possibly geometrically containing other ones) or sets of features as well, a possibility not explicitly examined in Deal 2015. I follow Scott (2020) in assuming that satisfaction conditions can make reference to sets of features.[6] Previous works (Coon and Bale 2014 on Mi'gmaq, Colley and Privoznov 2019 on Khanty, Scott 2020 on Ndengeleko) have proposed that the satisfaction condition can be formulated conjunctively: that is, the probe will halt when it agrees with a goal carrying both a feature F and a feature G. I argue that this can also work disjunctively: the Äiwoo probe halts whenever it agrees with a goal carrying either the feature [ADDR] or the feature [AUG].

3.2 Deriving the direct cases

At this point, a reminder is in order of the desiderata of the analysis. The distribution of object agreement is illustrated in Table 2 below, repeated from Table 1 with added labels.

Table 2: Overview of verb marking patterns.

Subject	**Object**	**Verb marking**	
1MIN	2nd person	V-S-O	Inverse
3MIN	non-3MIN	V-S-O	
Elsewhere		V-S	Direct

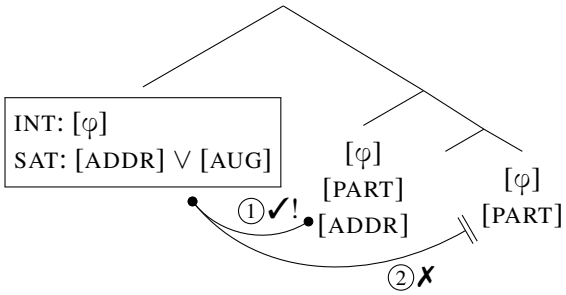
[6] Admittedly, this considerably extends the computational power of agreement, and might open for risks of overgenerating; I leave this open for future research. I thank Omer Preminger (p.c.) for this insight.

The label ‘direct’ applies to the cases where only the subject’s features are marked on the verb. I argue that in these configurations, the object is in fact never agreed with through the course of the derivation. As previously stated, I propose that Äiwoo has a probe carrying a disjunctive satisfaction condition [SAT: [ADDR] ∨ [AUG]]. This way, if the subject carries any of these features (i.e., if it is either 2nd person or augmented), it will satisfy the probe, and object agreement will be blocked. The interaction condition consists of only [φ], meaning that the probe will be able to agree with any kind of nominal argument. Notice that, however, what is copied to the probe is not only the interaction feature itself, but the whole feature set present on the goal (see Preminger 2014, Deal 2015).

For example, in a scenario of the type ‘You hit me’ (6), the [ADDR] feature on the subject satisfies the probe, making it halt, and thereby blocking any further agreement; this would obtain regardless of the number feature of either argument.

(6) i-togulo-**mu** **iu**
PFV-hit-**2MIN** **1MIN**
‘You hit me’ (2MIN → 1MIN)

(Also applies to 2MIN → 1AUG, 2AUG → 1MIN, 2AUG → 1AUG)

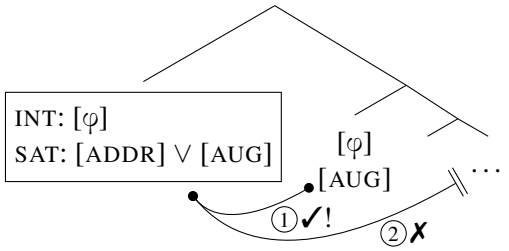


As presented in section 3.1, I assume that 1st+2nd person forms of any number also carry an [ADDR] feature (plus an additional [SPKR] feature; cf. Harley and Ritter 2002). Having a probe sensitive to the [ADDR] feature predicts 1st+2nd person arguments to pattern similarly to 2nd person arguments, and differently from 1st person arguments (1MIN subjects can trigger object agreement). This is a welcome consequence: as shown in (7), 1st+2nd person subjects behave exactly the same as 2nd person ones, blocking object agreement.

(7) i-togulo-**{ji/de}** **ijii**
PFV-hit-**{12MIN/12AUG}** **3AUG**
12MIN: ‘You and I hit them’; 12AUG: ‘We (incl.) hit them’

In addition to [ADDR], the second feature that can satisfy the Äiwoo probe is [AUG]. As previously highlighted, all augmented subjects (regardless of their person) block object agreement. Even a 3AUG subject, despite being poor in person features, will satisfy and halt the probe, thus preventing it from agreeing with any type of object, as shown in (8).

(8) i-togulo-**i** **{iu/iumu/...}**
PFV-hit-**3AUG** **{1MIN/2MIN/...}**
‘They hit {me/you/...}’ (3AUG → ...)



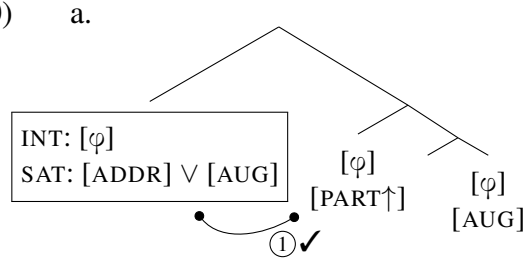
Taking out all pronominal forms that are either 2nd person or augmented from the paradigm, one is left with 1MIN and 3MIN, which are exactly the ones that can trigger object agreement. However, not all configurations where the subject is 1MIN do in fact trigger object agreement. In particular, the cases 1MIN → 3MIN/AUG still show the direct construction. In these, the subject does not satisfy the probe, as it does not carry [ADDR] nor [AUG]. Since the probe interacts with any goal carrying [φ] (that is, any nominal), at this point the model presented so far would predict that the probe agrees with both arguments; in other words, these configurations should show object agreement—which they do not (9).

(9) i-togulo-**no** **ijii**
PFV-hit-**1MIN** **3AUG**
'I hit them' (1MIN → 3AUG)

In an interaction-and-satisfaction framework, this can be "solved" with dynamic interaction features (Deal 2020). In brief, a probe can have its interaction condition altered through the course of the derivation when it interacts with a goal carrying a dynamic feature. This feature is then copied onto the interaction condition of the probe, limiting the following agreement cycles to only goals that also carry this feature.

I suggest that the [PART] feature in Äiwoo is dynamic (notated [PART↑]). The trees in (10) show the two stages of the derivation of a 1MIN → 3AUG configuration (the 1MIN → 3MIN case would show the same behaviour). First (10a), the subject is agreed with. The dynamic feature [PART↑] is copied onto the interaction domain of the probe, restricting therefore subsequent agreement cycles to only goals that carry this feature.[7] After this, the only goals that can be agreed with are 1st/1st+2nd/2nd person ones, since they all carry a [PART↑] feature; crucially, 3rd person goals—regardless of their number—can not be agreed with anymore. Although the probe is not satisfied, at this point there are simply no more compatible goals, and probing stops.

(10) a.



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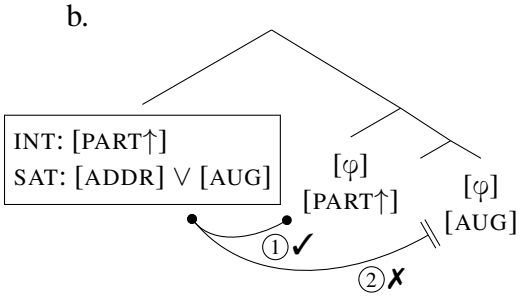


[7]Dynamic interaction conditions essentially contribute to recreate an effect automatically built into the Cyclic Agree model (Béjar and Rezac 2009) (albeit fairly less restrictively). In that approach, probes can be specified as to which feature they look for; at the same time, due to the geometrical organization of features (Harley and Ritter 2002), if a probe carries the uninterpretable feature [*u*ADDR] it will automatically also carry [*u*PART] and [*u*φ], as these are strictly contained within the former. Therefore, this probe will be able to agree, for example, with a 3rd person goal: however, after this the [*u*φ] feature will be deleted, and only 1st/2nd person goals will be able to be agreed with later. The practical effect is that every cycle of agreement has the potential of restricting the range of possible goals of subsequent cycles. This is precisely what dynamic interaction conditions do.

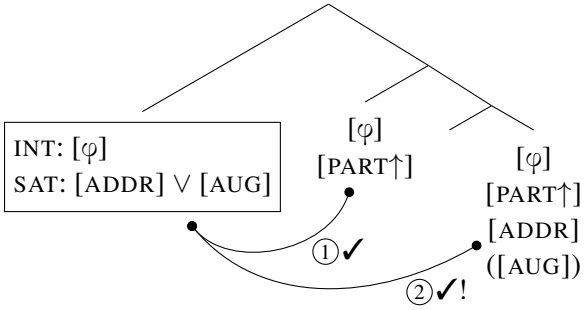
Importantly, although it has not been mentioned for the cases discussed so far, the fact that the feature [PART↑] is dynamic does not have any undesirable consequences for the rest of the analysis. If the subject is 2nd or 1st+2nd person, the probe is satisfied after the first agreement cycle anyway (due to the [ADDR] feature), so restricting its interaction domain will have no effect; the same applies if the subject is 1AUG, due to the [AUG] feature.

3.3 The inverse cases

The inverse cases are those in which both the subject and the object are marked by morphemes on the verb. As a reminder for the reader, this happens in the following configurations: (i) 1MIN → 2nd person; (ii) 3MIN → non-3MIN. I argue that, for these, the probe does in fact agree with both arguments: it is not satisfied by the subject, and then proceeds agreeing with the object.[8] The disjunctive satisfaction mechanism predicts this to be possible for all and only the attested cases.

The first type of configuration in question is 1MIN → 2nd person, illustrated in (11) (the [AUG] feature is parenthesized to signify that this derivation is valid for both 1MIN → 2MIN and 1MIN → 2AUG). Here, the probe first agrees with the subject, but this goal does not carry any of the satisfaction features. The dynamic feature [PART↑] is copied onto the probe's interaction domain (not shown). A second agreement cycle is triggered, the probe manages to find a second compatible goal (i.e., one bearing [PART↑]), and object agreement ensues. In this case, the object satisfies the probe, but this is actually irrelevant: at this point there would be no more goals to agree with, so the probe would halt anyway.[9]

(11) i-togulo-**nee-{mu/mi}**
PFV-hit-**1MIN-{2MIN/2AUG}**
'I hit you' (1MIN → {2MIN/AUG})

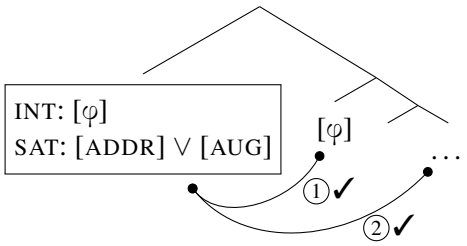


The derivation of the other series of cases (3MIN → non-3MIN) is parallel to this. The subject only carries the feature [φ], and does not satisfy the probe. After having agreed with it, the probe goes then on to to agree with the object, whatever be its featural specification.

[8] I do not make any claim specifically regarding the morphological realization of this agreement. One possible idea in a Distributed Morphology framework (Halle and Marantz 1993) is to have the probe undergo fission when it has copied back two sets of features, therefore surfacing as two separated morphemes.

[9] I am implicitly assuming here that the subject and the object are the only possible agreement goals for an Äiwoo verb. Even with semantically ditransitive verbs such as 'give' or 'send', the goal/benefactive argument is expressed with the equivalent of a prepositional phrase, and it never controls agreement. The only way of creating a three-argument structure is to use the so-called circumstantial voice construction, which adds a peripheral argument—locative, benefactive, instrument, etc.—to a basic transitive verb; see Næss 2015b for details. Crucially, this added argument also never controls agreement.

(12) i-togulo**-gu-{mu/i/…}**
PFV-hit**-3MIN-{2MIN/3AUG/**. . . }
'S/he hit {you/the /. . . }'
(3MIN → . . .)

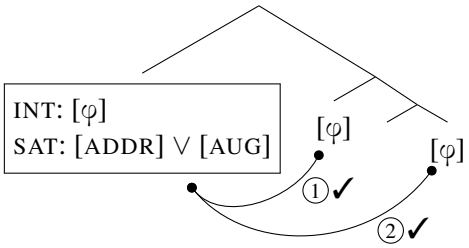


3.4 3MIN: the *-gu* marker, null exponence, and the 3MIN → 3MIN case

So far I have explicitly excluded the case where both arguments are 3MIN from the discussion. In this section I will (i) present what the model predicts, (ii) show the relevant data and discuss how this can be reconciled with the predictions, (iii) discuss 3MIN exponents in Äiwoo in general, and argue that they display allomorphy between an overt suffix *-gu* and a null one; (iv) lastly, I will make a note about the descriptive labels 'direct' and 'inverse'.

The agreement mechanism outlined thus far predicts that in the 3MIN → 3MIN case, the probe should agree with both arguments, as in the 3MIN → non-3MIN case described above. An illustrative tree is shown in (13): first, the probe agrees with the subject, which does not satisfy it; nothing then stops the probe from agreeing with the object as well.

(13)



Given the syntactic derivation, one would expect to find two morphemes on the verb, similarly to the other cases where two successful agreement cycles obtain. However, the data for 3MIN → 3MIN configurations shows something else, as there is in fact no visible agreement at all (14). Note that Äiwoo is a language where both subjects and objects are routinely dropped; (14) is thus a completely well-formed sentence.

(14) i-togulo
PFV-hit
'S/he hit him/her/it'

The analysis in (13) is not impossible to reconcile with the data point in (14). The problem lies in adjudicating whether one is dealing with the actual absence of any exponence, or with the presence of null exponents; I argue for the latter. An important argument for the presence of a null 3MIN suffix is based on a series of four post-verbal clitic particles, of which I will use the future/habitual clitic =C*aa* as an example. These clitics have dis-

parate functions, but they share a common allomorphy pattern: their initial consonant (the C in =C*aa)* varies depending on the clitic's host, that is, the element immediately linearly adjacent to its left. Due to the complexity of the pattern, this variation cannot be argued to be phonological allomorphy, but it must be morphological; see Næss 2015a for details. For the purposes of the argument, the following allomorphs will be sufficient: the clitics' default/elsewhere form is /k/-initial; however, in places where one could expect there to be a 3MIN null suffix, these clitics take an /n/-initial form instead.

At this point, a reminder is in order about where agreement is marked on Äiwoo verbs. The suffix system this article is dedicated to occurs in undergoer voice only, whereas actor voice verbs and intransitive verbs mark the subject with person/number *prefixes* instead of suffixes. Compare for example (15) to (16).[10] In (15), with the undergoer voice verb *togulo*, the future clitic is realized as =*naa*: here, the grammatical context is compatible with the presence of a -3MIN suffix in the boxed slot.[11] Sentence (16), on the other hand, contains an intransitive verb, and therefore there is a person prefix (*i-* 1MIN; the homophony with the perfective marker *i-* shown in many other examples is accidental). There is no plausible reason why there should be a 3MIN marker on this verb, and the same future clitic surfaces as =*kaa* (the elsewhere form).

(15) go sii nâ-togulo-□**=naa** nâ-dâu
so.that fish IRR-hit-3MIN?**=FUT** IRR-be.many
'… so that he would catch a lot of fish'
(literal translation: 'so that he would catch fish [and that it] would be a lot')

(16) iu i-ki-tokoli**=kaa** kele
1MIN 1MIN-IPFV-sit**=FUT** here
'I will sit here'

The alternation between /n/- and /k/-forms cannot be argued on the basis of voice alone. When an overt subject DP occurs in an undergoer voice clause, the clitic =C*aa* attaches to its right. In (17), the verb is in undergoer voice, but the clitic still surfaces as =*kaa*, since it attaches to the noun *God* (where there is no reason to expect there to be a 3MIN suffix).

(17) me-ki-vevaale go sipsip ku-wâ-nubo-wâ God**=kaa**
person-IPFV-look.after PREP sheep IPFV-CAUS-die-UV God**=FUT**
'God will kill/strike the shepherd' (Mark 14:27)

If there is in fact nothing in the boxed slot in (15), it is hard to see what would trigger the n-form of the clitic. Therefore, I assume that here 3MIN is realized by a null suffix that selects the n-form of a following clitic; I will notate this as -$\emptyset^{N}$. It is then not impossible that in a

[10] This paper builds on data collected by Åshild Næss in fieldwork in Honiara and the Reef Islands (Temotu province, Solomon Islands) in 2004, 2005 and 2015. Parts of the data corpus are archived on ELAR (`https://elar.soas.ac.uk/Collection/MPI1032004`) and in the PARADISEC archive (`https://catalog.paradisec.org.au/collections/AN1`). Sentence (17) is from a translation the Gospel of Mark.

[11] In Äiwoo, undergoer voice clauses have unmarked (O)V(S) word order.

3MIN → 3MIN configuration there is not one null suffix, but two: the probe does actually agree with both arguments, but the morphological exponent is null for both. In other words, the verb forms in sentences (14-15) would have to be analyzed as *togulo*-$\emptyset^{N}$-$\emptyset^{N}$ (abstracting away from the different TAM marking), with one marker for each argument.[12]

This proposal then begs the question of when 3MIN (i.e., the feature set consisting only of [φ]) is realized as -$\emptyset^{N}$ and when it is realized as *-gu*. This can be handled by simple positional allomorphy: 3MIN is realized as *-gu* when followed by a non-3MIN agreement marker, and by -$\emptyset^{N}$ otherwise.[13] For concreteness, one can formulate this in a Distributed Morphology framework (Halle and Marantz 1993). First, a probe that has agreed with two arguments and has thus copied back two sets of features will have to undergo Fission, and be thus split into two independent terminals (which will then have to be linearized in the right order). Later, the vocabulary insertion rule for 3MIN on either of these terminals will have to be approximately as sketched in (18); the feature disjunction "[PART] ∨ [AUG]" is meant to identify all possible non-3MIN feature combinations.

(18) 3MIN:
-gu ↔ [φ] / [PART] ∨ [AUG]
-$\emptyset^{N}$ ↔ [φ]

To do justice to the complete paradigm, there is one case where the suffix *gu* surfaces with no following overt suffix, thereby seemingly contradicting the rule in (18). This is the 3MIN

[12]To the best of my understanding, an analysis of this type is in fact implied in the original proposal in Deal 2015, based on complementizer agreement in Nez Perce. Deal argues that the probe on C^0 has the structure [INT: [φ]; SAT: [ADDR]]. The data below shows the form of the complementizer in the 3SG → 3SG case (ia) (Deal 2015), and when either of the arguments is 1SG (ib-c).

(i) a. **ke** kaa A.-nim pee-cewcew-téetu T.-na
C then A.-ERG 3/3-telephone-TAM T.-ACC
'When A calls T.' (3SG → 3SG)

b. **ke-x** kaa *pro*$_{subj}$ 'e-cewcew-téetu A.-ne
C-1 then PRO.1SG OBJ.3SG-telephone-TAM A.-ACC
'When I call A.' (1SG → 3SG)

c. **ke-x** kaa A-nim hi-cewcew-téetu *pro*$_{obj}$
C-1 then A.-ERG 3SUBJ-telephone-TAM PRO.1SG
'When A. calls me' (3SG → 1SG)

As is visible from the examples, 3SG does not have any visible morphological realization on the complementizer, whereas 1SG does (*-x*). Given the probe's structure, neither of 1SG and 3SG arguments will satisfy it, but they will both be interacted with. Therefore, although only 1SG is realized on the surface, the feature set from the 3SG argument (only [φ]) must be copied onto the probe as well. In Nez Perce, this does not receive any visible morphological exponence, so it could be the case that this feature is deleted from C^0 before PF; crucially, this [φ] feature has to be copied onto the probe, regardless of what happens later. In Äiwoo, on the other hand, we can be sure that this agreement step has taken place, thanks to the clitic allomorphy facts.

[13]In a sense, Äiwoo here is making sure to distinguish morphologically between combinations such as 3MIN → 2MIN and 2MIN → 3MIN. If the only possible exponent of 3MIN were -$\emptyset^{N}$, both these cases would be realized identically as *-mu* (although one of them would be -$\emptyset^{N}$-*mu* underlyingly). In this respect Äiwoo differs from Nez Perce, which collapses 3SG → 1SG and 1SG → 3SG to the same surface form, see (i).

→ 1MIN combination (19). Importantly, in (19) there cannot be a 3MIN dropped object, as would be common (see (14) above); the only possible reading is with a 1MIN object.

(19) i-togulo**-gu**
PFV-hit**-3MIN**
'S/he hit me' (not: 'S/he hit him/her/it')

I suggest that this can be analyzed as an another case of allomorphy, this time of the 1MIN marker. The argument for the presence of a null marker is the same, based on the the consonant-initial clitics. After the overt 1MIN marker *-no*, these clitics surface with an /ŋ/-initial form, orthographically <ng> (20) (Næss 2015a; see footnote 10 for the data source). Crucially, this happens in the 3MIN → 1MIN case as well (21). It is thus not unreasonable that 1MIN has a null exponent selecting the ng-form of the clitics, notated as -$\emptyset^{NG}$.

(20) kastom nâ-wâsili**-no=ngaa** ngâ dâlo lâ
custom.ceremony IRR-prepare**-1MIN=FUT** PREP year DIST
'I will prepare a ceremony for the next year'

(21) tumo ku-wo-mä=kaa ku-wo-potaa-mana-i**-gu-$\emptyset^{NG}$=ngaa**
father.1MIN IPFV-go-DIR1=FUT IPFV-go-search-very-UV**-3MIN-1MIN=FUT**
'My father will come and look very hard for me'

Finally, a note is in order about the labels 'direct' and 'inverse'. I take these as being strictly pre-theoretical/descriptive. Specifically, the 3MIN → 3MIN configuration has the same syntactic derivation as the other inverse cases (i.e., with agreement with both arguments). At the same time, the discussion of the data in section 2 did not include it under the (descriptive) 'inverse' label, since it was based on the overt morphological realizations.

4. Open question: object agreement and undergoer voice

The agreement system discussed through this article is only found in undergoer voice verbs (and in the circumstantial voice construction, ignored here). As previously mentioned, actor voice verbs (and intransitives) have a different system, where the subject is marked by prefixes instead of suffixes, and where there is never any object agreement (Äiwoo follows thus the generalization in Erlewine and Levin to appear). There is an intuitively clear connection that should ideally be accounted for: precisely that voice where the object is more "prominent" or "salient" in many ways is the one where object agreement is possible.

However, there is a problem in how to reconcile these two phenomena. An influential approach to Western Austronesian voice systems (see e.g., Aldridge 2004, Chen and McDonnell 2019 and references therein) works, succinctly summarized, as follows. The different voices consist of different "flavours" of v^0. The undergoer voice v^0 has an EPP feature that causes the object to move across the subject, to an outer specifier of *v*P (which the actor voice v^0 does not). After this, the object is the highest DP, and will therefore be the one targeted by any higher head (agreement, extraction, etc.).

Adapting this model to Äiwoo is not trivial. The agreement facts in undergoer voice require the probe, wherever it be, to interact first with the subject and only later, possibly, with the object; if the object is interacted with first, the calculus does not work. If the probe is somewhere as high as on T^0, this clashes with the voice model presented above: at that point, the object would be higher than the subject. One possibility is that the X^0 head containing the EPP feature that causes the object to raise is higher than the probe. This would entail that X^0 is also higher than v^0, as this is the one introducing the subject. If this is the case, then Äiwoo would in fact be syntactically different from other languages with this kind of voice system.

A consideration hinting at this as a line of inquiry worth of pursuit is related to extraction. In languages with a "well-behaved" symmetrical voice system, there is a famous restriction on what can be extracted: coarsely put, only the argument cross-indexed by the voice morphology can undergo wh-movement, relativization, etc. In Äiwoo, however, this is not absolute. In fact, subjects *can* be extracted from undergoer voice clauses if the object is pronominal, that is, not a full DP (whether a full pronoun or an agreement marker on the verb; Næss 2015b). If the extraction restriction in other Austronesian languages is a consequence of the configurational position of the various DPs, then it could be reasonable that Äiwoo is in fact fundamentally different in this respect.

5. Conclusion

I have presented an analysis of a complex set of agreement data from Äiwoo, which I argue is best modelled in terms of disjunctive satisfaction of a probe. Other literature has argued for conjunctive satisfaction of a probe (Coon and Bale 2014, Colley and Privoznov 2019, Scott 2020), and independently for disjunctive satisfaction as well (Bondarenko and Zompì 2020 suggest it for agreement in Svan). Moreover, Amy Rose Deal (p.c.) suggests that disjunctive satisfaction could potentially be responsible for the Phase Impenetrability Condition (Chomsky 2001) as well: if a probe is supposed not to see beyond, say, C^0, adding $[\ldots \vee C]$ to its satisfaction condition would predict the same result. On the other hand, conjunction and disjunction are computationally powerful tools, and run the risk of overgenerating: the challenge will therefore lie in balancing the theoretical restrictiveness of this model of agreement with its empirical coverage.

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