A'ingae =*sa'ne* 'APPR' and the semantic typology of apprehensional adjuncts*

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Abstract We explore the semantics and typology of functional morphemes encoding *apprehensional*, i. e. negative prospective, meanings through a detailed case study of the adjunct uses of =*sa'ne* 'APPR' in A'ingae (or Cofán, ISO 639-3: con, an Amazonian isolate). We provide the one of the first formal accounts of apprehension: In a structure [*p* [*q*=*sa'ne*]], =*sa'ne* 'APPR' encodes a modal semantics where the goal worlds of the actor responsible for *p* avoid a salient situation $r \Rightarrow q$. Finally, we reveal two inherent asymmetries among apprehensional functions (*precautioning asymmetry* and *timitive asymmetry*), thus making substantial predictions with regards to typological patterns in apprehensional morphology.

Keywords: modality, rationale clauses, infinitives, negation, adjuncts

1 Introduction

All languages presumably have lexical expressions to encode fear, apprehension, and other similar negative attitudes about future potentialities. In English, such expression includes verbs such as *fear* and conventionalized expressions such as *beware* or *watch out*.

Recent typological work by Vuillermet (2018) and others (building on Lichtenberk 1995's work on To'aba'ita) has established the existence of functional morphemes encoding apprehensional meanings. Five distinct apprehensional functions

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have been identified (1). Apprehensional morphemes are underlined and the constituents they are associated with are bracketed. Some glossing has been simplified and/or adapted from the original publications.

(1) a. APPREHENSIVE PROPER   Ese Ejja (Vuillermet 2018)
         [*b'iya b'iya b'iya b'iya kekwa-ka-<u>chana</u> miya*]
         bee   bee bee   bee pierce-3A-APPR 2SG.ABS
         'Bee, bee, bee, bee! <u>Watch out</u>, it <u>might</u> sting you.'

     b. PRECAUTIONING AVERTIVE   English?
         Don't move [<u>lest</u> the bee sting you.]

     c. PRECAUTIONING IN-CASE   English?
         Wear long sleeves [<u>lest</u> there be bees.]

     d. TIMITIVE   Ese Ejja (Vuillermet 2018)
         iñawewa kwaji˄kwaji-ani [*b'iya=<u>yajjajo</u>*]
         dog   run˄RDP-PRS   bee=TIM
         'The dog is running <u>for fear of</u> bees.'

     e. FEAR COMPLEMENTIZER Early Modern English (López-Couso 2007)
         For therunto I had said to them, that I ferid [<u>lest</u> the Kinges Highnes
         wolde as they saide take displeasure inough towarde me for the only
         refusal of the other.]

The *apprehensive proper* can be found in matrix clauses. It serves to warn about an undesirable potentiality and can be approximated by the English *beware*, *watch out*, or *might*. The *precautioning* use relates two clauses in a hypotactic fashion: the matrix clause situation aims at averting the situation denoted by the morphologically marked subordinate clause (*precautioning avertive*) or at being prepared for the situation of the subordinate clause (*precautioning in-case*). The *timitive* is an adposition or a case marker which introduces the entity to be feared or avoided. Finally, the *fear complementizer* use introduces the complements of verbs with negative emotional valence, such as *fear*.

In this paper, we will address the question of how these various uses are related across different languages and within one language. Formally, while some of these functions can be encoded by distinct lexical items in some languages (e. g. Ese Ejja, Vuillermet 2018), sometimes a single morpheme covers multiple apprehensional functions (e. g. Marrithiyel, Green 1989). In at least the latter cases, we might then wonder if a single unified semantics is possible and desirable. We explore these questions through a detailed case study of one particular apprehensional morpheme in A'ingae (or Cofán, ISO 639-3: con, an Amazonian isolate). A'ingae =*sa'ne* 'APPR' occurs robustly in all of the above uses save for the apprehensive proper (Dąbkowski & AnderBois forthcoming).

Although A'ingae =*sa'ne* 'APPR' has the fear complementizer use, our focus will be only its three adjunct uses: the two precautioning uses where =*sa'ne* 'APPR' attaches to a full clause (2a-b) and the timitive use where it attaches to a DP (2c).[1]

(2)   a.   PRECAUTIONING AVERTIVE[2]   (20170803_dyandyaccu_LC: 40)
          phuraen kan-ñakha [*amphi ja=sane*]
          touch   try-ITER   fall   go=APPR
          'He felt with his hand <u>so as not to</u> fall down.'

     b.   PRECAUTIONING IN-CASE
          chaketa=ma=ngi undikhû [*ûnjin tûi=sa'ne*]
          jacket=ACC=1   don   rain   splash=APPR
          'I put on a jacket <u>in case</u> it rains.'

     c.   TIMITIVE
          anae'ma=ni=ngi   *phi* [*thesi=sa'ne*]
          hammock=LOC=1 sit   jaguar=APPR
          'I'm in a hammock <u>for fear of</u> a jaguar.'

In the precautioning avertive function, the matrix clause is aimed at averting the event of the morphologically marked subordinate clause. For example, the goal of the agent feeling his way in (2a) is so that he does not fall down.

Previous literature characterizes the in-case function as one where the matrix clause aims at being prepared for the eventuality of the subordinate clause. In (2b), that eventuality is rain. Our primary insight is to think about the in-case function as also being avertive, differing in that the situation to be averted is an undesirable consequence of that described by the subordinate clause. In (2b), what is averted is getting wet, not rain itself, as one does not normally have control over the whether.

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1 The following glossing abbreviations have been used: ablative case 'ABL,' absolute case 'ABS,' accusative case (2) 'ACC(2),' additive focus 'ADD,' adjectivizer 'ADJ,' adverbializer 'ADV,' agent 'A,' anaphoric demonstrative 'ANA,' andative direction 'AND,' apprehensional 'APPR,' auxiliary verb 'AUX,' benefactive case 'BEN,' causative voice 'CAUS,' comparative 'CMP,' contrastive topic 'CNTR,' dative case 'DAT,' diminutive aspect 'DMN,' different subject 'DS,' elative case 'ELAT,' exclusive focus 'EXCL,' evitative case 'EVIT,' first person '1,' frustrative 'FRST,' hesitative 'HES,' human plurality 'PLH,' imperative mood (2/3) 'IMP(2/3),' imperfective aspect 'IMPV,' infinitive 'INF,' instrumental case 'INST,' irrealis mood 'IRR,' iterative aspect 'ITER,' locative case 'LOC,' manner demonstrative 'THUS,' negation 'NEG,' new topic 'NEW,' nominal subordinator 'SBRD,' passive voice 'PASS,' pejorative 'PEJ,' present tense 'PRS,' reduplication 'RDP,' same subject 'SS,' second person '2,' subject plurality 'PLS,' third person '3,' timitive case 'TIM,' polar interrogative 'INT,' prohibitive mood 'PRHB,' pronoun singularity 'SG,' pronoun plurality 'PL,' prospective aspect 'PRSP,' purpose clause 'PURP,' venitive direction 'VEN,' verbal plurality 'PLV,' veridical mood 'VER.'

2 The apprehensional 'APPR'—like many other morphemes—has variants with the glottal stop: =*sa'ne*, and without it: =*sane*. Since this difference does not appear to be semantically important, we retain the forms of previous published works and native speaker transcriptions in naturalistic data. We transcribe the glottal stops in elicited data. See Dąbkowski (2019) for a more detailed discussion.

Lastly, the timitive is an adposition or a case marker-like function which introduces the entity to be avoided and can often be translated by the English expression *for fear of*. Although the timitive is formally unlike the precautioning functions in that it takes a DP and not a clause, it is semantically similar to them as it encodes what is to be avoided. In (2c), the speaker tries to avoid (an encounter with) a jaguar.

The core of our proposal is as follows. In a structure $[p\ [q{=}sa'ne]]$, ={sa'ne} 'APPR' encodes a modal semantics where the goal worlds of the actor responsible for p (typically the agent) avoid a contextually salient or recoverable situation r. In the *avertive* use, the agent strives to avoid q itself: $r \Leftrightarrow q$. In the *in-case* use, the agent strives to be prepared for q so as to avoid r, the negative extension of q: $r \Rightarrow q$ and $q \nRightarrow r$. In the *timitive* use, the agent strives to avoid a situation involving the entity denoted by q: r merely "includes" its individual-denoting complement (e. g. the jaguar in 2c), but r itself is entirely contextually supplied.

In doing so, we provide one of the first[3] formal semantic accounts of apprehensional morphemes. Beyond giving a unified account of the three uses, we explain why timitives are somewhat restricted relative to other uses in A'ingae. and make clear (and so far correct) predictions about typological patterns in apprehensional morphology.

The rest of the paper is structured as follows. Section 2 provides background on A'ingae and its speakers. Section 3 describes the three adjunct uses of =*sa'ne* 'APPR.' Section 4 develops a preliminary semantics for avertive =*sa'ne* 'APPR' building on semantics for rationale clauses. Section 5 extends the analysis to in-case uses of =*sa'ne* 'APPR,' explaining the apparent cross-linguistic asymmetry between the two. Section 6 shows that the somewhat restricted timitive uses of A'ingae =*sa'ne* 'APPR' follow from the proposal. Section 7 elaborates on the typological implications of the proposal, shows that its predictions are preliminarily borne out, and concludes.

2   Background

A'ingae (or Cofán, ISO 639-3: con) is an indigenous language isolate spoken by about 1 500 Cofán people in northeast Ecuador and southern Colombia at the interface of the Andes and the Amazon. The language is thought to be a isolate despite prior claims of affiliation with Barbacoan, Chibchan, and Chicham (Jivaroan) families (AnderBois, Emlen, Lucitante, Sanker & Silva 2019 and references therein).

The Cofán are a traditionally hunter-gatherer group whose territory spanned the Andean foothills of Ecuador and Colombia down into Amazonia. Since the 1960s, colonization and concomitant environmental damage from oil extraction have greatly reduced their land base. Their language is endangered in Ecuador and

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3 For another account focusing on the diachrony of apprehensional meanings and the Australian Kriol particle *bambai*, see Phillips (2017, 2020).

severely endangered in Colombia, although it is still robustly learned by children in most Ecuadorian communities.

Notable works on the language includes a dictionary (Borman 1976), a bible translation, two written collections of traditionally oral narratives (Borman & Criollo 1990, Blaser & Chica Umenda 2008), a corpus of approximately ten hours of annotatived video (AnderBois & Silva 2018), a grammar sketch (Fischer & Hengeveld forthcoming), a phonetic sketch (Repetti-Ludlow, Zhang, Lucitante, AnderBois & Sanker 2019), and a detailed investigation of stress (Dąbkowski 2019).

Grammatically, A'ingae is head-final and largely dependent-marking. It has complex agglutinating morphology; forms with many suffixes and enclitics are typical. Word order is predominantly SOV, strictly verb-final in subordinate clauses, and more flexible in matrix clauses.

The data used in this paper come from elicitations with speakers from the communities of Zábalo, Dureno, and Sinangoé and a collection of naturalistic stories deposited as AnderBois & Silva (2018). The latter are cited with a SOAS identifier and a line number. All sources represent the Ecuadorian language variety.

3 Surveying the uses of *=sa'ne* 'APPR'

As noted in Section 1, A'ingae *=sa'ne* 'APPR' has various superficially distinct functions. In this section, we review the main properties of the three adjunct uses: the two precautioning uses where *=sa'ne* 'APPR' introduces a subordinate clause and the timitive use where it introduces a DP. For a more detailed description of these as well as apprehensive proper and fear complementizer uses, see Dąbkowski & AnderBois (forthcoming).

3.1 Avertive use

In its most frequent use, *=sa'ne* 'APPR' introduces *precautioning avertive* adjuncts. In its avertive use, *=sa'ne* 'APPR' introduces a subordinate clause describing a negative potential outcome to be avoided (3).

(3) a. *sema-'je=ngi* [*dû'shû=ndekhû khiphue'sû=sa'ne*]
        work-IMPV=1 child=PLH   starve=APPR
        'I am working <u>lest</u> my children starve.'

     b. *ka'shi=ngi apishu'thu=ma* [*chan   ña=ma   iyû'û=sa'ne*]
        wash=1   dishes=ACC   mother 1SG=ACC scold=APPR
        'I washed the dishes <u>so that</u> my mother does <u>not</u> scold me.'

c. *tse=fan*   *khi⟨'⟩tsha=jama* [*khitsha thûña=sane*]
   ANA=PEJ.ACC pull⟨PLV⟩=PRHB pull   break=APPR
   'Don't pull it <u>so that</u> you do <u>not</u> break it!'

                                    (20170801_river_contamination_ARLQ: 8)

In (3a), for example, the work encoded by the matrix clause is done to avoid the children's hunger encoded in the subordinate clause. In (3b), the speaker washes the dishes to avoid a scolding. Lastly, in (3c), the apprehensional clause modifies an imperative, instructing the addressee to put an object down to avert its destruction.

Whereas some apprehensional morphemes uniformly express the *speaker's* negative evaluation, here it is the *subject's* evaluation (cf. 2a). The avertive *=sa'ne*-clause is a subordinate clause and the matrix clause is formally and functionally like any other matrix clause (e. g. can be of any sentence type). We also see that all arguments in both clauses may be overt with no restrictions on co-reference.

3.2   In-case use

In another frequent use, *=sa'ne* introduces *precautioning in-case* adjuncts. The in-case use of *=sa'ne* is formally identical to the avertive use, as both introduce clausal adjuncts. However, it differs semantically in that it describes not a situation to be avoided, but rather one for which to be prepared. As noted above, however, note that we can instead regard the in-case uses as ones which introduce a situation which is not itself to be avoided, but rather whose undesirable *consequence* is (4). For example, getting one's rifle ready will not prevent the Teteté from coming (which is the stated situation), but might avert the negative consequence of not being prepared for an attack (4a).

(4)   a. *putaen'gu=ma am'bian* [*tetete=ndekhû ji='fa=sa'ne*]
        rifle=ACC   have   Teteté=PLH   come=PLS=APPR
        'I got my rifle ready <u>in case</u> the Teteté come.'

     b. *tsa'khû=ma=ngi guathian-'jen* [*ña yaya khuvi=ma i=sa'ne*]
        water=ACC=1   boil-IMPV   1SG father tapir=ACC bring=APPR
        'I am boiling water <u>in case</u> my father brings a tapir.'

     c. *tsa'u=ma=ngi giyaen-'jen* [*faengasû=ndekhû ji='fa=sa'ne*]
        house=ACC=1 clean-IMPV friend=PLH   come=PLS=APPR
        'I am cleaning my house <u>in case</u> my friends come.'

Despite the similarities to the avertive use, typological literature (following Lichtenberk 1995) typically regards the precautioning in-case use as distinct from the precautioning avertive use. One argument given is the existence of forms like the periphrastic *=mbe kañe* 'NEG.ADV AUX.INF' in A'ingae, which only allows for the avertive use (5).

(5) a. *putaen'gu=ma=ngi am'bian* [*thesi ña=ma an=mb=e   kan=ñe*]
          rifle=ACC=1   have   jaguar 1=ACC eat=NEG=ADV AUX=INF
          'I have a rifle <u>so that</u> a jaguar does <u>not</u> eat me.'

     b. #*putaen'gu=ma=ngi am'bian* [*thesi=ma   kachi=mb=e   kan=ñe*]
          rifle=ACC=1   have   jaguar=ACC meet=NEG=ADV AUX=INF
          intended: 'I have a rifle <u>in case</u> I encounter a jaguar.'
          actual: 'I have a rifle <u>so that</u> I <u>do not</u> encounter a jaguar.'

Having a rifle might prevent being eaten by a jaguar, so *=mbe kañe* 'NEG.ADV AUX.INF' can be felicitously used in (5a). A rifle will not, however, make meeting a jaguar any less likely. Thus, (5b) has only the pragmatically aberrant reading.

3.3 Timitive use

It its least common use, *=sa'ne* 'APPR' functions as a timitive case marker or adposition, embedding not a clause, but a DP denoting an entity to be avoided (6). A'ingae uses the same morpheme *=sa'ne* 'APPR' for both precautioning and timitive functions. This makes A'ingae unlike, for example, Ese Ejja which has a dedicated timitive *=yajjajo* 'TIM' used only for those purposes.

(6) a. *chaketa=ma undikhû=ja* [*tsanda=sa'ne*]
          jacket=ACC don=IMP   thunder=APPR
          'Put on a jacket <u>in case of</u> thunder.'

     b. *tuyakaen ña   ambian setsani=da=tsû   jin=ña ña=mbe ushachu,*
          and   1SG have   downriver=NEW=3 be=VER 1SG=BEN everything
          [*ayafakhupi=sane*] *kûpakhu*
          mouth sore=APPR prayer plant
          'I have prayer plant downriver [at my old house] <u>for</u> mouth sores.'
                              (20170803_garden_medicinal_plants_LC: 34)

     c. *kuenza=ndekhû=ti uke='fa   uvepa'chu tsau'pa=ma* [*anchan=sa'ne*]
          elder=PLH=INT   burn=PLS termite   nest=ACC   mosquito=APPR
          'Do the elders burn termites' nests <u>to avoid</u> mosquitoes?'

While the internal structure of complements differs between the precautioning and timitive uses, the two categories are semantically similar: they both denote that which is to be avoided, be it a situation, its consequence, or an entity. Still, the timitive uses are restricted in two important ways.

First, the timitive uses are more felicitous with eventive DPs than non-eventive ones. A timitive use with an eventive DP is demonstrated in (6a). When the DP is non-eventive, as in (7), where the *=sa'ne*-embedded noun denotes non-eventive chicha, the sentence improves with prior context which makes a particular kind of

event salient. Even so, still a full clause where =*sa'ne* 'APPR' has the precautioning in-case function is preferred to the timitive use.

(7) #(*pûi fiesta=nga tsû tsetse'pa jin=ñe atesû.) jayi=mbi=ngi fiesta=nga*
each party=DAT 3 chicha be=INF know go.PRSP=NEG=1 party=DAT
[*tsetse'pa* ?(*jin*)=*sa'ne*]
chicha be=APPR
'There is alcohol at every party. I'm not going to the party <u>to avoid</u> alcohol.'

Second, the timitive uses are more felicitous with DPs which have salient negative situations associated with them. Timitive uses with such DPs are shown in (6b-c), where mouth sores are associated with being in pain and mosquitoes with biting. In cases where the DP has naturally positive associations, non-eventive timitives may be infelicitous, even given prior context. Thus, even with the undesirable scolding in mind, (8) remains infelicitous.

(8) CONTEXT: My mother will scold me if I don't cook.
#*shu'khaen=ngi ña* [*chan=sa'ne*]
cook=1 1SG mother=APPR
intended: 'I cooked <u>for fear of</u> my mother.'

We conclude therefore that despite its non-clausal internal syntax, the timitive function is nonetheless uniformly propositional/eventive in nature.

4   An analysis of the avertive use

In this section, we draw a parallel between English rationale clauses introduced by (*in order*) *to* and the avertive uses of =*sa'ne* 'APPR.' We propose a preliminary semantics for the precautioning avertive function of =*sa'ne* 'APPR.' In Sections 5 and 6, we will extend that analysis to in-case and timitive uses.

4.1   A semantics for rationale clauses

Work on English infinitives has argued that there is a very rich range of syntactically and semantically distinct adjunct infinitives (e.g. Faraci 1974, Huettner 1989). The compositional semantics of these as well as their relationship to argument uses of infinitives remains relatively unexplored (though see Portner 1997).

Huettner (1989) identifies as many as 7 types of adjunct infinitives in English and argues that one parameter on which they vary is height of attachment:

(9) VP-LEVEL ADJUNCTS

   a.   I bought that dog [to bark at my in-laws.]   PURPOSE

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     b. Max works hard [to stay out of jail.]   GOAL

     c. They gave Sue ten dollars [to pose with a cobra.]   EXCHANGE

     d. John awoke [to find the fire had gone out.]   RESULT

     e. Mary blushed [to recall Tom's importunities.]   STIMULUS

(10)   IP-LEVEL ADJUNCTS

     a. I gave Scruffy a biscuit [(in order) to keep him quiet).]   RATIONALE

     b. Chris escaped [only to be recaptured.]   OUTCOME

Of these, the avertive =*sa'ne*-clauses are most similar to rationale clauses, typically expressing the matrix subject's intention for performing the action of the matrix clause.[4] In this section, we construct semantics for rationale clauses in five steps. In Section 4.2, we use the proposal developed here as a foundation for the semantics of precautioning avertive clauses.

Step 1   As a jumping-off point for our semantics of rationale clauses, we adapt Nissenbaum (2005)'s proposal:

(11) $[\![$(in order) to have food$_{\text{adjunct}}]\!]^w = \lambda e.\forall w'$ compatible with the goals relevant to e in w : PRO has food in w' (adapted from Nissenbaum 2005)

Nissenbaum (2005) formalizes the intuition that rationale clauses are event modifiers whose content expresses a goal of the event the rationale clause modifies.

Step 2   We then make the semantics of rational clauses compositional following Grosz (2014)'s reformulation of Nissenbaum (2005)'s proposal:

(12) $[\![$MOD$_{\text{rationale-clause}}]\!]^w = \lambda q.\lambda e.\forall w'$ compatible with the goals relevant to e in w : $q(w')$ (adapted from Grosz 2014)

Informally, Grosz (2014) analyzes rationale clauses as possessing a covert modal operator which combines with a proposition and yields an event modifier such that the proposition expresses goals relevant to the event.

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4 Further properties Huettner (1989) notes to distinguish rationale clauses from purpose clauses include subject rather than object control, the possibility of including 'in order' with no change in meaning, and the potential to occur in a left-adjoined position.

Step 3   Rather than event modifiers, we treat rationale clauses as propositional modifiers. Syntactically, this is motivated by Huettner (1989) claim that rationale clauses are IP adjuncts rather than VP adjuncts. Semantically, it is motivated by Grano (2017)'s observation that rationale clauses are crucially intensional. We incorporate those insights by changing the semantics above so that rationale clauses are propositional modifiers, rather than event modifiers.

Step 4   Following Grosz (2014) and various other authors in the literature on control, we recognize that a matrix agent is not syntactically necessary for a rationale clause to be possible:[5]

(13)   The house is white [(in order) to meet the HOA rules].

For example, (13) does not explicitly state who painted the house white, but it is still understood that such an individual exists. The same facts hold of A'ingae avertive clauses (and rationale clauses), as can be seen in (14), where the person responsible for choosing to build the house on a raised platform is implicit.

(14)   *tsa'u   tsû sefatshi* [*na'en pikhu=sa'ne*]
       house 3   raised   river   cover=APPR
       'The house is raised <u>lest</u> the river flood it.'

To accommodate this insight, we incorporate the rationale clause subject via Grano (2017)'s revised version of Farkas (1988)'s RESP relation:

(15) $\text{RESP}(a, p) \approx a$ intentionally brings it about that p

The RESP relation holds between an individual and a state of affairs which the individual intentionally brings about. The RESP relation thus formalizes the insight that the notion of intentionally bringing about a state of affairs is distinct from the thematic role of agent. For further motivation and discussion, see Farkas (1988).

Step 5   Finally, we bring together the insights of Steps 1-4 and propose that the existence of an impetus bearing the RESP relation to the state of affairs expressed by the matrix clause is a presupposition of the rationale clause itself rather than a part

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5 There are cases seemingly lacking an explicit or implicit agent:

   (i)   Fruits have seeds [(in order) to reproduce].

Previous proposals by Grosz (2014) and Grano (2017) observe that evolution here is goal-oriented in a way similar to human goals and that natural languages seem to treat the two on par. Although the details of this potential refinement are beyond the scope of our talk, it is ultimately worth considering whether cases such as (i) necessitate a formalism for agentless goal structures.

of the matrix clause denotation. For example, the semantics of the matrix clause in (13) presumably does not entail the existence of an individual responsible for the house being white. Thus, we arrive at the following semantics:

(16) $[\![(in\ order)\ to]\!] = \lambda q_{st}.\lambda p_{st}.\lambda w.[p(w)$ and
        $\forall w' \in \text{GOAL}_{i,p}(w) : q(w')]$
      presupposition: $\exists i$. such that $\text{RESP}(i, p)$

Our proposal amounts to identifying the rationale operator, such as the English (*in order*) *to*, with a function whose input is a proposition q and output a propositional modifier of p such that the modifier's input proposition p is performed to achieve the goals of the agent i responsible for the matrix clause (notated $\text{GOAL}_{i,p}$). The impetus i responsible for the matrix clause is usually the agent of the modified clause. The identity between the impetus i and the agent of the matrix clause, however, is not required in order to allow for cases such as (13).

While we have discussed English rationale clauses thus far, the semantics appears equally applicable to A'ingae adjunct infinitives, as seen in (17), yielding a top-level meaning as in (18)

(17) *sema-'je=ngi* [*ankhe'sû=ma am'bian=ñe*]
      work-IMPV=1 food=ACC   have=INF
      'I am working (in order) to have food.'

(18) $[\![(17)]\!] = \lambda w.$ the speaker is working in w and
        $\forall w'[w' \in \text{GOAL}_{i,p}(w) :$ the speaker has food in $w']$
      where $p =$ the speaker is working
      presupposition: $\exists i$. such that $\text{RESP}(i,\ \lambda w.$ the speaker is working in $w)$

Informally then, the semantics of (17) says that the subject, here the speaker, is working and that their goal worlds are one in which they have food.

4.2   A semantics for the avertive function

Basing ourselves on the semantics developed above for rationale clauses, we will now formalize the semantics of avertive uses of =*sa'ne* 'APPR,' as in (19).

(19) *sema-'je=ngi* [*dû'shû=ndekhû khiphue'sû=sa'ne*]
      work-IMPV=1 child=PLH   starve=APPR
      'I am working lest my children starve.'

Focusing only on the avertive uses of =*sa'ne* 'APPR' for a moment, we observe that precautioning avertive clauses are a *negative* version of English rationale clauses[6] Therefore, we propose a preliminary semantics for the precautioning

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6 We can also note that clausal negation and the infinitive are incompatible in A'ingae:

avertive =*sa'ne*-clauses, differing from the semantics for rationale clauses only in that the goal worlds are $\neg q$ worlds rather than q worlds:

(20) $\llbracket$=*sa'ne*$_{\text{avertive}}\rrbracket = \lambda q_{st}.\lambda p_{st}.\lambda w.[p(w)$ and
$\qquad \forall w' \in \text{GOAL}_{i,p}(w) : \neg q(w')]$
presupposition: $\exists i.$ such that $\text{RESP}(i, p)$

This is equivalent to saying that the avertive =*sa'ne* 'APPR' takes a proposition q as its input and outputs a propositional modifier such that the relevant goal worlds of the agent are ones where q does not hold. Applying this semantics to (19), we arrive at the following meaning:

(21) a. $\llbracket$*sema-'je=ngi*$\rrbracket = \lambda w.$ the speaker is working in w
b. $\llbracket$*dû'shû=ndekhû khiphue'sû*$\rrbracket = \lambda w.$ the children go hungry in w
c. $\llbracket$*dû'shû=ndekhû khiphue'sû=sa'ne*$\rrbracket = \lambda p_{st}.\lambda w.[p(w)$ and
$\qquad \forall w' \in \text{GOAL}_{i,p}(w) :$ the children <u>do not</u> go hungry in $w']$
presupposition: $\exists i.$ such that $\text{RESP}(i, p)$
d. $\llbracket$ (19) $\rrbracket = \lambda w.$ the speaker is working in w and
$\qquad \forall w' \in \text{GOAL}_{i,p}(w) :$ the speaker's children <u>do not</u> go hungry in w'
where $p =$ the speaker is working
presupposition: $\exists i.$ such that $\text{RESP}(i, \lambda w.$ the speaker is working in $w)$

The matrix clause in (21a) says that the speaker is working. The argument of =*sa'ne* in (21b) says that the children go hungry. The subordinate =*sa'ne*-clause in (21c) is a propositional modifier which takes in a matrix clause and says that it is the goal of the impetus responsible for the matrix clause's proposition that the children do not go hungry. Finally, (21d) says that the speaker is working and the goal of the impetus responsible for the speaker working is that their children are not hungry. In other words, the situation described by the avertive =*sa'ne*-clause does not obtain in the worlds where the presupposed impetus's p-relevant goals are met. As is usually the case, the RESP-presupposition is met by the agent of the matrix clause, i. e. the speaker since the subject is first person.

5   Extending the analysis to the in-case use

So far, we have proposed an apprehensional semantics based on the semantics of rationale clauses. This semantics is suitable for precautioning avertive uses, but does not work for in-case uses. Consider (4b) again.

(ii) **sema-'je=ngi* [*vana=mbi=ye*]
work-IMPV=1 suffer=NEG=INF
intended: 'I'm working <u>in order to not</u> be in trouble.'

(4b) *tsa'khû=ma=ngi guathian-'jen* [*ña yaya khuvi=ma i=sa'ne*]
water=ACC=1   boil-IMPV   1SG father tapir=ACC bring=APPR
'I am boiling water <u>in case</u> my father brings a tapir.'

Here, the subject's goal worlds are not limited to those in which the subject's father fails to bring home a tapir. Indeed, the father bringing home a tapir is desirable situation without any negative emotional valence. Nevertheless, there is intuitively another 'larger' situation that the subject wants to avoid. For (4b), it is the situation of being unprepared to cook the tapir when father brings one home.

To account for precautioning in-case uses like (4b), we revise the analysis in (20) as follows, giving a unified account of the avertive and in-case uses:

(22) $\llbracket$=*sa'ne*$_{\text{precautioning}}\rrbracket = \lambda q_{st}.\lambda p_{st}.\lambda w.[p(w)$ and
$\forall w' \in \text{GOAL}_{i,p}(w) : r \Rightarrow q$ and $\neg r(w')]$
where r is a contextually inferrable proposition
presupposition: $\exists i.$ such that $\text{RESP}(i, p)$

Across both uses, the precautioning =*sa'ne* 'APPR' is an operator which takes in a proposition q and outputs a propositional modifier of p such that i's p-relevant goal worlds are ones where the inferrable proposition r – which entails the state proposition q – does not hold.[7]

Under this unified semantics of precautioning uses, avertive and in-case uses fall out as its special cases. For the avertive uses, the state of affairs to be avoided is the one described (23a). For in-case uses, the state of affairs is be avoided "included," but is not identical with, the stated one (23b). This distinction is schematized below:

(23)   a. $\llbracket$=*sa'ne*$_{\text{precautioning avertive}}\rrbracket: r \Leftrightarrow q$
        b. $\llbracket$=*sa'ne*$_{\text{precautioning in-case}}\rrbracket: r \Rightarrow q$ and $q \nRightarrow r$

Whether the precautioning =*sa'ne* 'APPR' receives the avertive or the in-case interpretation depends on a number of pragmatic factors, including considerations such as (a) whether q is plausibly under i's control (e. g. rain is not controllable by most potential i other than shamans), (b) whether q is itself likely to be regarded negatively by i (i. e. i is generally unlikely to avoid a positive state of affairs), and (c) what outcomes would engaging in p plausibly be intended to avert (e. g. what tapir-related outcomes boiling water could be intended to avert). While the semantics itself leaves r quite underspecified, these various pragmatic factors serve to constrain substantially the potential values for r in a given context.

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7 We formalize the in-case semantics with a contextual $\neg r$ rather than $\neg p \wedge \neg q$ to capture the intuition that often performing the action described by p may be one of many ways to achieve i's goal. I. e. if the impetus i had not brought it about that p, they would have done something else to avoid the undesirable outcome, such as starting a fire to smoke the meat in the case of (4b).

6   Extending the analysis to the timitive use

Lastly, we return to the timitive uses of =*sa'ne* 'APPR.' The timitive function differs from the two precautioning functions in that it takes a DP, not a clause, and thus superficially appears reminiscent of an adposition or case marker. For example, the syntactic argument of =*sa'ne* 'APPR' in (24) is the DP *anchan* 'mosquitoes.'

(24)   *kuenza=ndekhû uke='fa   uvepa'chu tsau'pa=ma* [*anchan=sa'ne*]
        elder=PLH   burn=PLS termite   nest=ACC   mosquito=APPR
        'The elders burn termites' nests <u>to avoid</u> mosquitoes.'

Timitive uses in A'ingae are always avertive in our extended sense. Intuitively, there always is a situation which "contains" the entity of the =*sa'ne*-marked DP.

(25)   a. *shamandakhû=ma='khe santshe san'jan=ña='chu* [*asapa'chu=sane*]
           armpit=ACC=ADD   dryly   dry=IRR=SBRD mycosis=APPR
           'You must dry your armpits as well <u>to avoid</u> mycosis.'
                                                      (Pederson & Cooper 1982: p. 11)

       b. *tsa'u=ni=ngi   jayi   [ûnjin=sa'ne]*
          house=LOC=1 go.PRSP rain=APPR
          'I'm going home <u>for fear of</u> rain.'

       c. #*juva=tsû* {*i'na, fûndu*}   [*unkumari=sa'ne*]
          DIST=3   {cry,   scream} bear=APPR
          intended: 'He {cried, screamed} <u>for fear of</u> the bear.'

Thus, in (25a), it is mycosis itself that the subject is trying to avoid through drying. In (25b), it is the larger situation of rain and not yet being home that is to be avoided. Conversely, as seen in (25c), cases with no aversion are infelicitous even when the English gloss *for fear of* is apt. Here, in particular, crying or screaming is not aimed at deterring the bear. It could, indeed, have the opposite effect.

Observe that the precautioning in-case clausal uses, too, rely on the existence of an inferrable proposition to be avoided. We therefore propose that the timitive makes use of essentially the same semantics. For concreteness' sake, we propose the following lexical entry for the timitive:

(26) $[\![$=*sa'ne*$_{\text{timitive}}]\!] = \lambda x_e.\lambda p_{st}.\lambda w.[\,p(w)$ and
        $\forall w' \in \text{GOAL}_{i,p}(w) : r$ involves x in w' and $\neg r(w')]$
        where r is a contextually inferrable proposition
        presupposition: $\exists i$. such that $\text{RESP}(i, p)$

Alternatively, we might retain the precautioning semantics above, and take timitive cases to be instances of *coercion*. For a discussion of coercion, underspec-

ification, and polysemy, see Asher (2011). We do not compare the two proposals here and remain agnostic about their ultimate consequences.[8]

Regardless of whether one adopts the coercion-based analysis or the lexical entry in (26), it is apparent that like the in-case use above, the timitive function also relies crucially on there being a contextually salient or recoverable proposition. The timitive function can thus be seen as parasitic on the in-case function.

This also helps explain the two properties of the timitive noted in Section 3.3. First, timitive uses are most felicitous with eventive nouns, where the associated proposition is most easily recoverable from context, e. g. (6a, 25b). Second, timitive uses are felicitous when the argument DP is associated saliently with an undesirable situation, facilitating recovery/coercion, e. g. (6b, 25a). Conversely, in the absence of negative emotional association (or presence of a positive one), an undesirable situation cannot be easily recovered, so the timitive is infelicitous, e. g. (8).[9]

7 Typological implications and conclusion

Thus far, we have developed a formal semantic proposal for A'ingae =*sa'ne* 'APPR.' By relating the precautioning avertive, precautioning in-case, and timitive uses in an asymmetrical fashion, our account makes substantive typological predictions with respect to their availability for a given apprehensional morpheme.

7.1 Implications for precautioning uses

Both the avertive and in-case uses relate two clauses hypotactically. Thus, Vuillermet (2018) and the emergent typological consensus group them together formally under the label *precautioning*. Moreover, Lichtenberk (1995) and subsequent literature typically regards avertive and in-case apprehensionals as having equal status; neither is based on or in any sense prior to the other. Such an conception therefore predicts

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8 A third possibility in principle would be an elliptical analysis. There are, however, two kinds of evidence that argue against this alternative. First, there is no tendency for the hypothetically elided material to appear in the preceding linguistic context. Second, constructions such as (iii), where =*sa'ne* 'APPR' attaches to a case-marked noun phrase, are ungrammatical.

  (iii) **kuenza=ndekhû uke='fa   uvepa'chu tsau'pa=ma* [*anchan=nga=sa'ne*]
         elder=PLH   burn=PLS termite   nest=ACC   mosquito=DAT=APPR
         'The elders burn termites' nests <u>to avoid</u> (getting stung by) mosquitoes.'

9 While our account predicts that context should facilitate the recovery of a relevant proposition, (8) remains infelicitous even so. One possibility is that affective aspects of the lexeme *chan* 'mother' yield a judgment more categorical than what the account expects. Another possibility is simply that a richer context establishing the negative prospect is needed. We leave it to future work to investigate this pattern further.

no particular constraints on which of these cases a given apprehensional morpheme may be used.

The unified semantics for the avertive and in-case functions given by our account, on the other hand, posits an inherent asymmetry between the two precautioning uses. Since A'ingae =*sa'ne* incorporates a contextually inferrable proposition, the avertive semantics can be straightforwardly obtained by *requiring* that the undesirable proposition is the one encoded by the =*sa'ne*-clause (27a). The in-case use, on the other hand, involves inferring an undesirable proposition (27b). Observe that, if undesirable, the proposition encoded by the =*sa'ne*-clause itself is *trivially* inferrable, so a morpheme without the restriction particular to the avertive should still be able to function in an avertive manner:

(27)   a. $[\![$=*sa'ne*$_{\text{avertive}}]\!] = [\![$=*sa'ne*$_{\text{precautioning}}]\!]$ and $r \Leftrightarrow q$
       b. $[\![$=*sa'ne*$_{\text{in-case}}]\!] = [\![$=*sa'ne*$_{\text{precautioning}}]\!]$ (r may but need not $\Leftrightarrow q$)

Based on this asymmetry, we predict that we should not find apprehensional morphemes which only have in-case uses but no avertive uses. We dub this prediction *precautioning asymmetry*:

(28)   PRECAUTIONING ASYMMETRY
       If an apprehensional morpheme has the precautioning in-case function, then it also has the precautioning avertive function.

From what is known of the typology of apprehensional morphemes to date, the prediction of precautioning asymmetry is borne out:

(29)   a.   DEDICATED AVERTIVE: =*mbe kañe* 'NEG.ADV AUX.INF'
            putaen'gu=ma=ngi am'bian [*thesi   ña=ma an=mb=e   kan=ñe*]
            rifle=ACC=1   have   [jaguar 1=ACC eat=NEG=ADV AUX=INF]
            'I have a rifle <u>so that</u> a jaguar does <u>not</u> eat me.'
       b.   PRECAUTIONING (AVERTIVE OR IN-CASE): =*sa'ne* 'APPR'
            jûnde ja [*tise faengae ji=sa'ne*]
            soon go 3SG together come=APPR
            'I hurried up to leave {<u>so it is not the case that</u>/<u>in case</u>} he comes with us.'
       c.   DEDICATED IN-CASE: N/A
            *unattested cross-linguistically to date

The A'ingae =*sa'ne* 'APPR,' for example, has both the avertive and in-case uses. The periphrastic =*mbe kañe* 'NEG.ADV AUX.INF' can be used to express avertive meanings but does not have the in-case function (5). This situation is paralleled exactly by To'aba'ita, whose apprehensional *ada* 'APPR' has avertive and in-case

functions, while *fasi* 'PURP' can only be used in the avertive fashion (Lichtenberk 1995). Likewise, the English *lest* has been reported in both avertive and in-case contexts (1b-c), while a plethora of negative purpose constructions (*in order not to*, *so as not to*, *so that not*) are explicitly avertive.[10]

Thus, beyond providing a unified semantics of the formally identical precautioning avertive and in-case uses, our account predicts—correctly to our knowledge—an asymmetry in their encoding.

7.2 Implications for timitive uses

In addition to the above prediction for precautioning uses, we make an implicational prediction for languages with avertive timitives like =*sa'ne* 'APPR.'[11] Since the timitive function is a syntactic variant (or a coercion of) the in-case function and the avertive function is a special case of the in-case function, we specifically predict non-existence of morphemes with both timitive and avertive but no in-case uses.[12] We dub our prediction *timitive asymmetry*.

(30)   TIMITIVE ASYMMETRY
       If an apprehensional morpheme has the precautioning avertive and timitive functions, then it also has the precautioning in-case function.

While more work is needed to confirm it, attested data is—to our knowledge—consistent with these predictions. For example, the apprehensional *-fang* 'APPR' in Marrithiyel (Western Daly; Australia) has all three functions, just like =*sa'ne* 'APPR' in A'ingae (II).[13] We are not aware of counterexamples to (30).

While the semantics for the timitive draws on the same semantic mechanism as the precautioning in-case use, we nonetheless expect dedicated avertive timitives to be possible for purely syntactic reasons. While morphemes with precautioning functions embed clauses, morphemes with the timitive function are heads of DPs. Thus, the timitive bears syntactic semblance to a case marker or an adposition and,

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10 Note that English *in case* is not a counterexample since it is not necessarily negative in any way and has a more clearly conditional semantics. We are unaware of literature on the semantics of English *in case* to point to to concretely compare in greater detail.

11 Within the limited typological work to date, we note that only some timitives pattern with =*sa'ne* 'APPR' in being avertive in any sense. For example, Vuillermet (2018) shows that Ese Ejja's dedicated timitive =*yajjajo* can encode the stimulus of fear as well. Concretely, it is felicitous in scenarios such as (I) in the appendix, whereas A'ingae =*sa'ne* 'APPR' was infelicitous in the analogous (25c). For such cases, our account would not be applicable and we would therefore make no specific typological predictions.

12 Furthermore, based on precautioning asymmetry, we also do not expect to find morphemes with timitive and in-case uses, but without an avertive use.

13 Examples referenced with uppercase Roman numerals can be found in the appendix.

LANGUAGE	MORPHEME	AVERTIVE	IN-CASE	TIMITIVE
A'ingae	=sa'ne	✓	✓	✓
A'ingae	=mbe kañe	✓	✗	✗
Marrithiyel (II)	-fang	✓	✓	✓
To'aba'ita (III)	ada	✓	✓	✗
Diyari (IV)	yathi	✓	✓	✗
Warrgamay (Va)	-ma/-lma	✓	✓?	✗
Warrgamay (Vb)	-nga/-la/-nda	✗	✗	✓
[predicted absent]	N/A	✗	✓	✗
[predicted absent]	N/A	✓	✗	✓
[predicted absent]	N/A	✗	✓	✓

Figure 1: Predicted and attested typology for apprehensional adjuncts.

if similarly restricted, may be unable to combine with a clause for syntactic reasons. Warrgamay (Dyirbalic; Australia) exemplifies this case with the dedicated avertive timitive -fang 'TIM' (Vb).

7.3 Conclusion

In this paper, we have developed a unified semantics for apprehensional adjuncts headed by A'ingae =sa'ne 'APPR.' We have proposed to analyze =sa'ne 'APPR' as introducing a negative version of a rationale clause. Building on a novel account of the semantics of rationale clauses, we analyze =sa'ne 'APPR' as contributing a propositional modifier stating that the the goal worlds of the actor responsible for the matrix clause are ones which avert a situation introduced by the subordinate avertive clause.

The core insight into the relation among different uses of an apprehensional morpheme such as =sa'ne 'APPR' is that the in-case and timitive uses are also avertive, but the situation to be averted in these cases is contextually inferred based upon the material to which =sa'ne 'APPR' attaches. The analysis therefore predicts an inherent asymmetry between avertive and in-case/timitive uses. These cross-linguistic predictions and the preliminary data supporting them are found in the appendix and are summarized in Figure 1.

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