

Aleut case matters

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1 Aleut cases

Aleut shows a remarkable alternation in its case and agreement patterns: roughly put, one pattern appears when a non-subject argument is syntactically unexpressed in a predicate, and the other pattern appears otherwise. This paper is devoted to an attempt to provide a coherent analysis for this alternation: the missing argument is analyzed as a *pro* which must move into a local relation with the highest T; in this position, it triggers additional agreement on the verb, and blocks normal case assignment to the subject (which then gets a different case). This movement is analogous to that of (potentially long) clitic movement, and its effects on the case and agreement patterns is shown to be similar to the *wh*-agreement pattern in Chamorro.

1.1 The phenomenon

There are two cases on nominals and two sets of inflections on verbs in Aleut, which are schematized in (1) and (2).¹

	‘relative’	‘absolutive’
(1) Two cases on nominals:	-m	- \hat{x} (sg.) -s (pl.)

*It’s more than a pleasure to present this in honor of Jerry Sadock. In point of fact, this paper would in no way exist without Jerry, and is merely a preliminary to a more extended version which he will be coauthor of. It was Jerry (and his work) that introduced me to the facts from Aleut in the first place, and who lent me his copy of Bergsland and Dirks and who was persistent about getting me to try to think about these facts. So in addition to being the expert on these matters, he is also the proximate cause and inspiration for this paper. All mistakes are mine, though, of course. Tusind tak og undskyld hvis der er fejl i dataene eller analysen, Jerry!

¹All data in this paper are from Bergsland 1997 (henceforth AG) and Bergsland and Dirks 1981 (henceforth AASG), mostly as reported in Sadock 1999, Sadock 2000, and Boyle 2000 (see also Fortescue 1985 and Leer 1987).

‘anaphoric’	‘nonanaphoric’
(/A/ in the glosses)	(unmarked in glosses)
e.g. -V (3/A/sg)	-x̂ (3/sg.3)

An example of the basic alternation is in (3): when all arguments are overt, as in (3a), the ‘absolutive’ case appears on them all and the ‘nonanaphoric’ verb endings (which agree with the subject), while if an argument is missing—as the direct object is in (3b)—the subject is marked with the ‘relative’ and the verb shows an ‘anaphoric’ ending, in this case one which indicates that both the subject and missing element are singular.

- (3) a. Piitra-x̂ Ivaana-x̂ kidu-ku-x̂.
Peter-3/sg.abs John-3/sg.abs help-PRES-3/sg.3
‘Peter is helping John.’ (AASG:32)
- b. Piitra-m _ kidu-ku-u.
Peter-3/sg.rel help-PRES-3/A/sg
‘Peter is helping him.’ (AASG:32)

This state of affairs is general, and has been dubbed the ‘Aleut Effect’ by Jerry Sadock:

- (4) THE ‘ALEUT EFFECT’ (Sadock 1999, Sadock 2000):
The relative case is used when there is an NP missing from the predicate
- (5) [if a] 3.p[erson] complement or a subordinate part of it is left out as known from context or the situation there is in general a suffixal reference to it in the final verb and a nominal subject is in the relative case. (Bergsland 1997:126)

Further examples illustrating the Aleut Effect are given in (6)-(8), where the alternation is triggered by a missing object of a preposition and of a possessor, as well as by a hanging topic. The last example is instructive, as it shows that the alternation is governed by the local argument realization properties of the clause (in this case, because the object is not in the local domain, appearing instead in a peripheral topic position); the alternation, in other words, requires reference to the local syntax, not merely to larger discourse properties (that is, in (8) the object is ‘missing’ only from the local clause, not the larger clause or *a fortiori* the whole discourse context; it need not be inferred or given at all—it is in fact overt, just not local):

- (6) Missing object of a preposition/locative adverbial:
- a. Ivaana-x̂ kanfixta-s yaasika-m nagan aġi-ku-x̂.
John-3/sg.abs candy-pl.abs box-3/sg.rel in put-PRES-3/sg
‘John put the candies in the box.’ (AASG:98)
- b. Ivaana-m kanfixta-s _ nagan aġi-ku-u.
John-3/sg.rel candy-pl.abs in put-PRES-3/A/sg
‘John put the candies in it.’ (AASG:98)
- (7) Missing possessor of a non-subject:
- a. Piitra-x̂ hla-s ada-a kidu-ku-x̂.
Peter-3/sg.abs boy-pl father-3/A/sg.abs help-PRES-3/sg
‘Peter is helping the boys’ father.’ (AG:144)

- b. Piitra-m _ ada-a kidu-ku-u.
Peter-3/sg.rel father-3/A/sg.abs help-PRES-3/A/sg
 ‘Peter is helping the boy’s father.’ (AG:144)

(8) Hanging topics:

- a. tayaĝu-ĥ qa-ĥ qa-ku-ĥ.
man-sg.abs fish-sg.abs eat-PRES-3/sg
 ‘The man is eating the fish.’
- b. qa-ĥ tayaĝu-m _ qa-ku-u.
fish-sg.abs man-sg.rel eat-PRES-3/A/sg
 ‘The fish, the man is eating it.’ (Bergsland 1969:27)

Missing *subjects*, however, do not trigger anaphoric inflection (and since they are missing, no relative case arises either):

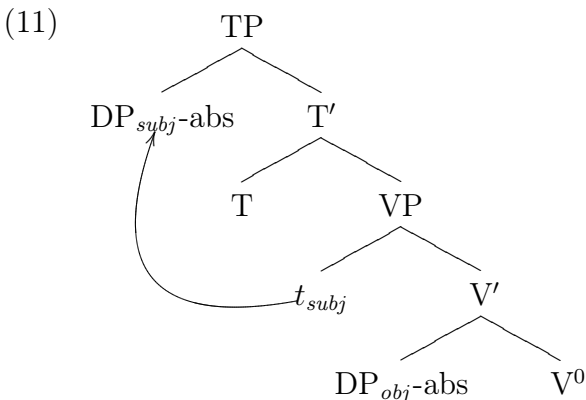
- (9) Ivaana-ĥ kidu-ku-ĥ.
Ivan-3s.abs help-PRES-3s
 ‘He/she is helping Ivan.’ (AG:8)

Finally, Aleut shows ‘promiscuous’ number marking in the anaphoric inflections, potentially indexing the person and number of both the subject and of the missing element:

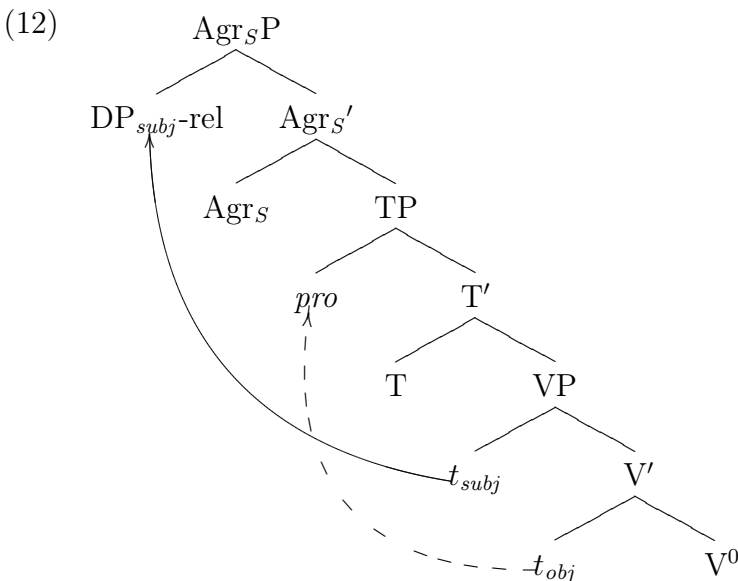
- (10) kidu-ku-ngis.
help-PRES-3/A/pl
 ‘He/she/they is/are helping them.’
 ‘They are helping him/her/them.’ (AASG:10)

2 A movement approach

Boyle 2000 proposes that missing arguments in Aleut are null *pros*, and that these must be licensed in specTP (from which position they trigger agreement); he proposes that the Relative Case is assigned by Agr_S in a specially projected specAgr_SP when specTP is thus occupied. That is, in a normal clause with all arguments overtly specified, an Aleut clause will have the structure given in (11), with absolutive case assigned to all DPs, and only the DP in specTP able to trigger agreement (assumed to be mediated uniformly by T).



In a clause in which the Aleut Effect arises, on the other hand, *pro* occupies specTP and forces the additional projection of Agr_SP, into whose specifier the usual subject is compelled to move (by virtue of *pro* having a higher right to specTP), where it is assigned the relative case.



Alternations of the Aleut sort involving variable case assignment to subjects and varying morphology on the verb do have parallels, of course. The most prominent parallels are from Japanese and Turkish. In Japanese, the alternation known as *ga*→*no* conversion involves an otherwise nominative subject being exceptionally marked with the genitive case in certain environments, typically in clausal arguments or adjuncts to nominals, as in (13), from Miyagawa 1993 and Ochi 2001:

- (13) a. Relative clauses
 [John-ga/no _ katta] hon
John-NOM/GEN bought book ‘the book John bought’
 b. Gapless complement-to-N clauses:
 John-ga/no kuru kanousei
John-NOM/GEN come probability ‘the probability that John will come’

A second parallel is found in the famous alternations between -An and -DIK² participial morphology in Turkish (see Cagri 2005 for a recent approach and references), which also involves a genitive subject:

- (14) a. [_ divan-da otur-an] bayan
sofa-LOC sit-SR lady
 ‘the lady who is sitting on the sofa’
 b. [bayan-m _ otur-duğ-u] divan
lady-GEN sit-NSR-3s sofa
 ‘the sofa that the lady is sitting on’

²-An is glossed SR = subject relative, -DIK as NSR = non-subject relative

2.1 Tracking dependencies

Aleut shows a fairly intricate system, but one with one goal, as Sadock 1999 points out: to track missing things. While one might suspect that this system has something in common analytically with switch-reference (or subject) tracking systems, I will suggest instead that it is closer in manifestation to the wh-tracking system known as wh-agreement, in particular in a language like Chamorro, as analyzed by Chung 1998.

What’s unusual about Chamorro (as opposed to Celtic, Coptic, and other wh-agreement systems) is that the agreement—in Chamorro registered on the verb, not the complementizer—also indexes, roughly, the *case* of the extractee. The basic pattern is summarized in (15), taken from Chung 1998, as are the data illustrating this pattern given in (16) (with page numbers following referring to Chung 1998).

- (15) Inflection on verbal and adjectival predicates in wh-question:
 [Nom] -*um*- when the predicate is realis and transitive
 [Obj, Obj2] (optional) nominalization, plus -*in*- when the predicate is transitive
 [Obl] nominalization, plus (optional) -*in*- when the predicate is unaccusative

Overt realization of wh-agreement *replaces* regular subject-verb agreement.

(If wh-agreement is not overt, then the predicate has the regular subj-verb agreement.)

- (16) a. Ginin hayi na un-chuli’ i lepblu? C184 (PPs don’t trigger wh-agr)
from who? Comp AGR[2s]-take the book
 ‘From whom did you take the book?’
 b. Hafa malago’-mu? C184
what? WH[obl].want-AGR[2s]
 ‘What do you want?’
 c. Hafa fina’tinas-ñiha i famalao’an? C201
what? WH[obj].make-AGR[3p] the women
 ‘What did the women cook?’
 d. Hayi sinangane-nña si Juan malago’-ña pära u-bisita?
who? WH[obj2].say.to-agr D_{PN} Juan WH[obl].want-agr Fut WH[obj].agr-visit
 ‘Who did Juan tell (us) that he wants to visit?’ C211

What Chamorro makes clear is that it is possible find a system in which verbs in a local relation with a cyclically moved element agree with features of that element. While in Chamorro this agreement replaces regular subject verb agreement, in Aleut it is supplementary to it.

2.2 Back to Aleut

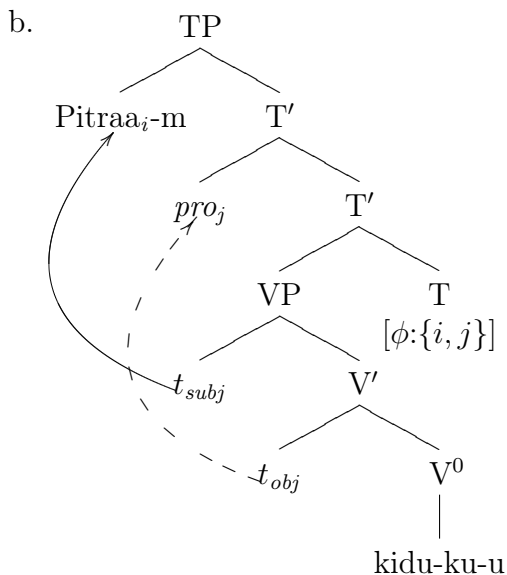
There are two basic ideas that are needed to account for the Aleut patterns. The first is that a null argument *pro* must move to T or the specifier of TP (the latter as in the proposal of Boyle 2000. The second idea is that agreement can be polyvalent: T may agree with more than one agreement trigger, inducing multiple values on T; this idea is simply multiple Agree

as proposed in Hiraiwa 2001 and expanded on elsewhere (Merchant 2008, Nevins 2007, et multi alii).

- (17) a. Multiple Agree: T ‘probes’ (agrees with) every DP in its domain (specifier and head)
 b. Null arguments move to T (if they’re clitics) or specTP (as for Chinese argument-drop following Huang 1984; tucking in multiple specifiers: Richards 2001)

Concretely, I’d like to propose that *pro* moves to immediately c-command T, as does the regular subject, and that both elements therefore participate in agreement with T; this is illustrated in the tree in (18b) for the example in (18a).

- (18) a. Piitra-m _ kidu-ku-u.
Peter-3/sg.rel help-PRES-3/A/sg
 ‘Peter is helping him.’ (AASG:32)



The value of T’s ϕ feature therefore is not a single value, but rather a set of values. The details of the two separate applications of Agree are given in (19). (These feature sets are the product of the definition of Agree given in (35) in the Appendix.)

- (19) a. Probe/trigger: Pitraa[$\phi:\{3s\}$]
 b. Goal: T[$\phi : \emptyset$]
 c. Agree(DP,T; ϕ) \rightsquigarrow T[$\phi:\{3s\}$]
 d. Probe: *pro*[$\phi:\{3s\}$]
 e. Goal: T[$\phi:\{3s\}$]
 f. Agree(DP,T; ϕ) \rightsquigarrow T[$\phi:\{3s,3s\}$]

Once a complex feature set is present on T (as the set-valued value of its ϕ feature), we are in a position to state the relevant contextually sensitive morphological spell-out rules (Perlmutter 1971, Farkas and Kazazis 1980, Sadock 1991, Ackema and Neeleman 2004, Nevins 2007, Legate 2008, and many others):

- (20) Morphological case rules in Aleut
- a. /-m/ ↔ [Case]/ _ *pro.3*
 - b. /-x̂/ ↔ [Case] *elsewhere*
- (21) Morphological verbal agreement rules in Aleut
- a. ‘Anaphoric’ inflections (polyvalent)
 - i. /-V/ ↔ T[ϕ :{3s,3s}]
 - ii. /-ng/ ↔ T[ϕ :{1s,3s}]
 - iii. /-ngis/ ↔ T[ϕ :{3p,3}]
 - ⋮
 - b. Nonanaphoric inflection (monovalent)
 - i. /-x̂/ ↔ T[ϕ :{3s}]
 - ii. /-q/ ↔ T[ϕ :{1s}]
 - ⋮

2.3 Remote gaps

The Aleut Effect can be triggered by a missing element inside an embedded clause as well, as shown by the following data. In (22), for example, the matrix verb *una-ku-u* ‘cook’ appears in the anaphoric form triggered by the unexpressed embedded subject meaning ‘he’.

- (22) Qa-x̂ igiim axs sağa-qa-a una-ku-u.
fish-abs.s dat.3R give.CONJ do.yesterday-PRT-3.A.s cook-PRES-3.A.s
 ‘She is cooking [which] the fish he gave her yesterday.’ [AASG 139]

In (23), we also see the promiscuous agreement in the matrix verb, which signals both a first person matrix subject and a missing third person element (in both cases, the missing element is the embedded subject).

- (23) a. sa-x̂ kalu-l angali-i uku-ungan axta-ku-ng.
duck-abs/s shoot-CONJ did.today-PART/abs/A/s find-ANT/3s be-PRES-1s/A/s
 ‘I found the duck he had shot.’ (AASG:132-133)
- b. Una-na-ngin qaatuda-ku-ng.
cook-PART-3/A/p like.to.eat-PRES-A.1s/s
 ‘I like to eat what (things) she is cooking.’ [AG 289]

In the last three examples, if we take the English equivalents as indicative, it appears that the Aleut Effect can be triggered from out of a relative clause, typically a strong island cross-linguistically.

The mere fact of a relative (or relative-like) structure is not enough to trigger the Aleut Effect in the matrix, however, as the following example shows. In (24), there is no gap in the relative clause—not even one corresponding to the gap of a relative pronoun, as Aleut seems to have internally headed relatives of the sort described in Williamson 1987 and elsewhere. Here, the internal head is *tayaġu* ‘man’:

- (24) tayaġu-m sa-ġ kalu-l angali-i aslixta-angan
man-rel/s duck-abs/s shoot-CONJ did.today-PART/abs/A/s meet-ANT/3s
 aġta-ku-q.
be-PRES-1s

‘I met the man who shot the duck.’ (AASG:132-133)

It is worth noting in passing here that possessors also occur in the relative case (and trigger anaphoric marking on the possessum); this is why the participial form in (24) is anaphoric and the embedded subject in the relative case. A simple possessive is given in (25) and has an analog in languages such as Turkish. I will have to leave an account of possessors to another occasion.

- (25) tayaġu-m ula-a *cf. Turkish* adam-m ev-i
man-rel/s house-abs/A/s man-GEN house-3sPOSS
 ‘the man’s house’

When a gap is found inside a relative structure which modifies a matrix subject, however, no Aleut Effect is found; this is seen particularly clearly in the following examples, which were kindly elicited, at Jerry Sadock’s request, by Anna Berge in Anchorage (from a speaker of the Pribilovian dialect, not Atkan, the dialect the rest of the data in this paper is from).

- (26) a. uut(a)ka-ġ tumhdaanaġ.
duck-abs shot.3s ‘He shot a duck.’
 b. uut(a)ka-ġ alaġu-m ilan kiminaġ.
duck-abs sea-rel into sank.3s ‘The duck sank into the ocean.’
 c. uut(a)ka-ġ tumhda-qa-a alaġu-m ilan kimi-na-ġ.
duck-abs/s shoot-PART-abs/A/s sea-rel/s into sink-PAST-3s
 ‘The duck he shot sank into the ocean.’
 d. * uut(a)kaġ tumhda-qa-a alaġum ilan kimi-qa-a.
duck-abs/s shoot-PART-abs/A/s sea-rel/s into sink-PAST-A/3s

If the Aleut Effect is due to the movement of *pro* to a position near the matrix tense head (in some way responsible for the case and agreement patterns: details of one implementation are given below), then it would seem at first glance to be extremely worrisome that we find the Aleut Effect triggered by missing elements inside what in other languages would be islands, since this would seem to require that *pro* be allowed to move out of an island in Aleut.

For better or for worse, this situation is again reminiscent of facts from Turkish and Japanese. In Turkish, the puzzle has always been that the subject relativization morpheme *-An* is triggered not merely by a missing subject (this would make these relatives fully parallel to reduced subject relatives in English, for example, and amenable to a similar analysis), but that *-An* appears when a subject *or a part of a subject* is missing. In other words, it is triggered also by a relativized possessor inside a subject, as in (27a), or of an argument inside a subject clause, as in (27b) (examples from Cagri 2005:8):

- (27) a. [[_ kız-ı] kitab-ı getir-en] adam
girl-POSS book-ACC bring-SR man
 ‘the man whose daughter brought the book’
- b. [[_ biz-e güven-eceğ-i] şüpheli ol-an] adam
1p-DAT trust-FUT-POSS doubtful be-SR man
 ‘the man who that (he) will trust us is doubtful’

Similarly, Ochi 2001 argues that the *-no*-marked subjects in Japanese have raised to a position higher than their nominative marked alternates, giving rise to wide scope readings of *-no*-marked disjunctions, as the following examples illustrate.

- (28) a. [[[Rubii-ka shinju]-**ga** yasuku-naru] kanousei]-ga 50% izyoo da.
ruby-or pearl-NOM cheap-become probability-NOM 50% over is
 i. ‘The probability that (either) rubies or pearls will become cheap is over 50%.’
 ii. \neq ‘(Either) the probability that rubies will become cheap or the probability that pearls will become cheap is over 50%.’
- b. [[[Rubii-ka shinju]-**no** yasuku-naru] kanousei]-ga 50% izyoo da.
ruby-or pearl-GEN cheap-become probability-NOM 50% over is
 i. ‘The probability that (either) rubies or pearls will become cheap is over 50%.’
 ii. ‘(Either) the probability that rubies will become cheap or the probability that pearls will become cheap is over 50%.’
- (29) [[[John-ka Mary]-ga/no katta] hon]-o misete.
John-or Mary-NOM/GEN bought book-ACC show.me
 a. ‘Show me the book that (either) John or Mary bought.’
 b. ‘Show me (either) the book that John bought or the book that Mary bought.’

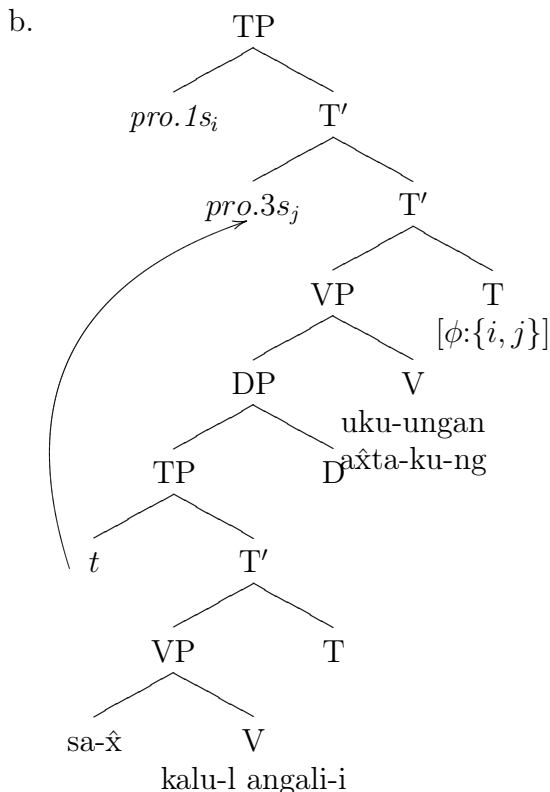
This is not to say that the apparent island-violating nature of all these movements shouldn’t concern us. It should. We should wonder whether positing movement of elements out of islands should even be a possible point of cross-linguistic variation, and we should suspect that it should not be.

Several possibilities occur to me at this point. One could investigate the idea that what makes these island violations acceptable has to do with the status of what moves: in Aleut and in Turkish, at least, the moving element lacks any pronunciation, and perhaps it is exactly because there is no pronounced element in the head position of the island-violating dependency that these are somehow overlooked; if this were true, we would have to somehow state island conditions on PF-representations, a move that, while unorthodox, has some precedent in work that looks at islands as PF phenomena (Ross 1967, Boeckx 2003, among others). Making this move would require us, however, to find a way to distinguish the moving *pro* and presumptive null operator in Turkish from null operators in languages like English, which do indeed trigger island effects (a thought here would be to vigorously pursue the ‘head-raising’ analysis of relative clause and other ‘null operator’ constructions, eliminating the *Op* entirely: if this is right, the external head–pronounced of course–is (or is part of) the moved element). A second possibility would be simply to claim that islands are a point of cross-linguistic variation, or at least that which nodes will be bounding nodes is (following Rizzi

1982). Finally, one might suspect that what makes the translational equivalents in English islands has to do with a layer or layers of structure which are in fact absent in the Aleut. In other words, while relative clauses are islands in English, and what we translate with relatives appear not to be islands in Aleut, there is no direct equivalency of structure (only of use) between these elements across the two languages. If Aleut relativization structures do not involve a full CP adjoined to an NP inside a DP (as English ones do), then perhaps movement out of them will fail to violate the (cross-linguistically invariant) island conditions. Specifically we could propose that movement out of a DP/NP/CP is worse than movement out of a mere DP/TP, and suppose—as seems reasonable given the lack of evidence for an external head N or even a CP layer in Aleut—that Aleut relatives are ‘nominalized’ clauses: that is, they are TPs selected by D directly. This would trace the variation in island sensitivity back to a mundane difference in structure between the two languages of a familiar sort.

If this is on the right track, then the structures of two of the relevant examples above will be the following:

- (30) a. Una-na-ngin qaatuda-ku-ng.
cook-PART-3/A/p *like.to.eat*-PRES-A.1s/s
 ‘I like to eat what (things) she is cooking.’ [AG 289]
 b. *pro.1s pro.she* [_{TP} *t* [_{T'} *pro.pl* [_{VP} *t* una-na-ngin]]] qaatuda-ku-ng
- (31) a. sa- \hat{x} kalu-l angali-i uku-ungan a \hat{x} ta-ku-ng.
duck-abs/s shoot-CONJ did.today-PART/abs/A/s *find-ANT/3s be*-PRES-1s/A/s
 ‘I found the duck he had shot.’ (AASG:132-133)



3 Conclusion

The extremely unusual pattern of case and agreement in Aleut indicates the need for a more flexible approach to agreement, countenancing polyvalent agreement, in which more than one trigger can influence the morphological realization of agreement; this in turn requires that we allow sets (or perhaps ordered n-tuples) as values for inflectional features on covarying heads. The ‘relative’ case is analyzed as a special case that appears when the subject is adjacent to a null element. The analysis rests on the supposition that null arguments are present in the syntax, though unpronounced, and that they have properties akin clitics in needing to be syntactically near (immediately c-commanding) a T node. The strange appearance of the ‘Aleut Effect’ out of islands was argued to be an illusion: the hope is that what seem to be islands are not in fact (due to a reduced structure).

I conclude, however, by admitting that this account merely scratches the surface of the relevant phenomena, since I have not addressed additional intricacies of when the relative case can appear, what kinds of promiscuous agreement are possible, and under what conditions the competition among features leads to ambiguities. These are all issues that a more comprehensive treatment of case and agreement in Aleut should examine, and are phenomena that are treated insightfully in Sadock 1999 and Sadock 2000, upon which works I can make no claim of improvement.

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Appendix: A grammar fragment

- (32) DEFINITION: GRAMMAR
 A grammar G consists of a pair of a set of lexical elements L and a set of operations O :
 $G = \langle L, O \rangle$
- (33) DEFINITION: DERIVATION
 A derivation on a numeration D_N is a pair:
 a set of lexical elements from L , called the Numeration N , and
 an ordered n-tuple of phrase markers PM :

$D_N = \langle N, \langle PM_1, \dots, PM_n \rangle \rangle$

(34) DEFINITION: CONVERGENCE

A derivation D_N *converges* iff

1. PM_n contains no unchecked strong (*) features
2. PM_n contains no unvalued (:_) features
3. All elements in the Numeration have been Merged
4. For each adjacent pair of phrase markers $\langle PM_k, PM_{k+1} \rangle$ in D_N , there is an operation Ω such that Ω applied to PM_k yields PM_{k+1} .

(35) DEFINITION: AGREE(X,Y;F)³

For any syntactic objects X and Y, where X bears a feature F with value Val(F) and Y bears a matching (unvalued:±) inflectional feature F', and X c-commands Y,
let $\text{Val}(F') = \text{Val}(F') \cup \text{Val}(F)$

³At the risk of intolerable crypticness, I am aware that this definition makes certain incorrect predictions, but lack the space to correct it here.