# Overcoming the Unexpected:
# The Tagalog Ability/Involuntary Action Form

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## 1. Introduction

Some languages have verbal morphology that lumps together what, at first sight, look like unrelated modal meanings. Tagalog is a case at hand. There are two classes of verbal forms in Tagalog: the neutral form and the so-called 'ability / involuntary action (AIA) form' (Schachter & Otanes, 1972; Dell, 1983). These forms are illustrated in (1).[1] The verb in the sentence in (1-a) is in the neutral form, marked by the infix *<in>*, which also conveys perfective aspect. The verb in the sentence in (1-b) is in the AIA form, marked by prefix *na-*, which contributes perfective aspect as well. The sentence in (1-a) conveys that Lisa opened the door. On top of that, the sentence in (1-b) conveys that the door opening was within what Lisa could do or that it was beyond what she could control, depending on the context.

(1)    a.    B<in>uks-an      ni  Lisa ang  pinto.
               <PFV.NTL>open-LV GEN Lisa NOM door
               'Lisa opened the door.'
        b.    Na-buks-an      ni  Lisa ang  pinto.
               PFV.AIA-open-LV GEN Lisa NOM door
               'Lisa managed to open the door. / Lisa accidentally opened the door.'

The Tagalog AIA form finds counterparts in the Malagasy verbal prefix *maha-* (Paul et al., 2016), and, outside Austronesian, in the 'Out-of-Control' circumfix *ka-...-a* in St'át'imcets (Davis et al., 2009), both of which can convey ability attributions or describe accidental actions, as in (2) and (3) below.[2]

(2)    a.    Mahaongotra fantsika amin' ny   tanana Rabe.
               AHA.pull-out nail      with  DET hand  Rabe
               'Rabe can pull out nails with his hands.'
        b.    Nahasotro      poizina izy.
               PST.AHA.drink poison  3
               'He drank poison [by accident].'            (Paul et al., 2016)
(3)    a.    ka-gwél-s=kan-a
               OOC-burn-CAUS=1SG.SUBJ-OOC
               'I managed to get it lit.'

[1] Tagalog examples use the following abbreviations for glosses: AIA: Ability/Involuntary Action Form, AV: Agent Voice, CV: Conveyance Voice, GEN: Genitive, IMPF: Imperfective, LK: Linker, LV: Locative Voice, NEG: Negation, NOM: Nominative, NTL: Neutral Form, OBL: Oblique, PFV: Perfective, PROS: Prospective, PV: Patient Voice, Q: Question Particle. Morpheme boundaries are indicated following the Leipzig Glossing Conventions. Non-Tagalog examples follow the glosses used in the source texts.

[2] The parallel is not perfect, though. Unlike the Tagalog AIA forms, Paul et al. (2016) observe that when *maha-* combines with stative predicates, it receives a causative interpretation. Davis et al. (2009) also report a number of other interpretations of *ka-...-a*, an issue that we will partially comment on later on.

    b.   ka-gwél-s=kan-a                  ta=ngúy'tten=a
         OOC-burn-CAUS=1SG.SUBJ-OOC DET=bed=EXIS
         'I accidentally set my bed on fire.'                  (Davis et al., 2009)

From the standpoint of a formal semanticist interested in the expression of modality in natural language, the semantic contribution of AIA morphology poses some questions:[3]

1. What kind of modal flavor do the AIA verbal forms express? Why are the 'manage to' and 'accidental' interpretations lumped together across languages? And how does this interpretation relate to what we know about the modal flavors expressed by other modal expressions?

2. How uniform is the interpretation of AIA forms across languages?

The goal of this paper is rather modest. We aim to partially contribute to our understanding of questions 1 and 2 above by probing into the interpretation of the Tagalog AIA forms, focusing on their perfective versions.

Unsurprisingly, we are not the first to address the questions above. Davis et al. (2009) and Paul et al. (2016) have put forth careful semantic analyses of the St'át'imcets and Malagasy forms, respectively.[4] Although there are significant differences in the implementation of these analyses, they both converge, to a certain degree, in the answer that they provide to question 1 above: that AIA forms contribute circumstantial modality; in particular, that these forms convey that a certain outcome *follows* from a set of facts.

In this paper, we will lay out some basic facts about the interpretation of the Tagalog AIA forms and assess the extent to which the previous approaches to its Malagasy and St'át'imcets counterparts can capture them. We will show that, as they are, these previous proposals for Malagasy and St'át'im-cets do not extend in a straightforward manner to Tagalog and, in doing so, reveal some differences in the interpretation of AIA forms in Tagalog, Malagasy, and St'át'imcets, therefore contributing to our understanding of question 2 above.

In contrasting Tagalog with Malagasy and St'át'imcets, we do not find reasons to challenge the proposal that the type of modality that AIA forms contribute in Tagalog is sensitive to a set of relevant circumstances or facts, but we will show that there are reasons to believe that Tagalog AIA forms convey that a certain outcome is *unexpected*, given those facts, rather than that it follows from them. The paper ends by presenting some desiderata or minimal requirements for an analysis of the Tagalog AIA forms. For reasons of space, we do not develop such an analysis here. That is a task that we embark upon in Alonso-Ovalle & Hsieh forthcoming, to which we refer the interested reader.

The paper is organized as follows: Section 2 lays out some basic background about the form of the Tagalog AIA inflection and introduces two properties of its interpretation, one of which has not been, to our knowledge, explicitly highlighted before; Sections 3 and 4 assess the extent to which previous proposals for Malagasy and St'át'imcets can be extended to Tagalog; Section 5 concludes the paper by summarizing the properties of the Tagalog AIA forms that an analysis of this form should capture.

## 2. The Tagalog AIA inflection: Form and interpretation

We start with some minimal background about the Tagalog verbal inflection paradigm. We have seen in (1) that Tagalog verbs can appear either in the neutral or in the AIA form. Tables 1-2 show that each of these forms inflect for voice and aspect: Table 1 shows the perfective forms in different voices and Table 2 the locative voice in different aspects. Voice marking correlates with the argument marked as the 'pivot', bearing nominative *ang/si*, as shown, for AIA forms, in (4). Without overriding temporal modifiers, perfective, imperfective and prospective forms are interpreted as past, present/habitual, and future, respectively, as (5) illustrates for the first two forms. See Schachter & Otanes 1972 for details.

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[3] To our knowledge, there is no standard term used to refer to the Tagalog AIA forms and also to their counterparts in other languages. Here, we will use 'AIA' to refer to the Malagasy and St'át'imcets forms too.

[4] The analysis in Davis et al. 2009 is presented in Davis et al. 2007. In what follows we will mainly refer to Davis et al. 2009, which is a longer version of Davis et al. 2007.

**Table 1:** Sample voice forms for *bukas* 'open'

|  | Neutral | AIA |
|---|---|---|
| AGENT | b<**um**>ukas | **naka**-bukas |
| PATIENT | b<**in**>ukas* | **na**-bukas* |
| LOCATIVE | b<**in**>kus-**an** | **na**-buks-**an** |
| CONVEYANCE | **i**-b<**in**>ukas | **na-i**-bukas |

Forms marked * are slightly marginal

**Table 2:** Sample aspect forms for *bukas* 'open'

|  | Neutral | AIA |
|---|---|---|
| (INF) | buks-**an** | **ma**-buks-**an** |
| PFV | b<**in**>uks-**an** | **na**-buks-**an** |
| IMPF | b<**in**>u~buks-**an** | **na-bu**~buks-**an** |
| PROS | **bu**~buks-**an** | **ma-bu**~buks-**an** |

(4) a. Naka-bili     *ang bata* ng   mani.
     PFV.AV.AIA-buy NOM child GEN peanut

     'The child {managed to buy / accidentally bought} peanuts.'     *Agent Voice ↔ Agent Pivot*

   b. Na-bilh-an     ng   bata ng   mani *ang kapatid niya*.
     PFV.AIA-buy-LV GEN child GEN peanut NOM sibling  3SG.GEN

     'The child {managed to buy / accidentally bought} peanuts *for her sibling*.'

                                 *Locative Voice ↔ Location/Recipient Pivot*

(5) a. K<um>ain      si   Junior ng   gulay.
     <PFV.AV.NTL>eat NOM Junior GEN vegetables

     'Junior ate vegetables.'                  *Perfective form, past interpretation*

   b. K<um>a~kain si   Junior ng   gulay.
     IMPF.AV.NTL~eat NOM Junior GEN vegetables

     'Junior {eats / is eating} vegetables.'    *Imperfective form, habitual/present interpretation*

We will focus on the interpretation of AIA forms in the perfective aspect by introducing two properties that set these forms apart from their neutral counterparts. To illustrate the first property, we will elaborate on the observation about the interpretation of the Tagalog AIA form that we made in the introduction by considering the following three scenarios:

(6) a. *Scenario 1 (Expected Outcome):* Lisa is trying to open an automatic door. All that is required to open the door is to press a button. It's impossible for the door not to open if the button is pressed. Lisa presses the button. As expected, the door opens.

   b. *Scenario 2 (Ability / Overcoming an Obstacle):* Lisa is trying to open an automatic door. To open the door, you need to enter a code and press a button. Lisa can't remember the code. She tries different ones. In the end, she enters the correct one. The door opens.

   c. *Scenario 3 (Involuntary Action):* Same automatic door. Lisa is bored, presses keys randomly, and happens to enter the code that opens the door.

The AIA sentence in (1), repeated in (7), can be felicitously used to describe Scenarios 2 or 3. In Scenario 2, (7) can be naturally paraphrased with the English sentences *Lisa managed / was able to open the door* and in Scenario 3 with *Lisa accidentally opened the door*. In contrast, (7) cannot be felicitously used to describe Scenario 1 (to the extent that Lisa's opening of the door is taken to be completely predictable and expected, as intended). The neutral form counterpart of (7) is felicitous in all three scenarios (although speakers can express a preference for the AIA form in Scenarios 2 and 3).

(7) Na-buks-an      ni   Lisa ang   pinto.
     PFV.AIA-open-LV GEN Lisa NOM door

On top of this, Dell (1983) notes that AIA forms in the perfective entail the actual culmination of the event described, while neutral forms do not (although they strongly imply it): the version of the discourse in (8) with an AIA form feels contradictory, but the neutral form version does not.

(8)  {I-t\<in\>ulak        / # Na-i-tulak}       ni   Ben ang   bato, pero hindi ito
      CV-\<NTL.PFV\>push    AIA.PFV-CV-push GEN Ben NOM rock  but   NEG  this
      g\<um\>alaw           dahil     napaka-bigat nito.
      \<AV.NTL.PFV\>move because very-heavy    this.GEN
      'Ben managed to push the rock, but it didn't move because it was so heavy.' (after Dell, 1983)

To sum up, in contrast with their neutral counterparts, we take sentences containing AIA forms in the perfective to convey (i) a modal meaning component that restricts the types of scenarios that they can describe, and (ii) an implication that the events that they describe are completed actual (past) events.[5]

In the next two sections, these two properties will guide our discussion of the contrast between Tagalog AIA forms and their counterparts in Malagasy and St'át'imcets, as analyzed in Paul et al. 2016 and Davis et al. 2009. These analyses assume that the the modal contribution of AIA morphology stems from one and the same modal core. Under different implementations, they propose, roughly, that AIA morphology conveys circumstantial modality and contributes the claim that a certain state of affairs follows from a set of relevant facts. In what follows, we will assess the extent to which these analyses can extend to Tagalog. The conclusion will be that a straightforward application of these analyses does not succeed in capturing the modal flavor of the Tagalog AIA forms or their actuality implication. We will start with the analysis of Malagasy *maha-* presented in Paul et al. 2016, and then discuss the proposal for St'át'imcets presented in Davis et al. 2009. [6]

## 3. A sublexical universal modal with a circumstantial domain (Paul et al., 2016)
### 3.1. The analysis

As illustrated in Section 2, the Tagalog AIA prefix conveys actual completion of the event described. The same is true for its Malagasy counterpart, *maha-*. In contrast, neither the Tagalog neutral form nor *its* counterpart in Malagasy convey an actuality implication. The analysis of *maha-* presented in Paul et al. 2016 is motivated by the observation that this contrast finds a parallel in the behavior of the so-called 'defeasible causative' verbs (Martin & Schäfer, 2012, 2017).

Defeasible causatives are verbs that describe actual completed events when their external argument is a non-volitional causer, but not when it is an agent. The two-sentence discourses in (9) below illustrate this point with the help of French *enseigner* ('to teach'). When *enseigner* takes a causer subject in the first sentence (*ce voyage*, 'that trip'), as in (9-a), a continuation conveying that there will be no complete teaching event (that Russian won't be learned) feels contradictory; when *enseigner* takes an agent subject, as in (9-b), it does not.

(9)  a.  # Ce voyage lui enseignera le russe. Mais évidemment, il ne l'apprendra pas.
         'This trip will teach him Russian. But obviously, he will not learn it...'
     b.  Pierre lui enseignera le russe, # mais évidemment, il ne l'apprendra pas.
         'Pierre will teach him Russian, # but obviously he will not learn it...'

(Martin & Schäfer, 2012)

Martin & Schäfer's (2012) analysis of this contrast underlies Paul et al.'s (2016) analysis of Malagasy *maha-*. According to Martin & Schäfer, defeasible causatives have a sublexical modal component (Koenig & Davis, 2001): these verbs denote relations between an individual $x$, an event $e$, and a world $w$, where $e$, which has theme $x$, causes a result event $e'$ with theme $x$ in all worlds $w'$ in a certain domain $\rho$ accessible from $w$. This is illustrated in (10) below.[7]

(10)  $[\![teach]\!] = \lambda x \lambda e \lambda w.\text{teach}_w(e) \wedge \text{theme}(x,e) \wedge \Box_{\rho_w}^{w'} \exists e'[\text{cause}_{w'}(e,e') \wedge \text{learn}_{w'}(e') \wedge \text{theme}(x,e')]$
(adapted from Martin & Schäfer, 2012:ex.7)

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[5] To our knowledge, the infelicity of AIA forms in contexts like Scenario 1 has not been explicitly noted before.

[6] Because AIA forms convey completion of an actual event, this morphology has been previously analyzed in Malagasy as a marker of lexical aspect (Travis, 2010). The modal interpretation that AIA conveys is not the focus of this approach, and, for that reason, will not be discussed here.

[7] For the sake of presentation, we have adapted slightly the truth conditions presented in Martin & Schäfer 2012. They assume an interpretation function relativized to a possible world, we do not. Nothing hinges on this difference.

External arguments get added later in the derivation, and it is assumed that the type of external argument correlates with the value of $\rho$, the domain of worlds that the metalanguage modal ranges over. If the external argument is an agent, then the value of the metalanguage variable $\rho$ must be what they call an 'energetic' modal base: a set of worlds where the agent achieves her goals. If the external argument is a causer, then the value of $\rho$ must be a circumstantial modal base: a set of worlds that share some facts with the world of evaluation.[8] The type of modal domain correlates with the presence or absence of an actuality entailment. When the modal base is energetic, the caused event $e'$ is claimed to hold in all members of the set of worlds where the agent of the causing event achieves their goals. Since this set may or may not include the world of evaluation, the claim does not entail that $e'$ exists in the world of evaluation. When the modal base is circumstantial, however, the caused event $e'$ must exist in the world of evaluation. This is so because the accessibility relation is reflexive and the sublexical modal has universal force: the domain of quantification of the sublexical universal modal contains those worlds that share some facts with the world of evaluation, since the world of evaluation shares all facts with itself, it is in the domain of the universal modal, and, therefore $e'$ is claimed to be part of it.

Paul et al. (2016) assume this type of bi-eventive analysis for Malagasy verbal roots. Transitive verbal roots in Malagasy are taken to denote a relation between two individuals $x$ and $y$, an event $e$, and a world $w$, where $x$ is the theme of $e$, $y$ is either an agent of a causer of $e$, and $e$ causes a result state $s$ in all worlds $w'$ accessible from $w$. For instance, the relation that Malagasy *catch* denotes is given in (11).[9]

(11)    $\lambda x \lambda y \lambda e \lambda w.\text{catch}_w(e) \wedge \text{catcher}(y,e) \wedge \text{catchee}(x,e) \wedge$
$$\Box_{\rho_w}^{w'} \exists s[\text{caught}_{w'}(s) \wedge \text{cause}_{w'}(e,s) \wedge \text{theme}(x,s)]$$

The Malagasy counterparts of the Tagalog neutral and AIA forms specify the semantic role of the external argument and this, under the current analysis, has an effect on the type of domain that the sublexical modal ranges over, and consequently on whether the actuality of the resulting state is implied. Malagasy Actor Topic morphology (parallel to the Tagalog neutral form) adds the condition that the external argument is an agent. This results in the sublexical modal having an energetic modal base and in the absence of an actuality implication. For instance, the truth conditions of the Malagasy past sentence in (12), with a verb in the actor topic form, convey that there is a past event $e$ (an event $e$ whose temporal extension is included in a past reference time $r$), which is an event of the child's (participating in a) catching of the dog and which results in the dog being caught in all worlds compatible with the intentions of the child in the world of evaluation. These truth conditions will be satisfied in a scenario where the child merely tries to catch the dog, but does not succeed.

(12)    Nisambotra  alika io    zaza io.
        PST.AT.catch dog   DEM child DEM
        'This child caught a dog.'                                   (truncated from Paul et al., 2016)

(13)    $[\![\text{PAST } [\text{AT-}\textit{catch the dog}] \textit{ this child}]\!](w) = 1$ iff $\exists e[e \subseteq r \wedge r \leq \text{now} \wedge \text{catch}_w(e) \wedge \text{catcher}(\text{c},e) \wedge$
        $\text{agent}(\text{c},e) \wedge \text{catchee}(\text{d},e) \wedge \Box_{\text{energetic}_w}^{w'} \exists s [\text{be-caught}_{w'}(s) \wedge \text{cause}_{w'}(e,s) \wedge \text{theme}(\text{d},s)]]$

In contrast, the AIA prefix *maha-* introduces the specification that the event participant engaged in the catching is a causer. This has the consequence that the modal domain of the sublexical modal contributed by the verb will be circumstantial and that the actuality of the resulting state is entailed. To

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[8]   We gloss over how this constraint over the possible values of $\rho$ is imposed. Martin & Schäfer rely on some meaning postulates.

[9]   Two comments about (11) are in order. First, we illustrate the relation with a lambda expression, like Paul et al. (2016) do at the beginning of their paper. The attentive reader will notice that the ordering of argument association that the lambda expression encodes does not correspond with the order in which arguments are saturated in (13). By the end of their paper, Paul et al. assume, following Keenan 2008, that arguments at the root level are unordered, and that one function of voice morphology is to determine the order of argument association. We gloss over this point, since nothing of what we will say in our assessment of the analysis hinges on it (keep in mind, though, that, because of this, we cannot properly call one of the $e$ type arguments of the verb 'external', as we do). Second, Paul et al. illustrate their analysis with the denotation of *cut*. In their denotation, as far as we can tell, 'cutter($y,e$)' must hold of a participant $y$ of $e$ iff $y$ is the agent or causer of $e$. Note also that the metalanguage predicate describing the causing event $e$ (in this case 'catch$_w$') must not entail completion of $e$, unlike what English *catch* suggests.

illustrate, the truth conditions of the past AIA sentence in (14) convey the existence of a past event $e$ of the child's (participating in a) catching of the dog that results in the dog being caught in all worlds compatible with some set of facts in the actual world, and, hence, in the actual world.

(14)  Nahasambotra alika io    zaza io.
      PST.AHA.catch dog   DEM child DEM
      'This child was able to catch a dog.'                    (truncated from Paul et al., 2016)

(15)  $[\![\text{PAST } [\textit{maha-catch the dog}] \textit{ this child}]\!](w) = 1$ iff $\exists e[e \subseteq r \wedge r \leq \text{now} \wedge \text{catch}_w(e) \wedge \text{catcher}(c,e)$
      $\wedge \text{causer}(c,e) \wedge \text{catchee}(d,e) \wedge \Box^{w'}_{\text{circumstantial}_w} \exists s\,[\text{be-caught}_{w'}(s) \wedge \text{cause}_{w'}(e,s) \wedge \text{theme}(d,s)]]$

This analysis focuses on capturing the contrast between AIA morphology and the counterpart of the Tagalog neutral form with respect to the (lack of) actuality implications. In what follows, we will ignore the neutral form and will focus on the characterization of the AIA forms. We will see that an extension of this analysis to Tagalog faces challenges capturing the two main properties of the AIA forms that we presented in Section 2: its modal component and its actuality implications.

### 3.2. Challenges (for extending to Tagalog)

We start with the modal component. The first challenge is that, under its present form, the analysis fails to capture the felicity conditions of AIA sentences described in Section 2. Recall that Section 2 showed that AIA sentences are deviant when describing a completely predictable event. We illustrated this by pointing out that sentence (7), repeated below in (16), is deviant as a description of Scenario 1, repeated in (17) below.

(16)  #Na-buks-an      ni   Lisa ang  pinto.
      AIA.PFV-open-LV GEN Lisa NOM door
      'Lisa managed to open the door.'

(17)  *Scenario 1 (Expected Outcome):* Lisa is trying to open an automatic door. All that is required to open the door is to press a button. It is impossible for the door not to open if the button is pressed. Lisa presses the button. As expected, the door opened.

Note, however, that, under the current analysis, AIA sentences are predicted to be felicitous and true whenever a causing event is guaranteed to lead to the result state, given the relevant facts. The sentence in (16) is predicted to convey the existence of an actual past event of Lisa's (participating in the) opening of the door that results in the door being opened in all worlds compatible with the relevant circumstances, as (18) illustrates. These truth conditions are satisfied in Scenario 1: in all worlds where the door is as it is in the actual world and Lisa presses the button, the door opens. The sentence is predicted to be felicitously and true in Scenario 1. But the sentence cannot be felicitously used to describe Scenario 1, and, as a result, the analysis fails to rule out sentences that should be ruled out as deviant.

(18)  $[\![\text{PFV } [\text{AIA-}\textit{open-}\text{LV } \textit{the door}] \textit{ Lisa}]\!](w) = 1$ iff $\exists e[e \subseteq r \wedge r \leq \text{now} \wedge \text{open}_w(e) \wedge \text{causer}(L,e) \wedge$
      $\text{theme}(d,e) \wedge \Box^{w'}_{\text{circumstantial}_w} \exists s\,[\text{opened}_{w'}(s) \wedge \text{cause}_{w'}(e,s) \wedge \text{theme}(d,s)]]$

Note that the problem is unrelated to the potential difficulty of construing Lisa as a non agentive-causer in Scenario 1: the AIA sentence in (20), with a causer subject, is also deviant in the scenario in (19), which makes the burning predictable.

(19)  *Scenario 4.* The fireplace has wood to last for the next hour. The chimney is working properly. Little Bong throws a small piece of paper into the fire. The fire burns it.

(20)  #Na-sunog       ng  apoy na ito  ang  papel.
      PFV.PV.AIA-burn GEN fire  LK this NOM paper
      'This fire managed to burn the paper.'

The second challenge that this type of approach poses is that, because of the force of the sublexical modal, the analysis predicts truth conditions that are too strong for the Tagalog AIA sentences. To see

that, consider the AIA sentence in (21). The sentence is associated with the truth conditions in (22): it is predicted to convey that there is an actual (past) event $e$ of Fe reaching for the balls such that in all worlds compatible with the relevant circumstances (and, hence, in the actual world $w_0$) $e$ causes a state of the red ball being taken.

(21)  Na-bunot       ni  Fe ang  pula=ng bola.
      PFV.AIA-pull(PV) GEN Fe NOM red=LK  ball
      'Fe drew the red ball.'                                          (modified from Dell, 1983)

(22)  $[\![$PFV $[$AIA-*draw the red ball*$]$ *Fe*$]\!](w) = 1$ iff $\exists e[e \subseteq r \wedge r \leq \text{now} \wedge \text{reach-for}_w(e) \wedge \text{causer}(F, e) \wedge$
      $\text{theme}(b, e) \wedge \Box^{w'}_{\text{circumstantial}_w} \exists s[\text{be-taken}_{w'}(s) \wedge \text{cause}_{w'}(e, s) \wedge \text{theme}(b, s)]]$

Consider now the scenario in (23).

(23)  *Scenario 5*. A number of differently and uniquely colored balls are in a box whose only opening is a hole big enough to fit a hand through. Without looking inside, Fe reaches into the box. She gets the red ball.

According to this scenario, Fe's reaching for the ball was not guaranteed to cause a taking of the red ball. There are worlds that share the relevant facts with (23) where Fe does not end up getting the red ball. That means that the truth conditions in (23) are not satisfied in this scenario, and that (21) is therefore predicted to be false. But this goes against the attested intuitions. The sentence in (21) *can* be felicitously used in the context in (23) to make a true claim. It is however incorrectly predicted to be felicitous and false. The analysis assigns truth conditions to AIA sentences that are too strong, then.

This conclusion has an important consequence for the characterization of the actuality implication of Tagalog AIA forms. To see why, consider now the negative AIA sentence in (24).

(24)  Hindi na-bunot       ni  Fe ang  pula=ng bola.
      NEG   PFV.AIA-pull(PV) GEN Fe NOM red=LK  ball
      'Fe has not drawn the red ball.'

As its English translation indicates, (24) conveys that Fe did not get the red ball, and, therefore, the sentence is perceived to be false in the scenario in (23). But the sentence is predicted to be true in that scenario. Because negation must scope over the (necessarily low) sublexical modal operator, the sentence in (24) is predicted to convey that there is no event $e$ of Fe reaching into the box such that in all worlds compatible with the relevant circumstances (and, hence, in the actual world $w_0$) $e$ causes a taking of the red ball. These truth conditions are satisfied in the scenario in (23), since the reaching for the ball was not *guaranteed* to result in getting the red ball, and the sentence is therefore predicted to be true.

(25)  $[\![$NEG PFV $[$AIA-*draw the red ball*$]$ *Fe*$]\!](w) = 1$ iff $\neg\exists e[e \subseteq r \wedge r \leq \text{now} \wedge \text{reach-for}_w(e) \wedge$
      $\text{causer}(F, e) \wedge \text{theme}(b, e) \wedge \Box^{w'}_{\text{circumstantial}_w} \exists s[\text{be-taken}_{w'}(s) \wedge \text{cause}_{w'}(e, s) \wedge \text{theme}(b, s)]]$

To summarize: treating the Tagalog AIA sentences as conveying a sublexical universal modal with a circumstantial modal base fails to capture the deviance of these sentences in scenarios describing a predicted outcome. More generally, the predicted truth conditions for positive AIA sentences are too strong—and, as a result, the predicted truth conditions for negative AIA forms are found to be too weak.

The discussion of the truth conditions of negative AIA forms builds on the assumption that negation must scope over the modal component that AIA forms are assumed to convey, since this component is part of the lexical entry of verbs. In the next section, we will consider extending the analysis of the St'át'imcets AIA circumfix *ka ... a* presented in Davis et al. 2009 to the Tagalog AIA forms. Like the analysis presented in Paul et al. 2016, this proposal treats the AIA form as contributing circumstantial modality. However, unlike the proposal presented in Paul et al. 2016, Davis et al.'s (2009) analysis locates the modal component in the AIA morphology itself, which is, therefore, not forced to scope under negation. However, this possibility will not help deriving the right truth conditions either, as we will see next.

## 4. A modal ranging over the most expected circumstantially accessible worlds (Davis et al., 2009)

*4.1. The analysis*

Davis et al. (2009) treat the St'át'imcets Out-of-Control circumfix *ka-...-a* as a circumstantial modal. The sublexical modal in the Paul et al. (2016) analysis ranges over *all* worlds that share a set of relevant circumstances with the world of evaluation. In contrast, according to Davis et al. (2009), the Out-of-Control circumfix *ka-...-a* ranges over a subset of those worlds.

In a world *w*, *ka-...-a* quantifies universally over (a subset of) the circumstantially accessible worlds: those that are most expected in *w* (as determined by a stereotypical ordering source $\mathbb{S}_w$.) This is shown in the lexical entry in (26), where $B_w$ is the set of worlds compatible with the relevant facts in *w*, and $\text{BEST}_{\mathbb{S}_w}$ is a function that selects from $B_w$ those worlds that are most expected in *w*.[10] Like other St'át'imcets modals (Davis et al., 2007, 2009), *ka-...-a* has variable modal force. This is captured by assuming that its domain of quantification can be a(n) (improper) subset of $\text{BEST}_{\mathbb{S}_w}(B_w)$. The function $f_x$ in (25) is responsible for the possible domain restriction: $f_x$ applies to the set of worlds $\text{BEST}_{\mathbb{S}_w}(B_w)$ and returns a subset of it. When $f_x(\text{BEST}_{\mathbb{S}_w}(B_w))$ is an improper subset of $\text{BEST}_{\mathbb{S}_w}(B_w)$, we get a universal interpretation. When $f_x(\text{BEST}_{\mathbb{S}_w}(B_w))$ is a proper subset of $\text{BEST}_{\mathbb{S}_w}(B_w)$, we get a weaker claim: that $P_{w'}(x)$ is true in *some* worlds $w'$ in $\text{BEST}_{\mathbb{S}_w}(B_w)$.

(26)     $[\![ka\text{-}\ldots\text{-}a]\!]^c$ is only defined if *c* provides a circumstantial modal base *B* and a stereotypical ordering source $\mathbb{S}$. If defined, $[\![ka\text{-}\ldots\text{-}a]\!]^c = \lambda P_{\langle e, \langle s,t \rangle \rangle} \lambda x \lambda w. \forall w'[w' \in f_x(\text{BEST}_{\mathbb{S}_w}(B_w)) \rightarrow P_{w'}(x)]$
(adapted from Davis et al. 2007:18)

*4.2. Challenges (for extending to Tagalog)*

The first challenge to apply this type of analysis to Tagalog concerns the felicity conditions of Tagalog AIA sentences presented in Section 2. The semantics in (26) predicts that sentences with *ka-...-a* morphology can be felicitous and true descriptions of events that are expected to happen, given some relevant circumstances. Davis et al. 2009 carefully show that this prediction is borne out, as the St'át'imcets sentence in (27) illustrates.

(27)     ka-lhéxw-a           ta=snéqwem=a
          CIRC-come.up-CIRC CIRC=sun=EXIS
          'The sun came out.'                                        (St'át'imcets, Davis et al., 2007:5)

This is an important difference between St'át'imcets and Tagalog. As we saw in Section 2, the Tagalog AIA forms *cannot* be felicitously used to describe predictable outcomes: the AIA Tagalog counterpart of (27) in (28-a) is deviant—unlike its counterpart in the neutral form, in (28-b), which is fine.

(28)     a.  #Naka-labas           ang araw.
              AV.PFV.AIA-come.out NOM sun
              'The sun came out.'                                        (Tagalog)
          b.  L<um>abas              ang araw.
              <AV.PFV.NTL>come.out NOM sun

A second difference between the Tagalog and St'át'imcets AIA forms poses another challenge to extending a semantics along the lines of (26) to Tagalog. The discourse in (29) shows that *ka-...-a* sentences do not convey an actuality entailment. This is consistent with the semantics in (26). According to (26), the property *P* expressed by the VP must hold in (some of) the most expected worlds in the circumstantial modal base $B_w$. The world of evaluation *w* must be in the modal base in $B_w$, but it can fail to be one of the most expected worlds in $B_w$, and, so *P* can fail to be true in *w*.

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[10] World arguments are presented as subscripts. Like Davis *et al.* we use '$B_w$' rather than '$\cap B_w$' to make the formula easier to read. We make the Limit Assumption and assume that there is always a set of worlds that come closest to the expectations that the ordering source describes.

(29)   ka-q'ém-s=kan-a                  aylh n-kál'wat=a,          t'u7 cw7áoz=t'u7
         CIRC-swallow-CAUS=1SG.SUBJ-CIRC then 1SG.POSS-medicine=EXIS but  NEG=ADD
         múta7 kw=en=s=xát'-min',          nilh s=7ús-ts-an
         again  DET=1SG.POSS=NOM=want-RED FOC NOM=throw.out-CAUS-1SG.ERG

         'I was able to swallow my medicine, but I didn't want it anymore, so I threw it out.'

<div align="right">(St'át'imcets, Davis et al., 2007)</div>

In contrast with what happens in St'át'imcets, as Davis et al. note, the actuality implications of AIA morphology in Tagalog (or Malagasy) are not cancellable: the Tagalog counterpart of the discourse in (29), in (30) below, feels contradictory.

(30)   Na-lunok              ko     na     ang gamot ko,       # pero ayaw  ko
         PFV.AIA-swallow(PV) 1SG.GEN already NOM medicine 1SG.GEN  but  not.like 1SG.GEN
         na    dito,    kaya t<in>apon          ko     na lang.
         already this.OBL so    <PFV.NTL>throw(PV) 1SG.GEN just

         'I was able to swallow my medicine, but I didn't want it anymore, so I just threw it out.'

To derive the actuality implication of AIA morphology in Tagalog as an actuality entailment, we would have to resort to a version of (26) where the modal quantifies over *all* worlds in $B_w$, much as the sublexical modal does in the analysis presented in Paul et al. 2016. This is shown in (31).

(31)   $[\![\text{AIA}]\!]^c$ is only defined if $c$ provides a circumstantial modal base $B$.
      If defined, $[\![\text{AIA}]\!]^c = \lambda P_{\langle e,\langle s,t\rangle\rangle}\lambda x\lambda w.\forall w'[w' \in B_w \to P_{w'}(x)]$

Given our discussion of Paul et al.'s (2016) analysis, however, we know that this move will not derive the correct interpretation of negated AIA sentences when negation takes scope over the AIA morpheme. Recall that (24), repeated below as (32), conveys that Fe did not draw the red ball. As we have seen before, letting negation scope over AIA would give us an unattested weaker interpretation: that the circumstances allowed for Fe not getting the red ball.[11]

(32)   Hindi na-bunot       ni  Fe ang  pula=ng bola.
         NEG  PFV.AIA-pull.PV GEN Fe NOM red=LK  ball

         'Fe has *not* drawn the red ball.'

This conclusion was difficult to avoid under the analysis presented in Paul et al. (2016), since, under their assumptions, the modal component is part of the lexical meaning of the verb. Under the current analysis, however, AIA morphology could in principle scope over negation. In fact, in St'át'imcets modals are second position clitics, which appear immediately after negation but are interpreted as having scope over negation, as (33) illustrates with inferential *k'a* (Rullmann et al., 2008).

(33)   cw7aoz k'a   k-wa-s        wá7
         NEG    INFER DET-IMPF-3POSS be

         'Maybe he's not there.'                  (Rullmann et al., 2008:344)

Scoping AIA morphology over negation is not going to give us the right interpretation either. To illustrate this, consider the interpretation of (32) in the scenario in (34).

(34)   *Scenario 6.* A number of differently and uniquely colored balls are in a box whose only opening is a hole big enough to fit a hand through. Without looking inside, Fe reaches into the box. She ended up getting the blue ball.

The sentence in (32) is perceived to be true in the scenario in (34): (32) conveys that Fe did not draw the red ball, and this is indeed the case in (34). A (purely circumstantial) universal interpretation of the

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[11] And, of course, assuming that AIA has existential, rather than universal, force, would derive an interpretation that is too strong (conveying that, given the circumstances, it was not possible for Fe to get the red ball).

AIA morphology scoping over negation would convey that in all worlds where the relevant circumstances are as in (34), Fe does not get the red ball. This is false. Given the scenario, Fe could have drawn the red ball. There are worlds where the relevant facts are as in (34) and where Fe gets the red ball. The predicted interpretation is then too strong.[12]

## 5. To conclude

We have assessed the extent to which the interpretation of the Tagalog AIA morphology in the perfective aspect differs from the interpretation of its counterparts in Malagasy and St'át'imcets, as analyzed in previous literature. The discussion has focused on two properties of the Tagalog perfective AIA forms: (i) that they cannot be felicitously used to describe completely predictable outcomes, and (ii) that, in positive sentences, they convey an actuality entailment.

We have seen that the analysis of the Malagasy AIA form presented in Paul et al. (2016) does not derive property (i). The analysis does derive property (ii), but at the cost of assigning truth conditions for AIA sentences that turn out to be too strong for Tagalog. We have also seen that neither (i) or (ii) characterize the St'át'imcets forms. The analysis of St'át'imcets AIA forms presented in Davis et al. (2009) correctly captures this. For that reason, however, the analysis cannot be extended as is to Tagalog. It remains to be seen, then, how to derive properties (i) and (ii).

Since positive Tagalog AIA sentences convey that a certain actual event *e* exists, and their negative counterparts convey that such an event does not, one possibility worth considering is that the modal component that this morphology contributes might not be at-issue. We explore an analysis along these lines in Alonso-Ovalle & Hsieh forthcoming, where, in order to capture property (i), we assume that this non-at issue modal component that the Tagalog AIA form contributes conveys that a certain outcome was unexpected, given the circumstances, rather than that it follows from them.

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[12] A purely circumstantial existential interpretation of the modal scoping over negation would be too weak. (32) is perceived to be false in (i), but it would be predicted to be true, as the drawing of the red ball was not guaranteed.

(i)    *Scenario 7.* A number of differently and uniquely colored balls are in a box whose only opening is a hole big enough to fit a hand through. Without looking inside, Fe reaches into the box. She gets the red ball.

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