

Article

On Derived Change of State Verbs in Southern Aymara

Gabriel Martínez Vera 

Institut für Romanische Sprachen und Literaturen, Goethe-Universität Frankfurt am Main, 60629 Frankfurt, Germany; MartinezVera@em.uni-frankfurt.de

Abstract: There are two main approaches to change of state verbs. One adopts an approach in terms of a *total change* (BECOME *P*, for base predicate *P*), i.e., a change from not being in the extension of the base predicate to being in it. The other adopts an approach in terms of a *relative change* (BECOME *more P*, for base predicate *P*), i.e., a change for a theme in which it increases in the extent to which it holds the property denoted by the base predicate. Different languages have been analyzed using one or the other approach. I argue that both proposals are actually appropriate for analyzing related but not (completely) overlapping phenomena in the domain of derived change of state verbs in the very same language. This proposal is based on the discussion of change of state verbs in Southern Aymara that are derived with the suffixes *-pta* and *-ra*. I show that verbs with *-pta* convey the meaning of *total change* and that verbs with *-ra* convey the meaning of *relative change*. I further discuss how expressions with *-pta* and *-ra* interact: expressions with *-ra* implicate that the theme does not change from not being in the extension of the base to being in it. I propose an account in terms of scalar implicatures in which *-pta* and *-ra* are lexical alternatives, thus extending the domain of linguistic phenomena for which the computation of scalar implicatures is relevant.

Keywords: (non-)gradable predicate; change of state verb; telicity; scalar implicature; Aymara



Citation: Martínez Vera, Gabriel. 2021. On Derived Change of State Verbs in Southern Aymara. *Languages* 6: 28. <https://doi.org/10.3390/languages6010028>

Received: 13 December 2020
Accepted: 2 February 2021
Published: 6 February 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Derived change of state verbs in English, as in (1), have been analyzed in one of two ways, broadly speaking: (i) in terms of a transition from not being in the extension of a base predicate to being in such an extension (i.e., *total change* or BECOME *P*, for base predicate *P*) (Abusch 1986; Dowty 1979) or (ii) in terms of a theme increasing in the extent to which it holds the property indicated by the base predicate (i.e., *relative change* or BECOME *more P* for base predicate *P*) (Hay et al. 1999; Kearns 2007; Kennedy 2012; Kennedy and Levin 2008; Martínez Vera 2020; Pedersen 2015; Winter 2006). Depending on the approach, (1) would thus be interpreted in terms of one of the following: (i) *the soup* changed from not being cool to being cool (in a given context of utterance) or (ii) *the soup* increased in coolness.¹

(1) The soup cooled.

These analyses make similar predictions with verbs such as *cool*, which are ambiguous between a reading in which the theme ends up cool (i.e., as a cool thing) and a reading in which the theme need not end up cool but has only increased in coolness to some extent (without necessarily counting as a cool thing). Under the *total change* account, the former reading is achieved when the theme changes in such a way that it counts as cool relative to the standard in the context of utterance. The latter reading is achieved when the theme changes to being cool in some context but when being cool in such a context may well be under what counts as cool under normal circumstances. In this regard, suppose that there is a person who drinks soup only when it is boiling hot; for this person, if the soup is not boiling hot, she would describe it as cool (thus, the theme need not be

¹ I only focus on eventuality readings of these verbs, setting aside the extent reading they (may) have. See Deo et al. (2013).

cool). Under the *relative change* account, the former reading is achieved because *cool* has a conventionalized non-maximal endpoint (Kearns 2007; Kennedy and Levin 2008); therefore, the theme changes, reaching this point. The latter reading is achieved whenever there is any increase in degree along a scale.

This ambiguity can be tested, for instance, by means of the adjunction of adverbials that target these readings. The *in* adverbial in (2a) targets the change in which the theme ends up cool, whereas the *for* adverbial in (2b) targets the change in which the theme ends up cooler (but not necessarily cool).

- (2) a. The soup cooled in ten minutes.
- b. The soup cooled for ten minutes.

While some predicates, such as *cool*, can be interpreted under either analysis (in this sense, this kind of predicate does not tell the analyses apart), such a possibility is not always present. Kennedy and Levin (2008) (see also Kearns 2007) point out that the *total change* approach falls short when faced with other predicates. These authors indicate that the *total change* account runs into problems when the ambiguity that is present by default in predicates such as *cool* is not there. Such an issue arises in cases with predicates that only allow changes in which the theme increases in the extent to which it holds the property denoted by the base predicate. This is the case of predicates such as *widen*. This is reflected by the effects of the adjunction of *in/for* adverbials: since the theme is understood in terms of an increase in width (but not in terms of becoming wide), adjoining *for* adverbials is possible while adjoining *in* adverbials is degraded.

- (3) The gap between the cars widened ??in ten minutes/for ten minutes.

Cases such as (3) would suggest that the *relative change* approach is preferred in English. There are, however, potentially problematic examples with predicates such as *straighten*. What intuitively occurs here is that the theme becomes straight. This is shown in (4): adjoining *in* adverbials is possible but adjoining *for* adverbials is degraded.

- (4) The hair straightened in ten minutes/??for ten minutes.

Kennedy and Levin (2008) show that cases such as those in (4), although apparently problematic for the *relative change* approach, can actually be accounted for under this approach. This is done in terms of maximization of lexical means whenever available. Adopting a degree approach (i.e., an approach where there is a scale with degrees indicating a particular measure), they proposed that verbs with lexical maximal degrees have a default telic reading because there is a pragmatic principle, Interpretive Economy, that states that lexical means are used by default, which means that the lexical maximal degree will be used when present. This analysis accounts for the contrast in (3)–(4): since the scale associated with *widen* does not have a lexical maximal degree (i.e., there is no degree representing absolute width), no maximization takes place and an atelic reading thus follows by default; since the scale associated with *straighten* does have a lexical maximal degree (i.e., there is a degree representing absolute straightness), it is maximized and a telic reading thus follows by default (see Kennedy and McNally 2005). Since Interpretive Economy is a pragmatic principle, it can be overridden when additional (e.g., contextual) cues are given, making it possible to get telic or atelic readings that do not arise by default.² As a result, the different kinds of predicates in English can be accounted for under the *relative change* approach.

Kennedy and Levin (2008) further discuss the (im)possibility of combining measure expressions with these verbs, which is exemplified in (5), in connection to why the *relative change* approach should be preferred over the *total change* approach for English (see also

² This means that verbs such as *cool* and *widen* are similar in that they convey an increase where no maximal endpoint is reached but differ in that only the former includes a conventionalized non-maximal endpoint. The presence of this conventionalized point makes it possible for sentences with *cool*, for instance, to yield a grammatical result when telic adverbials are adjoined, since there is an endpoint that can be targeted. This possibility is absent with sentences with verbs such as *widen*. See Kearns (2007) and Kennedy and Levin (2008) for additional discussion.

Hay et al. 1999). In this case, the phrase *five degrees* measures the amount representing how much the theme has changed. The authors argue that this can be readily accommodated under the *relative change* approach, since the increase in cooling is measurable; in this case, it equals five degrees.

(5) The soup cooled five degrees.

They further claim that it is not clear what would be measured under the *total change* approach; in particular, it is not clear what it means to measure a change from not being in the extension of a base to being in it. Specifically, the *total change* approach would find (5) equivalent to (6), but this is not the case, as (6) is degraded (in contrast to (5), which is good). This suggests that (5)–(6) are not equivalent, which further means that an account based on the *total change* approach predicts that measure phrases should be ruled out. As shown in (5), this is not the right result for English.

(6) The soup became ??five degrees cool.

The discussion of English-derived change of state verbs thus suggests that one of the analyses is correct, namely, the *relative change* account that makes use of scales (if one is to accept the criticisms raised above).

While this may well be the case for English (which is an issue that I will not address in this paper), the *total change* proposal has been claimed to account for derived verbs of change in other languages, specifically, the case where the theme changes in such a way that it ends up counting as a member of the extension of the verbal predicate in the context of utterance. One such case is discussed by Bochnak (2015a), who claims that Washo, a degreeless language (i.e., a language where gradability is not calculated through degrees on a scale but instead is calculated contextually by determining what counts as being in the extension of a relevant predicate), has derived change of state verbs that are analyzed under the *total change* approach (see also Matthewson et al. 2015 for a relevant discussion). Thus, the verb *cool* in Washo means that the theme changed from not being cool to being cool (based on the relevant standard in the context of utterance). As expected, sentences with this verb involve a telic predicate, which can be seen in (7) by means of the marginal status of the sentence when the atelic adverbial ‘for a long time’ is adjoined (Bochnak 2015a, p. 26).^{3,4}

(7) ??gó:be? halíja métu?-eti?-i.
 coffee long.time cold-INCH-FIN1
Intended: ‘The coffee cooled for a long time.’

This would suggest that both analyses of derived change of state verbs may be correct depending on what language is analyzed: it could either be a *total change* or BECOME *P* (for base predicate *P*) analysis for languages such as Washo, or a *relative change* or BECOME *more P* (for base predicate *P*) analysis for languages such as English.

In this paper, I argue that both proposals are actually appropriate in analyzing related but not (completely) overlapping phenomena in the domain of derived change of state verbs in the very same language. Southern Aymara (henceforth, Aymara) represents this case. Adding Aymara to what previous research has found will thus suggest that there is a descriptive three-way typological split in languages with morphologically derived change of state verbs. In particular, there are languages such as English, which include expressions of the BECOME *more P* (for base predicate *P*) type.⁵ This is the language type that has

³ Bochnak (2015a) also discusses verbs such as English *widen* in Washo, for which an aspectual progressive marker is used. I set this one aside in the discussion because I focus on suffixes that occupy the same position, whereas the Washo progressive is built on top of the inchoative *-eti?*.

⁴ Abbreviations: 3 = third person, ABL = ablative, COP = copula, DUR = durative, EVI = evidential, FIN1 = verbal suffix marking finiteness, INCH = inchoative, IL = ilative, NEG = negation, S = subject, and TOP = topic.

⁵ Languages that have been claimed to be similar to English are other Germanic languages (e.g., German and Dutch), Romance languages (e.g., Spanish, Italian, and French), Slavic languages (e.g., Polish, Czech, and Russian), and Uralic languages (e.g., Hungarian).

been studied more extensively, dating back to, e.g., Dowty (1979) and Abusch (1986). In addition, there are languages such as Washo, which include expressions of the BECOME *P* (for base predicate *P*) type. Only recently has this language type been studied in a work by Bochnak (2015a). In fact, to the best of my knowledge, Washo is the only language for which it has been proposed that a BECOME *P* analysis (for base predicate *P*) is the appropriate one (see Hohaus and Bochnak (2020) for an overview with regard to these issues; these authors explicitly mention that a discussion with regard to the cross-linguistic picture in connection to the kind of predicates investigated in this paper is rather recent). This paper provides evidence for a third language type, namely, the type represented by Aymara, which, as will be argued for in what follows, includes both kinds of expressions. In this sense, it is worth pointing that, in this paper, I propose an initial typology in that, at the very least, additional research is required in connection to the language types that only recently have been investigated (i.e., Washo and Aymara). Nonetheless, I pursue a rather restrictive version of the typology in that all analytical possibilities would be exhausted, which, to the very least, would constitute an initial building block for future research in this domain.

Aymara is an understudied Andean language spoken in the South of Peru, West of Bolivia, and North of Chile. Typologically, Aymara is a suffixal and, to some extent, agglutinative language for which the sentences show an SOV order. Specifically, I focus on the dialect of the town of Pomata (province of Chicuito, department of Puno in Peru) that is spoken by 13,637 people (Instituto Nacional de Estadística e Informática 2010). With regard to the presence of two different change of state verbs, Aymara has two suffixes, *-pta* and *-ra*, which derive verbs corresponding to *total change* and *relative change*, respectively. This is illustrated in (8)–(9), where there are two minimal pairs that will be used throughout this paper. In (8), the same base, *awki* ‘old’, derives a verb meaning ‘to become old’ (*total change*) when combined with *-pta* and a verb meaning ‘to become older (to age)’ (*relative change*) when combined with *-ra*. In (9), the same base, *qala* ‘stone, hard’, derives a verb meaning ‘to become a stone/hard’ (*total change*) when combined with *-pta* and a verb meaning ‘to become harder’ (*relative change*) when combined with *-ra*.^{6,7}

- (8) a. Mariya awki-**pt(a)**-i-wa.
 Mary old-**pta**-3S-EVI
 ‘Mary became old.’
 b. Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 ‘Mary became older (aged).’
- (9) a. Mariya qala-**pt(a)**-i-wa.
 Mary stone/hard-**pta**-3S-EVI
 ‘Mary became a stone/hard.’
 b. Mariya qala-**r(a)**-i-wa.
 Mary stone/hard-**ra**-3S-EVI
 ‘Mary hardened.’

To my knowledge, this is a thus far unattested system, which has consequences for the language in terms of the computation of scalar implicatures (Sauerland 2001, 2004, 2012). I will show that (8b) implicates that the theme does not change from not being in the extension of the base to being in it because there is an alternative with a stronger meaning, namely, (8a), which is used instead when the theme changes in such a way. I propose an account of this in terms of *-pta* and *-ra* constituting alternatives where expressions with

⁶ I translate the examples in the past, as this is the default way native speakers understand the sentences I discuss (it should be noted that Aymara does not show a distinction between present and past). In addition, in Aymara, there are no determiners, so bare nouns could be understood as definite or indefinite. I make use of the definite article in the glosses. All the arguments (subjects and objects) should be understood as singular. I leave aside the contribution of the so-called evidential *-wa*. See Klose (2015) and Martínez Vera (2018) for an analysis suggesting that *-wa* is a focus marker.

⁷ Ellided vowels are represented in parentheses.

-pta have a stronger meaning than expressions with *-ra* (i.e., expressions with *-pta* entail expressions with *-ra*). My proposal thus extends the empirical domain of the computation of scalar implicatures to change of state verbs.

The data discussed in this paper are based on two sources of information: grammatical descriptions, in particular, Cerrón-Palomino (2008) and, for the most part, Gonzalo Segura (2011), and original fieldwork with two consultants. The methodology used for the latter involved the presentation of contextual scenarios using Spanish as an auxiliary language, which was followed by a request for a felicity judgment on a particular grammatical sentence given that contextual scenario. The elicitation process with the two consultants was first undertaken in summer 2016 and was then followed-up in summer 2017; a third and fourth confirmation of the data was conducted in summer 2018 and 2019 with one of the two consultants. Both consultants shared the judgments reported in this paper. The examples were conceived of as natural by the consultants because either they made reference to everyday experiences or to instances that were tied to traditional stories in the community. I refer the reader to Bochnak and Matthewson (2015), Davis et al. (2014), and Matthewson (2004) for discussions regarding the soundness and validity of the aforementioned methodological choices.

The paper is organized as follows. In Section 2, I make explicit what I assume with regard to base predicates, in particular, I distinguish gradable and non-gradable base predicates in an approach that makes use of degrees. In Section 3, I address verbs with *-pta*. I propose that they convey the meaning of *total change* or *BECOME P* (for base predicate P). In Section 4, I address verbs with *-ra*. I propose that they convey the meaning of *relative change* or *BECOME *more* P* (for base predicate P). In Section 5, I discuss the interaction between expressions with *-pta* and *-ra*. Section 6 is the conclusion. In Appendix A, I present evidence suggesting that Aymara qualifies as a degree language, thus giving empirical support to the assumptions made in Section 2.⁸

2. Assumptions on Base Predicates

I assume that base predicates could be gradable (Kennedy and McNally 2005; Martínez Vera 2020; Pedersen 2015; Piñón 2008) or non-gradable (Heim and Kratzer 1998; Morzycki 2009). With regard to the former, following Kennedy and McNally (2005), I assume that scales S are sets of linearly ordered degrees d along some dimension associated with a base predicate. A scale S is defined as follows (Pedersen 2015):

- (10) The scale S associated with a base predicate is a pairing $\langle S, < \rangle$ or $\langle S, > \rangle$, where $<$ or $>$ is a linear order on S .

The minimal and maximal degrees in the scale S associated with a base predicate are defined in (11) (Pedersen 2015). Note that, if these degrees exist, they are unique (since the scale is linearly ordered):

- (11) a. *min* of S , the minimal degree in S , is defined as the degree $d \in S$ such that there is no degree $d' \in S$ such that $d' < d$.
 b. *max* of S , the maximal degree in S , is defined as the degree $d \in S$ such that there is no degree $d' \in S$ such that $d < d'$.

Following Kennedy and McNally (2005), the scale associated with a predicate could have (i) no minimal or maximal degree, i.e., open scales (12a); (ii) either a minimal or a maximal degree, i.e., partially closed scales, as in (12b); or (iii) both a minimal and a maximal degree, i.e., closed scales, as in (12c). The same dimensions but opposite orderings (indicated in the parentheses next to each item) are illustrated in (12), i.e., narrowness/width

⁸ Although I assume a degree approach and give support to it (thus providing empirical support for the approach adopted here), it is worth emphasizing that the claims made in this paper could in principle be stated in a degreeless account if two elements are made explicit: (i) non-gradable and gradable predicates are distinguished, and (ii) the notions of *total change* and *relative change* are separated. An approach along these lines could follow, for instance, recent work by Burnett (2014 2017), van Rooij (2011), and Kapitonov 2019.

and beauty in (12a), cleanliness/dirtiness and curliness/straightness in (12b), and emptiness/fullness and overtone in (12c).

- (12) a. *Open scales*
 narrow (>) wide (<)
 ugly (>) beautiful (<)
- b. *Partially closed scales*
 clean (>) dirty (<)
 curly (>) straight (<)
- c. *Closed scales*
 empty (>) full (<)
 closed (>) open (<)

I further assume that gradable predicates denote functions of type $\langle d, \langle e, it \rangle \rangle$ (I assume i for the type of eventualities). They are true of relation R between degree d in the scale associated with the base predicate, individual x , and eventuality e iff x has d in e (Bierwisch 1989; Heim 1985; Kennedy and Levin 2008; Kennedy and McNally 2005; Klein 1991; von Stechow 1984a). I assume that d is kept constant throughout the run time of e for simplicity. An example of the denotation of a gradable base appears in (13): (13) holds for degree d , individual x , and eventuality e iff x is d -hard in e .⁹

$$(13) \quad \llbracket \text{hard} \rrbracket = \lambda d \lambda x \lambda e [\text{hard}(x, d, e)]$$

Degree morphology saturates and imposes restrictions on the degree argument, e.g., comparatives, degree modifiers, and measure phrases. For my purposes, the positive morpheme *pos* is relevant (Kennedy and McNally 2005; Pedersen 2015; von Stechow 1984a). *pos*'s function is to relate the degree d that an individual x holds in eventuality e , as in (13) (*pos* takes gradable bases as argument), to another degree, which I label standard, that equals the average or norm of the individuals that form a (contextual) comparison class that is relevant to what is under discussion in a given eventuality. It is the standard of a gradable predicate (Kennedy 1999 2007b; Pedersen 2015; von Stechow 1984a; Winter 2006). When *pos* applies to a gradable predicate, the output is a predicate that is true of individual x and eventuality e in case x holds an existentially closed degree d on the scale associated with the predicate in e , such that d is greater than or equal to the standard of that predicate.¹⁰ *pos* is a function of type $\langle \langle d, \langle e, it \rangle \rangle, \langle e, it \rangle \rangle$, and its denotation appears in (14). The compositional process of such a morpheme taking a gradable predicate (e.g., (13)) as the argument appears in (15). In words, (15) is true of individual x and eventuality e iff x 's degree d of hardness in e is greater than or equal to the standard degree of hardness. I use P in (14) for a variable of gradable predicates and represent the standard of gradable base predicate P as *stnd*(P):

$$(14) \quad \llbracket \text{pos} \rrbracket = \lambda P_{\langle d, \langle e, it \rangle \rangle} \lambda x \lambda e \exists d [P(x, d, e) \wedge d \geq \text{stnd}(P)]$$

$$(15) \quad \llbracket \text{pos} \rrbracket (\llbracket \text{hard} \rrbracket) = \lambda x \lambda e \exists d [\text{hard}(x, d, e) \wedge d \geq \text{stnd}(\text{hard})]$$

Non-gradable predicates are of type $\langle e, it \rangle$ (Heim and Kratzer 1998; Morzycki 2009). They denote functions that are true of individual x and eventuality e iff x is in the extension of the non-gradable predicate in e . An example appears in (16). It is true of individual x and eventuality e iff x is a stone in e .

$$(16) \quad \llbracket \text{stone} \rrbracket = \lambda x \lambda e [\text{stone}(x, e)]$$

⁹ The approach adopted here in connection to gradable bases is that these are predicates that are non-monotonic, which suffices for current purposes. The discussion in this paper could be restated making use of monotonicity in connection to gradable predicates by means of, e.g., measure functions (see, e.g., Kennedy and Levin 2008). See Pedersen (2015) for additional discussion in connection to degree achievements.

¹⁰ I keep the characterization of an assignment of a value to the standard in informal terms, as its role in the discussion to follow is minimal.

3. Verbs with *-pta*

In this section, I discuss verbs with *-pta*. In Section 3.1, I provide a general characterization of the meaning of verbs with *-pta*. In Section 3.2, I discuss the base predicates that *-pta* takes. In Section 3.3, I formalize the proposal.

3.1. General Characterization

I propose that verbs with *-pta* are understood as change of state verbal predicates that convey the meaning of *total change* or *BECOME P* for a base predicate *P* (see Dowty 1979; Abusch 1986; see also Bochnak 2015a for a recent proposal along these lines for Washo). Specifically, the proposal is that an individual (a theme) is not in the extension of the base predicate present in the verb with *-pta* at the beginning of an eventuality but changes to being in such an extension at the end of the eventuality.

Verbs with *-pta* are formed by a base predicate combined with the suffix. The arity of these predicates is one: they take a theme argument. As anticipated in the Introduction section, I make use of the verbs *awki-pta-ña* ‘to become old’ (19) (which repeats (8a)) and *qala-pta-ña* ‘to become a stone/hard’ (20)–(21) (which repeat (9a)). The suffix *-ña* is the infinitival marker. In (19), *-pta* takes the gradable base *awki* ‘old’; in *refpta2*–(21), *-pta* takes the base *qala*, which is ambiguous between a non-gradable version with the meaning ‘stone’ (20) and a gradable version with the meaning ‘hard’ (21).¹¹ As the informal translations show, these sentences mean that the theme, *Mary*, changes from not being old to being old (19) and from not being a stone/hard to being a stone/hard (20)–(21). The meaning ‘hard’ is understood as becoming a hard or tough person. The contexts in which these sentences are felicitously uttered are provided.

Context: The last time Genaro saw Mary, she was 55 (an age we assume counts as not old). Genaro is visiting Mary now that she is turning 70 (an age that we assume counts as old). Genaro utters the following:

- (19) Mariya awki-**pt(a)**-i-wa.
Mary old-**pta**-3S-EVI
‘Mary became old.’

¹¹ In this footnote, I provide some evidence that suggests that *qala* is ambiguous between a non-gradable version with the meaning ‘stone’ and a gradable version with the meaning ‘hard’. (I thank an anonymous reviewer for suggesting that I incorporate the discussion to follow.) Below, I provide two scenarios against which a comparison between similar entities is established. The sentences (17)–(18) illustrate the comparative construction in Aymara, which involves the introduction of a standard of comparison. Such a standard is indicated by means of the ablative suffix *-tha* (see the Appendix A for an additional discussion with regard to the comparative construction in this language). Importantly, these cases target a comparison where the two elements that are compared hold the property under consideration to some extent; what matters is which element holds the relevant property more, i.e., the comparison involves the presence of gradability. As the contrast in (17)–(18) shows, targeting the meaning of ‘hard’ (in the sense of ‘sturdy’ here) is possible (18), whereas targeting the meaning of ‘stone’ (i.e., something similar to ‘stonier’) is not (17).

Context: There are two houses, both of which are made of stone and mortar. Both houses have the same dimensions, distribution, etc. One house has a lot of stone but not so much mortar. In contrast, the other house has less stone when compared to the first house; what it lacks in stone has been replaced with mortar. To describe such a comparison, someone utters the following:

- (17) ?*Aka uta-xa uka uka-tha qala-Ø-wa.
this house-TOP that house-ABL stone-COP.3S-EVI
‘This house is stonier than that house.’

Context: There are two tables made of wood. One table is sturdy, does not wobble, and resists a lot of weight. In contrast, the other table is not as sturdy (it seems more fragile), wobbles a little bit, and does not resist much weight when compared to the other table. To describe such a comparison, someone utters the following:

- (18) Aka misa-xa uka misa-tha qala-Ø-wa.
this table-TOP that table-ABL qalal-COP.3S-EVI
‘This table is sturdier than that table.’

The gradable vs. non-gradable distinction is what is of relevance for the discussion in this paper. A related question is what is the category of gradable and non-gradable predicates, such as for the ones discussed here. This is a question that I do not address in this paper. See the descriptive work of Cerrón-Palomino (2008), Gonzalo Segura (2011), among others, for discussion in this regard.

Context: This is part of a mythological story. The last time Genaro saw Mary, she was a regular person (with human flesh). Genaro is visiting Mary now, after five years, and to his surprise, Mary has turned into stone. Genaro utters the following:

- (20) Mariya qala-**pt(a)**-i-wa.
 Mary stone-**pta**-3S-EVI
 ‘Mary became a stone.’

Context: The last time Genaro saw Mary, she was very easygoing and gentle; she had no bad feelings towards anybody. Genaro is visiting Mary now, after five years, and she has completely changed: she is really tough, vengeful, and merciless. Genaro utters the following:

- (21) Mariya qala-**pt(a)**-i-wa.
 Mary hard-**pta**-3S-EVI
 ‘Mary became hard.’

Since my claim is that verbs with *-pta* convey the meaning that the theme changes from not being in the extension of the base at the beginning of the eventuality to being in it at the end of the eventuality, it is crucial to address the status of the theme with regard to (not) being in the extension of the base at the beginning and end of the eventuality in more detail. First, I discuss the status of the theme with regard to the extension of the base at the beginning of the eventuality. I test this by specifically targeting how the theme is before the relevant change when a sentence including *-pta* is uttered; in particular, I make use of contexts that make explicit that the theme is in the extension of the base predicate. For instance, the context for (22) makes explicit that the theme, *Mary*, is in the extension of old (people), as she shows characteristics that are typically associated with old age. In this context, uttering (22) is infelicitous, which suggests that the theme cannot be in the extension of the base predicate (at all).

Context: Mary is 75 years old and has arthritis. This year, she has started to show a new symptom of being old, namely, she has started to suffer from memory loss; someone utters the following:

- (22) #Mariya (aka mara-xa) awki-**pt(a)**-i-wa.
 Mary this year-TOP old-**pta**-3S-EVI
 ‘Mary became old (this year).’

Something similar can be said with regard to sentences with the verb *qala-pta-ña* ‘to become a stone/hard’. The contexts for (23)–(24) below make explicit that the theme counts as being in the extension of the base by either making explicit that most of it is already a stone (in context 1) or by having features associated with a hard person (in context 2). In these contexts, uttering (23)–(24) is infelicitous, which again suggests that the theme cannot be in the extension of the base predicate (at all).

Context 1 (targeting the meaning ‘stone’): In the past, Mary’s body (i.e., everything but her head) turned into a stone (e.g., in a mythical story); today someone utters the following:

- (23) #Mariya qala-**pt(a)**-i-wa.
 Mary stone-**pta**-3S-EVI
 ‘Mary became a stone.’

Context 2 (targeting the meaning ‘hard’): In the past, Mary’s heart hardened due to bad experiences, so she became a hard person. This last month, she continued having bad experiences; today someone utters the following:

- (24) #Mariya qala-**pt(a)**-i-wa.
 Mary hard-**pta**-3S-EVI

‘Mary became hard.’

Turning to the consideration of the end of the eventuality of change, the question is whether the theme is in the extension of the base predicate at this point. The answer is affirmative. To test this, I make use of an entailment test with a continuation that makes explicit that the result state has not been reached. The form of the test I use is ‘*x P-pta*, but *x* is not *P*,’ for theme *x* and base predicate *P* (see Tenny 1994; Beavers 2011). As is shown in (25)–(26), when the test is applied to (19)–(20), it yields a contradiction. This suggests that the theme is in the extension of the base predicate when the eventuality of change ends.

- (25) Mariya awki-**pt(a)**-i-wa, #ukatsti Mariya-xa jani-wa awki jaqi-k(a)-i-ti.
 Mary old-**pta**-3S-EVI but Mary-TOP no-EVI old person-DUR-3S-NEG
 ‘Mary became old, but she is not old.’
- (26) Mariya qala-**pt(a)**-i-wa, #ukatsti Mariya-xa jani-wa qala
 Mary stone/hard-**pta**-3S-EVI but Mary-TOP no-EVI stone/hard
 jaqi-k(a)-i-ti.
 person-DUR-3S-NEG
 ‘Mary became a stone/hard, but she is not a stone/hard.’

The discussion thus far suggests that verbs with *-pta* convey the meaning of *total change* or *BECOME P* (for base predicate *P*), i.e., a theme changes from not being in the extension of a base predicate at the beginning of an eventuality to being in such an extension at the end of the eventuality.

If this approach is correct, then the prediction is that adjoining telic adverbials should be acceptable whereas adjoining atelic adverbials should not. This prediction is borne out, as shown below. Here, I make use of the adverbials *maya ura-tha* ‘in an hour’ and *maya ura* ‘for an hour’. The difference between the telic and the atelic adverbial lies in the presence or absence of the ablative marker *-tha*. To illustrate the adjunction of these adverbials, consider the sentences in (27)–(28), where (27) is a sentence with the verbal predicate *pichaway-a-ña* ‘to sweep’, which describes an activity. (27) describes an eventuality of sweeping the house, which has no endpoint. As such, it is incompatible with telic adverbials, such as *mä ura-tha* ‘in an hour’, since they introduce a temporal bound. Instead, atelic adverbials, such as *mä ura* ‘for an hour’, are acceptable, since they do not introduce a temporal bound; they only indicate for how long the relevant activity took place. This contrast is shown in (27).

- (27) Jusiya ??mä ura-tha / mä ura ut(a)-Ø pichaway(a)-i-wa.
 Joseph one hour-ABL one hour house-ACC sweep-3S-EVI
 ‘Joseph swept the house in an hour/for an hour.’

In contrast, the sentence in (28) includes the verbal predicate *utachsu-ña* ‘to build’, which describes an accomplishment. In this case, there is an endpoint and the predicate is telic. As such, it is compatible with *mä ura-tha* ‘in an hour’, but incompatible with *mä ura* ‘for an hour’.

- (28) Jusiya mä ura-tha / ?*mä ura ut(a)-Ø utachsu(-i)-wa.
 Joseph one hour-ABL one hour house-ACC build-3S-EVI
 ‘Joseph built the house in an hour/for an hour.’

Turning back to verbs with *-pta*, adjoining the telic adverbial *maya ura-tha* ‘in an hour’ yields a grammatical result (29), but adjoining the atelic adverbial *maya ura* ‘for an hour’ does not (30). This is as expected.

- (29) Mariya maya ura-tha / *maya ura awki-**pt(a)**-i-wa.
 Mary one hour-ABL one hour old-**pta**-3S-EVI
 ‘Mary became old in an hour/for an hour.’
- (30) Mariya maya ura-tha / *maya ura qala-**pt(a)**-i-wa.
 Mary one hour-ABL one hour stone/hard-**pta**-3S-EVI

‘Mary became a stone/hard in an hour/for an hour.’

A further prediction regards the (im)possibility of combining measure phrases with expressions including verbs with *-pta* (see Kennedy and Levin 2008). If verbs with *-pta* convey the meaning of *total change*, then measure phrases should be ungrammatical in a sentence with these verbs. This is borne out, as shown in (31) with the verb *thaya-pta-ña* ‘to become cool’. When the sentence includes the measure phrase *phisqa grado-ru* ‘five degrees’ (31b), it is ungrammatical.¹²

- (31) a. Uma-xa thaya-**pt(a)**-i-wa.
water-TOP cool-**pta**-3S-EVI
‘The water became cool.’
b. *Uma-xa phisqa grado-ru thaya-**pt(a)**-i-wa.
water-TOP five degree-IL cool-**pta**-3S-EVI
‘The water became five degrees cool.’

3.2. Base Predicates

The suffix *-pta* takes non-gradable and gradable bases (Kennedy and McNally 2005; Morzycki 2009), as illustrated in the sample in (32)–(33) and (34), respectively. What I call non-gradable base predicates (roughly) correspond to nouns (32) and a numeral (33) in grammatical descriptions, and what I call gradable base predicates (roughly) correspond to adjectives (34) in grammatical descriptions (Gonzalo Segura 2011). For colors, Gonzalo Segura (2011) indicates that they are adjectives in Aymara (see (34d) below); the sample below is non-exhaustive.

- | | | | | | |
|------|----|----------|--------------|--------------------------|--------------------------------|
| (32) | a. | k’ayra | ‘frog’ | k’ayra- pta -ña | ‘to become a frog’ |
| | b. | uma | ‘water’ | uma- pta -ña | ‘to become water (to liquefy)’ |
| | c. | jaqi | ‘person’ | jaqi- pta -ña | ‘to become a person’ |
| | d. | jamp’atu | ‘toad’ | jamp’atu- pta -ña | ‘to become a toad’ |
| | e. | qala | ‘stone’ | qala- pta -ña | ‘to become a stone’ |
| | f. | anu | ‘dog’ | anu- pta -ña | ‘to become a dog’ |
| | g. | qamaqi | ‘fox’ | qamaqi- pta -ña | ‘to become a fox’ |
| (33) | | paya | ‘two’ | paya- pta -ña | ‘to duplicate’ |
| (34) | a. | phuqa | ‘full’ | phuqa- pta -ña | ‘to become full’ |
| | b. | llusk’a | ‘straight’ | llusk’a- pta -ña | ‘to become straight’ |
| | c. | awki | ‘old’ | awki- pta -ña | ‘to become old’ |
| | d. | janq’u | ‘white’ | janq’u- pta -ña | ‘to become white’ |
| | e. | qala | ‘hard’ | qala- pta -ña | ‘to become hard’ |
| | f. | anu | ‘aggressive’ | anu- pta -ña | ‘to become aggressive’ |
| | g. | qamaqi | ‘witty’ | qamaqi- pta -ña | ‘to become witty’ |

Of special interest here is the fact that, regardless of the non-gradable or gradable nature of the base predicate, all these verbs convey the meaning of *total change* or BECOME *P* (for base predicate *P*). In particular, note that the cases in (32)–(33) behave similar to the example with *qala-pta-ña* with the meaning ‘to become a stone’ in the previous section. Note as well that, regardless of the nature of the scale associated with the gradable base predicate in (34), they are all possible base predicates that can take *-pta* with no apparent difference in the core meaning of the verb. For instance, (34a) illustrates a gradable base with a closed scale associated with it, (34b) exemplifies the case of a gradable base with a top closed scale associated with it, and (34c)–(34g) show cases of gradable bases with open

¹² See example (55b) for a case with the predicate *thaya* ‘cool’, where measure phrases can be present, showing that the infelicity of (31b) is due to the presence of *-pta* rather than the base predicate.

scales associated with them. I assume that colors have an open scale associated with them, as they pattern with bases that have open scales associated with them.¹³

It is worth mentioning that, as expected, the verbs in (32)–(34) display the properties that were discussed in Section 3.1 with regard to the tests applied. Thus, if the theme is in the extension of the relevant predicate, a sentence including the derived verb with *-pta* is infelicitous (see (22)–(24)), i.e., the theme cannot be in the extension of the relevant base at the beginning of the eventuality. In addition, applying an entailment test yields a contradiction in that it must be the case that the theme ends up in the extension of the predicate under consideration (see (25)–(26)), i.e., the theme must be in the extension of the relevant predicate at the end of the eventuality. With regard to telicity, only *in* adverbials are possible with the predicates in (32)–(34) (see (29)–(30)), and measure phrases are disallowed (see (31b)).

In (35)–(36), I present examples with the verbs in (34a)–(34b), i.e., with the cases where the bases have a closed scale and a top closed scale associated with them, respectively. The cases with bases with open scales associated with them are similar to *awki-pta-ña* ‘to become old’ and *qala-pta-ña* with the meaning ‘to become hard’, which were discussed in Section 4.1.

Context: At home, there is a drawer where the children put their school supplies. Since they have been on vacation, the drawer has been empty. Recently, they started going back to school again. As a result, the drawer is now full. Realizing that the drawer is now full (after being empty), a parent utters the following:

- (35) Kaja phuqa-**pt(a)**-i-wa.
box full-**pta**-3S-EVI
‘The box (was) filled.’

Context: Mary is getting trained to be a hair stylist; she has a wig with curly hair. As part of her training, she must practice on the wig, so that its hair is straightened. She did as required in the afternoon. Mary’s mom saw the wig in the morning (when the hair was curly) and then saw it again in the evening (when the hair was straight). Mary’s mom utters the following:

- (36) Ñikuta llusk’a-**pta**-i-wa.
hair straight-**pta**-3S-EVI
‘The hair straightened.’

Finally, note that the case of *qala*, an ambiguous base with the meanings ‘stone/hard’, is not isolated. In particular, note that *anu* ‘dog/aggressive’ and *qamaqi* ‘fox/witty’ follow the same pattern in that they are ambiguous between a non-gradable and a gradable version, as shown in (32f)–(32g) in contrast to (34f)–(34g). The example in (37) exemplifies a sentence with the ambiguous verb *anu-pta-ña* ‘to become a dog/aggressive’.

- (37) Mariya anu-**pt(a)**-i-wa.
Mary dog/aggressive-**pta**-3S-EVI
‘Mary became a dog/aggressive.’

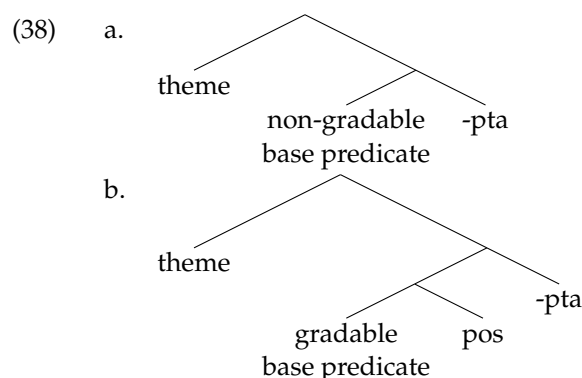
The discussion in this section suggests that all verbs with *-pta* should be analyzed uniformly (regardless of the presence of a non-gradable or gradable base predicate), in particular, in terms of *total change* or *BECOME P* (for some base predicate *P*).

3.3. Formalization

In this section, I formalize my proposal focusing on the VP level of expressions with *-pta*. As discussed in Section 3.2, these verbs are analyzed uniformly regardless of the

¹³ See Appendix A for a discussion on the properties of Aymara bases that have an open scale associated with them (see (98a) in particular). The discussion there also applies to colors in Aymara.

non-gradable or gradable nature of the base predicate that combines with the suffix. In particular, I assume that the base predicates that combine with *-pta* are of type $\langle e, it \rangle$, i.e., they are of the type of non-gradable bases (see Section 2). This makes explicit that what is relevant when verbs with *-pta* are considered is the extension of the base in a given eventuality. Assuming that the bases that *-pta* takes are of this type fits naturally with the diversity of bases discussed in the previous section. Note, in particular with regard to gradable bases, that assuming that bases are of type $\langle e, it \rangle$ means that these bases have their degree argument already saturated (see Section 2). I thus assume the Logical Forms in (38): the one in (38a) is for the case where the base predicate is non-gradable; the one in (38b) is for the case where the base predicate is gradable.¹⁴



I further assume that the suffix *-pta* is the one that conveys the meaning of change present in these verbs, as characterized in Section 3.1, specifically, *-pta* introduces the meaning of *total change* or BECOME *P* (for some base predicate *P*), i.e., that a theme changes from not being in the extension of a base predicate at the beginning of the eventuality to being in such an extension at the end of the eventuality. I propose the denotation in (39) for *-pta* (Abusch 1986; Bochnak 2015a; Deal and Hohaus 2019; Dowty 1979). $\llbracket -pta \rrbracket$ is a function that is true of non-gradable base *P*, individual *x*, and eventuality *e* iff it is not the case that *x* is in the extension of *P* at the beginning of *e* but is in the extension of *P* at the end of *e*.¹⁵

$$(39) \quad \llbracket -pta \rrbracket = \lambda P_{\langle e, it \rangle} \lambda x \lambda e [\neg P(x, ini(e)) \wedge P(x, fin(e))]$$

I exemplify the account below. I repeat examples (19)–(21) as (40a)–(42a). Note that the denotations of (40a) and (42a) include gradable bases (*awki* ‘old’ and *qala* ‘hard’, respectively) for which the degree argument has been saturated: the relevant individual holds a degree in the relevant scale that is at least equal to the standard of comparison in the context of utterance. The presence of a standard of comparison of this sort does not apply in (41a), as *qala* ‘stone’ is non-gradable.

- (40) a. Mariya awki-**pt(a)**-i-wa.
Mary old-**pta**-3S-EVI
‘Mary became old.’
- b. $\llbracket (40a) \rrbracket = \lambda e [\neg \exists d [old(m, d, ini(e)) \wedge d \geq stnd(old)] \wedge \exists d' [old(m, d', fin(e)) \wedge d' \geq stnd(old)]]$
- c. In words, (40a) is true of eventuality *e* iff Mary changed from not being old at the beginning of *e* to being old at the end of *e*.

¹⁴ A question arises as to why the degree morpheme slot in (38b) cannot be saturated by a degree expression: *pos* is the only element that can be there; an expression indicating an overt degree cannot occupy that slot (e.g., 5 years, 5 degrees, etc.). While I leave this issue for future research, I refer the reader to Martínez Vera (2020), who argues that measure phrases do not occupy the same slot that degree morphemes occupy in Aymara. He provides evidence involving degree morphemes that can cooccur with measure expressions. This would suggest that measure phrases are not in complementary distribution with degree morphemes; instead, they occupy different syntactic positions in this language.

¹⁵ I set aside the possible presence of a(n implicit) causing eventuality and focus exclusively on the part meaning change. See Piñón (2011).

- (41) a. Mariya qala-**pta**(a)-i-wa.
Mary stone-**pta**-3S-EVI
'Mary became a stone.'
b. $\llbracket (41a) \rrbracket = \lambda e [\neg \text{stone}(m, \text{ini}(e)) \wedge \text{stone}(m, \text{fin}(e))]$
c. In words, (41a) is true of eventuality e iff Mary changed from not being a stone at the beginning of e to being a stone at the end of e .
- (42) a. Mariya qala-**pta**(a)-i-wa.
Mary hard-**pta**-3S-EVI
'Mary became hard.'
b. $\llbracket (42a) \rrbracket = \lambda e [\neg \exists d [\text{hard}(m, d, \text{ini}(e)) \wedge d \geq \text{stnd}(\text{hard})] \wedge \exists d' [\text{hard}(m, d', \text{fin}(e)) \wedge d' \geq \text{stnd}(\text{hard})]]$
c. In words, (42a) is true of eventuality e iff Mary changed from not being hard at the beginning of e to being hard at the end of e .

The proposal makes explicit that VPs with *-pta* convey the meaning of *total change* or BECOME P (for base predicate P). It is also very flexible with regard to what bases can combine with *-pta*. From a semantic point of view, as long as the base is of type $\langle e, it \rangle$, it can combine with *-pta*. This flexibility seems appropriate given the high productivity of these verbs, as noted by Gonzalo Segura (2011). Finally, the proposal is consistent with the telicity contrast discussed in Section 3.1: there is a culmination in the eventuality, namely, the one linked to the fact that the theme ends up in the extension of the base predicate that combines with *-pta*, which means that adjoining telic adverbials should be possible but adjoining atelic ones should not. This is in fact the case, as shown in connection to examples (40a)–(42a) in (29)–(30).

4. Verbs with *-ra*

In this section, I discuss verbs with *-ra*. In Section 4.1, I provide a general characterization of the meaning of verbs with *-ra*. In Section 4.2, I discuss the base predicates that *-ra* takes. In Section 4.3, I formalize the proposal.

4.1. General Characterization

I propose that verbs with *-ra* are understood as change of state verbal predicates that convey the meaning of *relative change* or BECOME *more P* for base predicate P (see Hay et al. 1999; Winter 2006; Kearns 2007; Kennedy and Levin 2008; Kennedy 2012; Pedersen 2015). Specifically, the proposal is that an individual (a theme) increases in its degree along the scale associated with the base predicate present in the verb in an eventuality. This means that, in contrast to verbs with *-pta*, whether the theme belongs to the extension of the base predicate at the beginning or end of the eventuality of change is irrelevant.

Similar to the case of verbs with *-pta*, verbs with *-ra* are formed by a base predicate combined with the suffix. The arity of verbal predicates with *-ra* is also one: they take a theme argument. As anticipated in the Introduction section, to illustrate my proposal and to keep parallels with what was discussed in Section 3 as close as possible, I make use of the verbs *awki-ra-ña* 'to become older (to age)' (43) (which repeats (8b)) and *qala-ra-ña* 'to become harder' (44) (which repeats (9b)). Thus, sentences with *awki-pta-ña* 'to become old' and *awki-ra-ña* 'to become older', and sentences with *qala-pta-ña* 'to become a stone/hard' and *qala-ra-ña* 'to become harder' constitute minimal pairs. In (43), *-ra* takes the gradable base *awki* 'old'; in (44), *-ra* takes the gradable base *qala* 'hard'. The meaning 'stone' mentioned in Section 3 is not available in this case; therefore, the verb with *-ra* only derives the meaning 'to become harder' (I will suggest, in Section 4.2, that only the gradable version of the base is available for combination, not the non-gradable version with meaning 'stone'). Both *awki* 'old' and *qala* 'hard' have open scales associated with them. As the informal translations of (43)–(44) show, these sentences mean that the theme, *Mary*, increases in the extent to which a given property applies to it, i.e., *Mary* becomes older or harder/tougher (as a person). See below for detailed contexts.

- (43) Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 ‘Mary became older (aged).’
- (44) Mariya qala-**r(a)**-i-wa.
 Mary hard-**ra**-3S-EVI
 ‘Mary hardened.’

Since my claim is that verbs with *-ra* convey the meaning that the theme increases in its degree along the scale associated with the base predicate present in the verb in an eventuality, it is crucial to show that it does not matter whether, at the beginning or at the end of the eventuality of change, the theme holds a degree that corresponds to a degree an individual must have to state that it has the property indicated by the relevant predicate, i.e., any increase along the scale makes an expression with *-ra* felicitous. First, I discuss the status of the theme with regard to the beginning of the eventuality. I test this by specifically targeting what the theme is like before the relevant change with a sentence including *-ra* is uttered. In particular, I make use of contexts that make explicit that the theme is or is not old, or is or is not hard at the beginning of the eventuality. For instance, context 1 makes explicit that the theme, *Mary*, is not old (does not count as old), as she is very young. Context 2, on the other hand, makes explicit that *Mary* shows characteristics normally ascribed to old (people). Uttering a sentence with *awki-ra-ña* ‘to become older’ is felicitous in both contexts, which suggests that whether the theme is old at the beginning of the eventuality of change is irrelevant.

Context 1: Mary was 20 years old and is now turning 25; someone utters the following:

- (45) Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 ‘Mary became older (aged).’

Context 2: Mary is 75 years old and has arthritis. This year, she has started to show a new symptom of being old, namely, she has started to suffer from memory loss; today, someone utters the following:

- (46) Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 ‘Mary became older (aged).’

Something similar can be said with regard to a sentence with the verb *qala-ra-ña* ‘to become harder’. Context 1 makes explicit that the theme, *Mary*, is not hard (or tough), since she has always been easygoing and kind. Context 2, on the other hand, makes explicit that *Mary* is a pretty hard (or tough) person due to bad experiences. Uttering a sentence with *qala-ra-ña* ‘to become harder’ is felicitous in both contexts, which suggests again that whether the theme counts as sufficiently hard in that context is irrelevant.

Context 1: Mary is a very easygoing and kind person. However, in the recent past, she has had some bad experiences causing her to harden her heart a little bit; today, someone utters the following:

- (47) Mariya qala-**r(a)**-i-wa.
 Mary hard-**ra**-3S-EVI
 ‘Mary hardened.’

Context 2: In the past, Mary’s heart has hardened due to bad experiences, so she became a hard person. This last month, she has continued having bad experiences; today, someone utters the following:

- (48) Mariya qala-**r(a)**-i-wa.
 Mary hard-**ra**-3S-EVI

‘Mary hardened.’

Turning now to the consideration of the end of an eventuality of change, the question lies again in whether the theme need or need not hold a degree that corresponds to a degree an individual must hold to state that it has the property indicated by the relevant predicate at this point (e.g., whether the theme needs to count as sufficiently old or hard in context). The answer is that it need not. To test this, I make use of an entailment test with a continuation that makes explicit that the result state has not been reached. The form of the test I use is ‘*x P-ra*, but *x* is not *P*,’ for theme *x* and base predicate *P* (see Tenny 1994; Beavers 2011). As can be seen in (49)–(50) when the test is applied to (43)–(44), the continuation may yield a contradiction. For instance, if context 2 for (46) and (48) is considered, a contradiction arises, but this is not the case when context 1 for (45) and (47) is considered (i.e., no contradiction arises). This suggests that the theme need not be in the extension of the base predicate when the eventuality of change ends. Consider first the cases with *awki-ra-ña* ‘to become older’. If the theme counts as old, then a contradiction arises, as in (50); otherwise, no contradiction arises, as in (49). It is worth making explicit that the cases with *-ra* in (49)–(50) contrast with those with *-pta* in (25)–(26): only in the case of the latter must the theme be in the extension of the base (or hold a degree that makes the theme count as indicated by the base predicate in a given context).

Context 1: Mary was 20 years old and is now turning 25; someone utters the following:

- (49) Mariya *awki-r(a)-i-wa*, *ukatsti* Mariya-*xa jani-wa awki jaqi-k(a)-i-ti*.
 Mary old-*ra*-3S-EVI but Mary-TOP no-EVI old person-DUR-3S-NEG
 ‘Mary became older (aged), but she is not old.’

Context 2: Mary is 75 years old and has arthritis. This year, she has started to show a new symptom of being old, namely, she has started to suffer from memory loss; today, someone utters the following:

- (50) Mariya *awki-r(a)-i-wa*, #*ukatsti* Mariya-*xa jani-wa awki jaqi-k(a)-i-ti*.
 Mary old-*ra*-3S-EVI but Mary-TOP no-EVI old person-DUR-3S-NEG
 ‘Mary became older (aged), but she is not old.’

Consider now the cases with *qala-ra-ña* ‘to become harder’. If the theme counts as hard, then a contradiction arises, as in (52); otherwise, no contradiction arises, as in (51).

Context 1: Mary is a very easygoing and kind person. However, in the recent past, she has had some bad experiences causing her to harden her heart a little bit; today, someone utters the following:

- (51) Mariya *qala-r(a)-i-wa*, *ukatsti* Mariya-*xa jani-wa qala jaqi-k(a)-i-ti*.
 Mary hard-*ra*-3S-EVI but Mary-TOP no-EVI hard person-DUR-3S-NEG
 ‘Mary hardened, but she is not hard.’

Context 2: In the past, Mary’s heart has hardened due to bad experiences, so she became a hard person. This last month, she has continued having bad experiences; today, someone utters the following:

- (52) Mariya *qala-r(a)-i-wa*, #*ukatsti* Mariya-*xa jani-wa qala jaqi-k(a)-i-ti*.
 Mary hard-*ra*-3S-EVI but Mary-TOP no-EVI hard person-DUR-3S-NEG
 ‘Mary hardened, but she is not hard.’

The discussion thus far suggests that verbs with *-ra* convey the meaning of *relative change* or *BECOME more P* (for base predicate *P*), i.e., an eventuality of change in which the theme increases until the property holds.

If this approach is correct, then the prediction is that adjoining atelic adverbials should be possible whereas adjoining telic adverbials should be degraded. This prediction is borne

out, as shown in (53)–(54). As in Section 3.1, I make use of the adverbials *maya ura-tha* ‘in an hour’ and *maya ura* ‘for an hour’ in the examples. Thus, adjoining *maya ura* ‘for an hour’ is possible whereas adjoining *maya ura-tha* ‘in an hour’ is degraded (53)–(54).¹⁶

- (53) Mariya ??maya ura-tha / maya ura awki-**r(a)**-i-wa.
 Mary one hour-ABL one hour old-**ra**-3S-EVI
 ‘Mary became older (aged) in an hour/for an hour.’
- (54) Mariya ??maya ura-tha / maya ura qala-**r(a)**-i-wa.
 Mary one hour-ABL one hour hard-**ra**-3S-EVI
 ‘Mary hardened in an hour/for an hour.’

A further prediction regards the (im)possibility of combining measure phrases with expressions including verbs with *-ra*. If verbs with *-ra* convey the meaning of *relative change*, then they should be grammatical when a measure phrase is present. This is borne out, as shown in (55), with the verb *thaya-ra-ña* ‘to cool’. In contrast to (31b), which showed that measure phrases yield ungrammaticality when combined with expressions including verbs with *-pta*, adding the measure phrase *phisqa grado-ru* ‘five degrees’ in this case yields a grammatical result.

- (55) a. Uma-xa thaya-**r(a)**-i-wa.
 water-TOP cool-**ra**-3S-EVI
 ‘The water cooled.’
- b. Uma-xa phisqa grado-ru thaya-**r(a)**-i-wa.
 water-TOP five degree-IL cool-**ra**-3S-EVI
 ‘The water cooled five degrees.’

4.2. Base Predicates

In this section, I show that the suffix *-ra* takes gradable bases that are top open (Kennedy and McNally 2005; Morzycki 2009); gradable bases that are top closed and non-gradable bases are ungrammatical in verbs with *-ra*. According to grammatical descriptions, all the bases that *-ra* takes are adjectives (Gonzalo Segura 2011). Consider first the examples in (56). They illustrate verbs with *-ra* taking base predicates that have open scales associated with them. The sample below is non-exhaustive.

- | | | | | | |
|------|----|----------|---------|-------------------------|----------------------------|
| (56) | a. | t’ili | ‘short’ | t’ili- ra -ña | ‘to become shorter’ |
| | b. | ipi | ‘silly’ | ipi- ra -ña | ‘to become sillier’ |
| | c. | thaya | ‘cool’ | thaya- ra -ña | ‘to become cooler’ |
| | d. | awki | ‘old’ | awki- ra -ña | ‘to become older (to age)’ |
| | e. | isk’a | ‘small’ | isk’a- ra -ña | ‘to become smaller’ |
| | f. | juch’usa | ‘thin’ | juch’usa- ra -ña | ‘to become thinner’ |
| | g. | thuru | ‘thick’ | thuru- ra -ña | ‘to become thicker’ |

The examples in (57) illustrate verbs with *-ra* taking colors. As discussed in Section 3.2, I assume that colors have an open scale associated with them.

- | | | | | | |
|------|----|--------|----------|-----------------------|-------------------------|
| (57) | a. | uqi | ‘grey’ | uqi- ra -ña | ‘to become more gray’ |
| | b. | q’illu | ‘yellow’ | q’illu- ra -ña | ‘to become more yellow’ |
| | c. | jarama | ‘blue’ | jarama- ra -ña | ‘to become more blue’ |

The examples in (58) illustrate verbs with *-ra* taking ambiguous bases, i.e., bases that have a non-gradable and a gradable version. Of relevance here is that only the gradable

¹⁶ The sentences in (53)–(54) are similar to their English counterparts, as discussed in, for instance, Kennedy and Levin (2008), in that the presence of base predicates with a top open scale associated with them do not rule out telic adverbials completely, since it is possible to give cues (e.g., contextual cues) that suggest that some kind of culmination has been reached, i.e., that reaching some degree means that a culmination (in a given context) is reached.

version of the base predicates (with an open scale associated, as discussed in Section 3.2) derives a verb with *-ra*. I take this to suggest that the suffix *-ra* does not combine with non-gradable bases to derive verbs but only gradable ones.¹⁷

- | | | | | | |
|------|----|--------|--------------------|-----------------------|-----------------------------|
| (58) | a. | qala | ‘stone, hard’ | qala- ra -ña | ‘to become harder’ |
| | b. | qamaqi | ‘fox, witty’ | qamaqi- ra -ña | ‘to become wittier’ |
| | c. | asnu | ‘donkey, stubborn’ | asnu- ra -ña | ‘to become more stubborn’ |
| | d. | anu | ‘dog, aggressive’ | anu- ra -ña | ‘to become more aggressive’ |

The suggestion that *-ra* only combines with gradable bases is further confirmed when non-ambiguous non-gradable bases are taken into account. For instance, the non-gradable bases in (59), which derive verbs with *-pta* (see (32) in Section 3.2), yield an ungrammatical result when combined with *-ra*:

- | | | | | | |
|------|----|------|----------|----------------------|------------------------------|
| (59) | a. | uma | ‘water’ | *uma- ra -ña | ‘to become more watery’ |
| | b. | jaqi | ‘person’ | *jaqi- ra -ña | ‘to become more of a person’ |

The examples in (60)–(61) illustrate verbs with *-ra* taking bases with partially closed scales associated with them. Of importance here is that bases with a scale with a lexical maximal degree (an absolute endpoint) cannot derive verbs with *-ra*. The result is ungrammatical. This is shown in (60b)–(61b). When the bases combined with *-ra* do not include a lexical maximal degree, no violation arises and the result is grammatical. This is shown in (60a)–(61a).

- | | | | | | |
|------|----|---------|------------|-------------------------|------------------------|
| (60) | a. | q’añu | ‘dirty’ | q’añu- ra -ña | ‘to become dirtier’ |
| | b. | q’uma | ‘clean’ | *q’uma- ra -ña | ‘to become cleaner’ |
| (61) | a. | phurqi | ‘curly’ | phurqi- ra -ña | ‘to become curlier’ |
| | b. | llusk’a | ‘straight’ | *llusk’a- ra -ña | ‘to become straighter’ |

The restriction that base predicates with top closed scales associated with them are not possible in verbs with *-ra* also excludes cases where the base has a closed scale associated with it. This is shown in (62):

- | | | | | | |
|------|----|--------|---------|------------------------|---------------------|
| (62) | a. | phuqa | ‘full’ | *phuqa- ra -ña | ‘to become fuller’ |
| | b. | ch’usa | ‘empty’ | *ch’usa- ra -ña | ‘to become emptier’ |

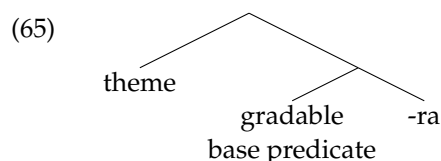
It is worth mentioning that, as expected, the verbs in (56)–(61) display the properties that were discussed in Section 4.1 with regard to the tests applied. Thus, at the beginning and at the end of the eventuality under consideration, the theme may hold a degree that makes it count as indicated by the base predicate in a given context (with regard to the cases targeting the status of the theme at the beginning of the eventuality, see (45)–(48); with regard to cases targeting the status of the theme at the end of the eventuality in connection to the entailment test, see (49)–(52)). With regard to telicity, only *for* adverbials are possible with the predicates in (56)–(61) (see (53)–(54)) and adjoining a measure phrase is possible (see (55b)).

¹⁷ Pending additional research, the distribution of ambiguous bases may be taken as an argument for the distinction that descriptive literature makes regarding nouns and adjectives—non-gradable and gradable bases in my case—which was mentioned in footnote (18).

I conclude that *-ra* can only derive verbs by taking gradable base predicates that have a top open scale associated with them.^{18,19}

4.3. Formalization

In this section, I formalize my proposal focusing on the VP level of expressions with *-ra*. As discussed in the previous section, verbs with *-ra* only take gradable bases. In order to account for this, I assume that the base predicates that combine with *-ra* are of type $\langle d, \langle e, it \rangle \rangle$ (see Section 2). This excludes the possibility of combining non-gradable bases with *-ra*. I thus assume the Logical Form in (65) for VPs with *-ra*:



Recall as well that *-ra* does not take all gradable bases; they have to be top open. I will include this information as a presupposition in the denotation of *-ra*. In this case, this presupposition is a domain restriction for which the function is to restrict what combinatorial possibilities are available (see Spalek 2014 for a recent approach in a similar vein).

I assume that the suffix *-ra* is the one that conveys the meaning of *relative change* or *BECOME more P* (for base predicate *P*) that is present in these verbs, as discussed in Section 4.1, i.e., *-ra* is the lexical item that conveys the meaning that there is an eventuality of change in which a theme increases in the extent to which a given property (as indicated by the base predicate) holds for the theme. It can now become clear why I propose that *-pta* and *-ra* are the items that introduce the meaning of change in my proposal: there are minimal pairs, e.g., *awki-pta-ña* 'to become old' and *awki-ra-ña* 'to become older', that only differ in what suffix is present. As anticipated in Section 1, I state the denotation of *-ra* making use of degrees. Specifically, I propose the denotation in (66) for *-ra* (Hay et al. 1999; Kearns 2007; Kennedy 2012; Kennedy and Levin 2008; Pedersen 2015; Winter 2006). $\llbracket -ra \rrbracket$ is a partial function requiring that gradable base *P* have a top open scale for it to be

¹⁸ It is relevant to mention that the restriction that verbs with *-ra* show (i.e., that bases in verbs with *-ra* cannot have top closed scales associated with them) is not cross-linguistically isolated. Di Sciullo (1997) and Martínez Vera (2016) point out that degree achievements in Romance languages that are derived with the prefix *en-* (in French and Spanish) or *in-* (in Italian) show the same restriction: bases with top closed scales associated with them yield ungrammaticality when they appear in verbs with *en-/in-*. This is illustrated in (63): the presence of *m* instead of *n* in the prefixes is due to an assimilation process.

(63)	a.	French	plat	'flat'	*emplatir/*emplanir	'to flatten'
	b.	Spanish	plano	'flat'	*emplanar	'to flatten'
	c.	Italian	piano	'flat'	*imppianare	'to flatten'

Verbs with bases with top open scales associated with them, on the other hand, are grammatical, just as in Aymara. This is illustrated in (64):

(64)	a.	French	dur	'hard'	endurcir	'to harden'
	b.	Spanish	duro	'hard'	endurecer	'to harden'
	c.	Italian	duro	'hard'	indurire	'to harden'

It is worth pointing out that this intriguing restriction does not seem to be tied to transitivity (see footnote 19), at least not in a straightforward way. In this regard, the comparison of Aymara and Romance languages is telling: while the Aymara verbs with *-ra* are intransitive, as Martínez Vera (2016) argues, the Spanish verbs that display this restriction are, by default, transitive. I leave an account of why a restriction such as this one does not seem arbitrary for future research.

¹⁹ The restriction that *-ra* can only derive verbs by taking gradable base predicates that have a top open scale associated with them begs the question of how verbs such as *to clean*, *to fill*, or *to straighten* are derived in Aymara. There are two strategies in the language to derive such verbs. One of them is that there are lexical verbs that convey these meanings. This is the case of verbs such as *phiskhu-ña* 'to clean'. The second strategy is to derive verbs with the suffix *-cha*, as in *phuqa-cha-ña* 'to fill' and *llusk'a-cha-ña* 'to straighten'. See Martínez Vera (2020) for an extensive discussion of verbs derived with *-cha*. I have excluded these verbs in the discussion because they show different properties when compared to verbs with *-ra* (or *-pta*) regarding, for instance, argument structure: verbs derived with *-cha* are transitive, whereas verbs with *-ra* (or *-pta*) are intransitive. A full account of the Aymara system of verbs of change is left for future research.

defined. When defined, $\llbracket -ra \rrbracket$ is true of gradable base P , individual x , and eventuality e iff x increases from degree d of P at the beginning of e to degree d' of P at the end of e .^{20,21}

$$(66) \quad \llbracket -ra \rrbracket = \lambda P_{\langle d, \langle e, it \rangle \rangle} : P's \text{ scale is top open. } \lambda x \lambda e \exists d, d' [P(x, d, ini(e)) \wedge P(x, d', fin(e)) \wedge d < d']$$

I exemplify the account below. I repeat examples (43)–(44) as (67a)–(68a). The denotations of (67a)–(68a) in (67b)–(68b), respectively, make explicit when a VP with *-ra* is defined (i.e., when the scale associated with the gradable base predicate is top open) and make explicit in the truth conditions that the theme increases in the eventuality of change.

- (67) a. Mariya awki-**r(a)**-i-wa.
Mary old-**ra**-3S-EVI
'Mary became older (aged).'
- b. $\llbracket (67a) \rrbracket$ is defined iff *old* is top open.
When defined, $\llbracket (67a) \rrbracket = \lambda e \exists d, d' [old(m, d, ini(e)) \wedge old(m, d', fin(e)) \wedge d < d']$
- c. In words, (67a) is defined iff the gradable base *old* has a top open scale associated with it. When defined, (67a) is true of eventuality e iff Mary increased in her degree of oldness in e .
- (68) a. Mariya qala-**r(a)**-i-wa.
Mary hard-**ra**-3S-EVI
'Mary hardened.'
- b. $\llbracket (68a) \rrbracket$ is defined iff *hard* is top open.
When defined, $\llbracket (68a) \rrbracket = \lambda e \exists d, d' [hard(m, d, ini(e)) \wedge hard(m, d', fin(e)) \wedge d < d']$
- c. In words, (68a) is defined iff the gradable base *hard* has a top open scale associated with it. When defined, (68a) is true of eventuality e iff Mary increased in her degree of hardness in e .

The proposal in this section makes explicit that VPs with *-ra* convey the meaning of *relative change* or BECOME *more P* (for base predicate P). It also makes explicit that *-ra* can only combine with gradable bases that have a top open scale associated with them. Finally, the proposal is consistent with the telicity contrast discussed in Section 4.1: there is an increase in degree for a theme in the eventuality, which does not (necessarily) mean that there is a(n absolute) culmination in the eventuality. This means that adjoining atelic

²⁰ As mentioned in footnote 15, I set aside the possible presence of a(n implicit) causing eventuality and focus exclusively on the part meaning change. See Piñón (2011).

²¹ The denotation in (66) solely focuses on the notion of *relative change* or increase (i.e., BECOME *more P* for base predicate P), as proposed by, for instance, Hay et al. (1999) and Pedersen (2015). In particular, in connection to the discussion on measure phrases in 4.1, note that the denotation of *-ra*, as in (66), does not readily allow for the combination of measure phrases, as in Kennedy and Levin's (2008) account. However, an easy fix is possible, namely, the addition of a measure function (which, following Kennedy and Levin 2008, would measure the difference between the degree that the theme holds at the end of the eventuality minus the degree that the theme holds at the beginning of the eventuality). See Pedersen (2015) for a relevant discussion on an approach that does exactly this to account for degree achievements in English: the degree achievement denotes an increase in degrees (in a similar approach to the one proposed in this paper), and a measure function is added on top of that when needed. For the main claims in this paper, it suffices to encode the notion of an increase in degree in the denotation of *-ra*, as this makes transparent the ways in which *-pta* and *-ra* (minimally) differ.

Note as well that the issue that motivates the principle of interpretive economy for degree achievements (i.e., that maximal degrees are maximized when lexically present) in Kennedy and Levin (2008) (see also Kennedy 2007b), which was problematic for Hay et al. (1999), does not arise in the present discussion because *-ra* does not combine with top closed scales, which is the case for which interpretive economy is (mostly) relevant. On a related but different note, see Pedersen (2015) for a discussion regarding the presence of two degrees in the denotation of change of state verbs compared to the use of only one degree in, for instance, Kennedy and Levin (2008).

adverbials should be possible but adjoining telic ones should be degraded. This is in fact the case, as shown in connection to examples (67a)–(68a) in (53)–(54) in Section 4.1.^{22,23}

Before turning to the interaction between expressions with *-pta* and *-ra* in Section 5, I summarize the key aspects of the proposal in Table 1. Verbs with *-pta* and *-ra* differ minimally depending on what suffix is present to convey either *total change* or *relative change*, which in turn provides evidence for the claim that both kinds of change are present in the same language in morphologically derived change of state verbs.

Table 1. Interim summary.

	Verbs with <i>-pta</i>	Verbs with <i>-ra</i>
<i>Intuitive meaning</i> (BECOME <i>P</i>) (BECOME <i>more P</i>)	total change relative change	
<i>Base predicate</i> (non-gradable) (gradable)	$\langle e, it \rangle$ $\langle d, \langle e, it \rangle \rangle$	
<i>Presuppositions</i>	none	bases have top open scales

5. Scalar Implicatures

This section addresses in what way expressions with *-pta* and *-ra* interact. Recall the examples with minimal pairs in (8)–(9). In what follows, I only include the meaning ‘hard’ from (9a) in (70a), since this is the relevant case when comparing it to the expression containing *-ra* in (70b).

- (69) a. Mariya awki-**pt(a)**-i-wa.
Mary old-**pta**-3S-EVI
‘Mary became old.’
b. Mariya awki-**r(a)**-i-wa.
Mary old-**ra**-3S-EVI
‘Mary became older (aged).’
- (70) a. Mariya qala-**pt(a)**-i-wa.
Mary hard-**pta**-3S-EVI
‘Mary became hard.’
b. Mariya qala-**r(a)**-i-wa.
Mary hard-**ra**-3S-EVI
‘Mary hardened.’

What is interesting when considering these pairs of expressions is that the ones with *-ra* have as default a reading whereby the theme does not change from not being in the extension of the base predicate to being in it (i.e., the alternative expression with *-pta* is not the case). To explain why this is so, I propose an account in terms of scalar implicatures (Sauerland 2001 2004 2012) in which *-pta* and *-ra* constitute lexical alternatives (see also Horn 1972, Gazdar 1979), where the expression with *-pta* entails the expression with *-ra*. By

²² As an anonymous reviewer pointed out to me, the semantics proposed means that measure phrases, as in (55b), would not occupy the slot that degree modifiers occupy (as has been proposed for English by Kennedy and Levin 2008). My approach would require that measure phrases are, e.g., adjoined to the VP with, e.g., a semantics that indicates the difference between the degrees that the theme hold at the end and beginning of the eventuality. The implementation of this is left for the future. See Martínez Vera (2020) for an additional argument with regard to the claim that measure phrases do not occupy the same slot as degree morphemes in Aymara. See Pedersen (2015) for a discussion with regard to the incorporation of a differential measure function in cases where change is represented by means of the presence of two degrees, as in here.

²³ My proposal so far makes a clear prediction regarding the presence of comparative morphology. As Bobaljik (2012) argues (see also Kennedy and Levin 2008), there is a link between suppletive forms in the comparative and degree achievements in that, if there is a suppletive comparative, then this form of the base is the one that surfaces in the degree achievement. An example of this in English is *to worsen*, where the base of the degree achievement is the suppletive comparative form *worse* instead of the positive form *bad*. It would be expected that verbs with *-ra* show suppletive comparative morphology, whereas verbs with *-pta* would not show it. Unfortunately, I have not been able to provide evidence for this prediction because the bases that usually are typologically suppletive (e.g., *good* and *bad*) are not so in Aymara.

doing so, I extend the domain of the computation of scalar implicatures to include verbs of change of state.

First, I illustrate informally how the computation of scalar implicatures works with a common example regarding *and* and *or*, as illustrated in (71):

- (71) a. Bill smokes and drinks.
b. Bill smokes or drinks.

The sentence in (71b) implicates that *Bill* did not do both things, but only one of them, i.e., (71b) has the implicature in (72). I use \rightsquigarrow for implicatures.

- (72) \rightsquigarrow Bill does not smoke and drink.

The reasoning is as follows: *and* and *or* constitute lexical alternatives. Since (71a)–(71b) are identical except for the fact that they differ in the presence of one lexical alternative or the other, they constitute an alternative to the other member of the pair. The expression with *and* in (71a) entails the expression with *or* in (71b) and, in this sense, (71a) has a stronger meaning than (71b).²⁴ Because of the presence of a stronger alternative, the expression with *or* in (71b) implicates that the stronger alternative, (71a), is not the case: this is (72).

When this reasoning is applied to the expressions with *-pta* and *-ra* in (69)–(70), we have the following: *-pta* and *-ra* constitute lexical alternatives. Since (69a)–(69b) and (70a)–(70b) are identical except for the fact that they differ in the presence of one lexical alternative or the other, they constitute alternatives to the other member of the pair. The expressions with *-pta* in (69a)–(70a) entail the expressions with *-ra* in (69b)–(70b), respectively, and in this sense, (69a)–(70a) have stronger meanings than (69b)–(70b). In other words, changing from not having a degree that equals being in the extension of a base predicate to having it entails an increase towards a degree representing being in the extension of such a base. Due to the presence of a stronger alternative, the expressions with *-ra* in (69a)–(70b) implicate that the stronger alternatives, (69a)–(70a), respectively, are not the case. This is shown in (73) for (69b) and in (74) for (70b) by means of informal English translations, which are intended to capture that the theme does not change from not being in the extension of the base predicate to being in it.

- (73) \rightsquigarrow Mary did not become old.
(74) \rightsquigarrow Mary did not become hard.

There is a small caveat in this reasoning. There are more verbs with *-pta* in terms of what bases it takes than verbs with *-ra*, i.e., the verbs derived with *-ra* are a proper subset of those derived with *-pta*.²⁵ What this means for the present discussion is that the entailment relation between expressions with verbs with *-pta* and *-ra* can only be established for gradable base predicates that have a top open scale associated with them. This means that the relevant entailment relation in the case under discussion is not the general notion of (classical) entailment used in the reasonings above but a narrower version of it, namely, Strawson entailment, which states that the relevant entailment relation between two expressions holds when the presuppositions of the expressions under consideration are defined (Gajewski and Sharvit 2012; Sharvit 2017; von Stechow 1999). For Aymara expressions with *-pta* and *-ra*, this means that an expression with *-pta* Strawson entails an expression with *-ra*. This is made explicit when calculating the scalar implicatures below.

To formalize the discussion, first, I define the notions of (classical) entailment and Strawson entailment. Following von Stechow (1999) and Sharvit (2017), I define (classical) entailment as follows:

²⁴ The baseline for this entailment relation such that the reasoning in the main text follows are the definitions of conjunction and disjunction in propositional logic, i.e., *p* and *q* is true iff both *p* is true and *q* is true, and *p* or *q* is true iff either *p* is true, *q* is true, or both *p* is true and *q* is true.

²⁵ My fieldwork suggests that the bases that derive a verb with *-ra* also derive a verb with *-pta*.

(75) (Classical) entailment

- a. For any statements p and q , p entails q iff p is false or q is true.
- b. For any predicates P and Q , P entails Q iff, for all type relevant x , $P(x)$ entails $Q(x)$.

Strawson entailment differs minimally from classical entailment in that the presuppositions of the expressions under consideration need to be defined:

(76) Strawson entailment

- a. For any statements p and q , p Strawson entails q iff p is false or q is true.
- b. For any predicates P and Q , P Strawson entails Q iff, for all type relevant x such that $P(x)$ and $Q(x)$ are defined, $P(x)$ Strawson entails $Q(x)$.

In this paper, I have limited myself to predicates of eventualities (not to statements). For the computation of scalar implicatures, I make use of this kind of object as follows: I assume that eventualities are existentially closed at the upper most projection in the VP so they become expressions of type t (see the Logical Forms in (38) for expressions with $-pta$ and (65) for expressions with $-ra$).

Based on (76), the inferential reasoning involving expressions including $-pta$ and $-ra$ can be stated as in (77). This only holds for gradable bases, since $-ra$ does not derive verbs with non-gradable bases, as discussed in Section 4.2. The presupposition of the conclusion, i.e., the presupposition of $-ra$, is assumed as a premise. When the presupposition is not true, the premises will be contradictory and will vacuously entail the conclusion. This is the case with gradable base predicates that are top closed. The Strawson entailment relation is asymmetric in this case, since an expression with $-ra$ may not Strawson entail the equivalent expression with $-pta$.

- (77) For any gradable base predicate P and theme x , $x \text{ pos}(P)\text{-pta}$
- $$\frac{P's \text{ scale is top open}}{x \text{ } P\text{-ra}}$$

The reasoning in (77) makes explicit that the computation of scalar implicatures can be sensitive to Strawson entailment (see Gajewski and Sharvit 2012 for a similar suggestion). Here, I propose to make a small adjustment to the computation of scalar implicatures to account for the Aymara cases under discussion. Instead of making use of classical entailment, I make reference to Strawson entailment. The algorithm for the computation of scalar implicatures I assume is as follows (Sauerland 2001 2004 2012):

- (78) a. Let α and α' form lexical alternatives in scale R such that $R = \langle \alpha, \alpha' \rangle$.
- b. ψ is a scalar alternative of ϕ if
- (i) $\psi \neq \phi$;
 - (ii) there are scalar expressions α and α' that occur on R such that ψ is the result of replacing one occurrence of α in ϕ with α' .
- c. $\neg\psi$ is a scalar implicature of ϕ if
- (i) ψ is a scalar alternative of ϕ ;
 - (ii) ψ Strawson entails ϕ ; and
 - (iii) ϕ does not Strawson entail ψ .

I illustrate how the algorithm works with the pair of expressions in (69), repeated in (79)–(80). I include the denotations of (79a)–(80a) in (79b)–(80b), respectively (see (40b)–(67b)). As mentioned above, for the computation of scalar implicatures, I assume that eventualities are existentially closed at the VP level. The discussion of these examples is applicable, mutatis mutandis, to (70):

- (79) a. Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 'Mary became older (aged).'

- b. $\llbracket (79a) \rrbracket$ is defined iff *old* is top open.
When defined, $\llbracket (67a) \rrbracket = \exists e \exists d, d' [old(m, d, ini(e)) \wedge old(m, d', fin(e)) \wedge d < d']$
 - c. In words, (79a) is defined iff the gradable base *old* has a top open scale associated with it. When defined, (79a) is true iff there is an eventuality *e* where Mary increased in her degree of oldness.
- (80)
- a. Mariya awki-**pta**-i-wa.
Mary old-**pta**-3S-EVI
'Mary became old.'
 - b. $\llbracket (80a) \rrbracket = \exists e \exists d [\neg [old(m, d, ini(e)) \wedge d \geq stnd(old)] \wedge old(m, d, fin(e)) \wedge d \geq stnd(old)]$
 - c. In words, (80a) is true iff there an eventuality *e* where Mary changed from not being old at the beginning of *e* to being old at the end of *e*.

The algorithm in (78) applied to this case is as in (81). (80a) Strawson entails (79a). The base, *qala* 'hard', is top open; therefore, the reasoning in (77) follows. The implicature of (79a) that arises is then the negation of (80a), which formally corresponds to the negation of the denotation in (80b), i.e., that there is no eventuality *e* in which Mary changed from not being old at the beginning of *e* to being old at the end of *e*. This implicature is shown in (82).

- (81)
- a. Let *-pta* and *-ra* form lexical alternatives in scale *R* such that $R = \langle -pta, -ra \rangle$.
 - b. (80a) is a scalar alternative of (79a) if
 - (i) $(80a) \neq (79a)$;
 - (ii) (80a) is the result of replacing one occurrence of *-ra* in (79a) with *-pta*.
 - c. $\neg(80a)$ is a scalar implicature of (79a) if
 - (i) (80a) is a scalar alternative of (79a);
 - (ii) (80a) Strawson entails (79a); and
 - (iii) (79a) does not Strawson entail (80a).
- (82)
- a. $\rightsquigarrow \neg \exists e [\neg \exists d [old(m, d, ini(e)) \wedge d \geq stnd(old)] \wedge \exists d' [old(m, d', fin(e)) \wedge d' \geq stnd(old)]]$
 - b. In words, the implicature of (79a) is that there is no eventuality *e* in which Mary changed from not being old at the beginning of *e* to being old at the end of *e*.

This approach correctly predicts that expressions with *-ra* will not implicate an increase from a degree that does not represent being in the extension of a base predicate to a degree that does represent being in the extension of the base. The discussion with regard to (45)–(46) in Section 4.1 is relevant in this regard ((45)–(46) are repeated below). Expressions with *-ra*, such as the one in (83), are normally used when a theme increases in degrees that do not count as characterizing it as being in the extension of a base or increases in degrees that do count as characterizing it as being in the extension of a base, as made explicit by context 1 and context 2, respectively. Context 3 (see (21)), however, is different in that it targets a change from not being in the extension of the base to being in it (in terms of degrees, an increase for the theme from a degree that does not represent being in the extension of a base predicate to a degree that does represent being an extension of the base). In this case, following the reasoning in (81), the alternative with *-pta*, stated in (85), will be used instead. This is borne out; note that it would be infelicitous to utter the alternative with *-pta* against context 1 and context 2; it would be infelicitous to utter the alternative with *-ra* against context 3.

Context 1: Mary was 20 years old and is now turning 25; someone utters the following:

- (83) Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 'Mary became older (aged).'

Context 2: Mary is 75 years old and has arthritis. This year, she has started to show a new symptom of being old, namely, she has started to suffer from memory loss; today, someone utters the following:

- (84) Mariya awki-**r(a)**-i-wa.
 Mary old-**ra**-3S-EVI
 'Mary became older (aged).'

Context 3: The last time Genaro saw Mary, she was 55 (an age we assume counts as not old). Genaro is visiting Mary now that she is turning 70 (an age that we assume counts as old). Genaro utters the following:

- (85) Mariya awki-**pt(a)**-i-wa.
 Mary old-**pta**-3S-EVI
 'Mary became old.'

It is worth pointing out, before closing this section, that a question arises in connection to English in this regard. In particular, why is it that the English sentences in (86) do not show the behavior that Aymara sentences with *-pta* and *-ra* display, i.e., why (86b) does not implicate that *the road* does not change from not being wide to being wide? Instead, this sentence remains neutral in this regard.²⁶

- (86) a. The road became wide.
 b. The road widened.

An attempt to answer this question would be to say that the verb *to become* and the suffix *-en* and its phonological variant \emptyset (see Hay et al. 1999) do not constitute lexical alternatives, as is the case with *-pta* and *-ra*. The reasons why this is the case could be diverse: for instance, it could be the case that *to become* and *-en*/ \emptyset show different syntax (in terms of argument structure, for example) or that the difference of analytic and synthetic forms is relevant in some way to be made precise. Note, in this regard, that Aymara *-pta* and *-ra* are very similar under my approach: they share the same syntax, and although their semantics is different, the only difference with regard to the inputs they take lies in the non-gradable or gradable nature of the base predicate. Thus, the Aymara case shows a rather strict parallelism (see Katzir 2007 and Fox and Katzir 2011 for a discussion regarding in what sense alternatives are parallel), which makes it natural to pursue an analysis along the lines sketched in this paper.

To conclude this section, I add the implicature that arises in the interaction between expressions with *-pta* and *-ra* to Table 1 in Table 2 for a complete overview of the main discussion in this paper:

²⁶ I thank Chris Kennedy for the discussion about these issues.

Table 2. Summary.

	Verbs with -pta	Verbs with -ra
Intuitive meaning (BECOME <i>P</i>) (BECOME <i>more P</i>)	total change relative change	
Base predicate (non-gradable) (gradable)	$\langle e, it \rangle$ $\langle d, \langle e, it \rangle \rangle$	
Presuppositions	none	bases have top open scales
Scalar implicature in the extension of <i>P</i> to being in it	none	theme does not change from being

6. Conclusions

This paper provided evidence for the presence of change of state verbs that indicate *total change* (i.e., BECOME *P* for base predicate *P*) (Abusch 1986; Dowty 1979), and *relative change* (i.e., BECOME *more P* for base predicate *P*) (Hay et al. 1999; Kearns 2007; Kennedy 2012; Kennedy and Levin 2008; Pedersen 2015; Winter 2006) in Southern Aymara. I claimed that Aymara has two suffixes, i.e., -pta and -ra, that derive these verbs: -pta takes non-gradable bases to derive verbs that convey *total change*, whereas -ra takes gradable bases to derive verbs that convey *relative change*. Although previous literature has assumed in practice that, within a language, one of the two accounts holds across the board when morphologically derived forms are considered (e.g., the *relative change* account for languages such as English and the *total change* account for languages such as Washo), the Aymara system provides evidence for the need for both kinds of analyses within the same language. This kind of system begs the question of what variations in morphologically derived change of state verb systems there are cross-linguistically: based on the approaches to derived change of state verbs that have been proposed to this date, a typology arises whereby languages such as English, Washo, and Aymara exhaust the possible systems in that either one of the two types of change is all there is, i.e., *relative change*, as in English; *total change*, as in Washo; or both *relative* and *total change* present, as in Aymara.

I have further shown that the presence of the two types of morphologically derived change of state verbs in the same language—expressions with -pta and -ra in Aymara—interact in a particular way: an expression with -ra implicates that the theme does not change from not being in the extension of the base predicate to being in it, since there is an alternative expression, namely, one with -pta, that would be used instead (Sauerland 2001, 2004, 2012). In particular, I have shown that these two suffixes constitute alternatives, where an expression with -pta entails an expression with -ra. I have further proposed that the computation of scalar implicatures in expressions with -pta and -ra is sensitive to Strawson entailment, i.e., the entailment relation holds when the presuppositions of the expressions involved are defined (Gajewski and Sharvit 2012; Sharvit 2017; von Stechow 1999); specifically, I proposed that -ra restricts the gradable base predicates it takes to those that have a top open scale associated with them. The proposal thus extends the domain of phenomena for which the computation of scalar implicatures is needed to include change of state verbs.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study, because the consultants were language experts.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Here, I suggest that the characterization of gradable predicates in terms of degrees, which seems appropriate for English (see Section 2), is also appropriate for Aymara. I base the discussion of the presence of gradable bases in Aymara on [Beck et al. \(2009\)](#) and [Bochnak \(2015b\)](#), who provided evidence for the parameter in (87), which distinguishes degree and degreeless languages (see [Kapitonov 2019](#) for a discussion of typological issues within a degreeless approach that raises problems for the degree-based approach; see also [Burnett 2017](#) for a discussion of related phenomena in a degreeless approach in a setting that degree-based approaches are also taken into consideration):

(87) *Degree Semantics Parameter*

A language {does/does not} have gradable predicates, i.e., lexical items that introduce degree arguments.

[Beck et al. \(2009\)](#) and [Bochnak \(2015b\)](#) discussed a battery of tests that tease apart how languages fare with regard to this parameter. The tests include the presence of degree modifiers, crisp judgments, and differential comparatives, among others. I mainly focus on the comparative, including a discussion of the crisp judgments, degree modifiers, and differential comparatives. I will also provide evidence suggesting that Aymara bases are sensitive to different scale structures (in particular, the presence of lexical maximal and minimal degrees in the scales). The evidence will suggest that Aymara does have gradable predicates.²⁷

The Aymara construction that will appear in the discussion of the tests is the existential construction, which has been labeled as such in grammatical descriptions of Aymara ([Cerrón-Palomino 2008](#); [Gonzalo Segura 2011](#)). This construction is similar to predicative sentences with the verb *to be* in English, including the presence of a copula. Synchronically, there is a variation regarding the morphological exponent of the copula, which varies between an overt suffix *-ka* or *-ya*, as a vowel lengthening or as the absence of an overt exponent. In the cases to be discussed, the third-person subject and the copula do not show an overt exponent in sentences with the predicates discussed in this paper. The proposed analysis in the literature is that the third-person subject and the copula together form a portmanteau null suffix.²⁸ This is the position that I assume in what follows. I exemplify pairs of antonyms in this construction. The pair of antonyms *phiru* ‘ugly’ and *k’acha* ‘beautiful’ are illustrated in (88a); the pair *jisk’a* ‘small’ and *jach’a* ‘big’ is exemplified in (88b); the pair *q’uma* ‘clean’ and *qañu* ‘dirty’ is illustrated in (88c); and the pair *ch’usa* ‘empty’ and *phuqa* ‘full’ is exemplified in (88d).

- (88)
- a. Misa-xa phiru/k’acha-Ø-wa.
table-TOP ugly/beautiful-COP.3S-EVI
‘The table is ugly/beautiful.’
 - b. Thaki-xa jisk’a/j’acha-Ø-wa.
path-TOP small/big-COP.3S-EVI
‘The path is small/big.’
 - c. Misa-xa q’uma/qañu-Ø-wa.
table-TOP clean/dirty-COP.3S-EVI
‘The table is clean/dirty.’
 - d. Kaja-xa ch’usa/phuqa-Ø-wa.
box-TOP empty/full-COP.3S-EVI
‘The box is empty/full.’

²⁷ See [Beck et al. \(2009\)](#) and [Bochnak \(2015b\)](#) for a discussion regarding other tests; see also [Beltrama and Bochnak \(2015\)](#) for a discussion of degree modifiers and measure phrases in both degree (e.g., Italian) and degreeless (e.g., Washo) languages in more detail. See [Martínez Vera \(2020\)](#) for a discussion about the equative construction in Aymara.

²⁸ It seems that the presence or absence of an overt copula depends on morphophonological considerations, as [Cerrón-Palomino \(2008\)](#) and [Gonzalo Segura \(2011\)](#) suggest.

The comparative construction in Aymara is based on the existential construction, to which some expressions are added, specifically, an expression including the standard of comparison and/or other modifiers with the meaning ‘more’. The Aymara comparative construction is exemplified in (89). In these constructions, the standard of comparison is introduced with the ablative *-tha* (which is common cross-linguistically).

- (89) a. Aka misa-xa uka misa-tha phiru/k’acha-Ø-wa.
this table-TOP that table-ABL ugly/beautiful-COP.3S-EVI
‘This table is uglier/more beautiful than that table.’
- b. Aka thaki-xa uka thaki-tha jisk’a/j’acha-Ø-wa.
this path-TOP that path-ABL small/big-COP.3S-EVI
‘This path is smaller/bigger than that path.’
- c. Aka misa-xa uka misa-tha q’uma/qañu-Ø-wa.
this table-TOP that table-ABL clean/dirty-COP.3S-EVI
‘This table is cleaner/dirtier than that table.’
- d. Aka kaja-xa uka kaja-tha ch’usa/phuqa-Ø-wa.
this box-TOP that box-ABL empty/full-COP.3S-EVI
‘This box is emptier/fuller than that box.’

Of relevance here is whether comparatives in Aymara involve a comparison of degrees (see [Bochnak 2015b](#); [Kennedy 2007a](#); [Sapir 1944](#)). Here, I provide evidence that suggests that a degree analysis of the comparative construction in Aymara would actually be appropriate. Let me start the discussion with crisp judgments. Following [Kennedy \(2007b\)](#), crisp judgments involve making fine-grained distinctions between two entities with regard to a gradable property. It has been proposed (see, e.g., [Bochnak 2015b](#)) that, if a positive form of a predicate, not a comparative form, is involved in a given construction making a comparison, these fine-grained distinctions are overlooked; in other words, any entities x, y under comparison for a given property P in its positive form are too similar for speakers to say that P is true of x but false of y . Only a true comparative construction (i.e., a construction involving explicit comparison) would allow such distinctions. This view, however, has been recently challenged. [Deal and Hohaus \(2019\)](#) argued that Nez Perce is a language that has a dedicated comparative morpheme; the comparative construction allows crisp judgments. Nonetheless, they argued that a degreeless analysis is more appropriate for this language. More generally, this would mean that degreeless languages may allow crisp judgments. An example of the former would be Nez Perce ([Deal and Hohaus 2019](#)), and an example of the latter would be Washo ([Bochnak 2015b](#)). Thus, allowing crisp judgments constitutes a necessary, although not sufficient condition, for claiming that gradable predicates in a language introduce degree arguments.

Aymara is a language that allows crisp judgments. A context that targets a crisp judgment, for example (89a), is provided in (90). The same applies to (89b)–(89d) (making the relevant changes). Importantly, (89a) is felicitous in these contexts.

- (90) Two tables are very similar in terms of how ugly/beautiful they are. They only differ (i) in that one table lacks one small very pretty ornament that the other has (this targets the uglier case) or (ii) in that one table has one small very pretty ornament that the other does not have (this targets the more beautiful case).

The question that needs to be answered is whether there is additional evidence for claiming that Aymara has gradable predicates that introduce degree arguments, since allowing crisp judgments, while important, does not settle the issue. Of relevance here is the discussion of degree modifiers, which is done in what follows in connection to the Aymara comparative construction (see [Beltrama and Bochnak 2015](#)). The reader may have noticed that the comparative in Aymara is reminiscent of the comparative construction in Japanese with *yori*, which has been discussed in [Beck et al. \(2004\)](#), [Hayashishita \(2009\)](#),

Sawada and Grano (2011), among others; *yori* is historically an ablative marker, similar to Aymara *-tha* (see also Stassen 1985). The Japanese comparative is exemplified in (91).²⁹

- (91) Kono sao-wa ano sao yori nagai.
this rod-TOP that rod than long
'This rod is longer than that rod.'

What is important here is that, as argued in, for instance, Hayashishita (2009) (contra Beck et al. 2004), these constructions, although syntactically different from their English counterparts with a *than* clause, do include a comparison of degrees. This is shown in (92) by adding a degree expression to (91), namely, *zutto* 'much'.

- (92) Kono sao-wa ano sao yori zutto nagai.
this rod-TOP that rod than much long
'This rod is much longer than that rod.'

Setting details of the analysis aside, the Aymara comparative construction, which seems to be structurally similar to the Japanese one, allows for the same kind of modification. This is shown in (93), where the word *juk'ampi* 'much more' is added to example (89a). The same applies to (89b)–(89d) (when the relevant changes are made).

- (93) Aka misa-xa uka misa-tha yuk'ampi phiru/k'acha-Ø-wa.
this table-TOP that table-ABL much.more ugly/beautiful-COP.3S-EVI
'This table is much uglier/much more beautiful than that table.'

In fact, it is worth pointing out that, as noted by Cerrón-Palomino (2008), in other varieties of Aymara, *juk'ampi* 'much more' is mandatory; in these other varieties of Aymara, *juk'ampi* actually means 'more', which would suggest that the Aymara comparative is similar to the English one in that there would be equivalents of *more* (*juk'ampi*) and of *than* (the ablative *-tha*). I take this kind of evidence to suggest that the comparative construction in Aymara should be described in terms of comparison of degrees.

While suggestive, there is a piece of evidence that is perhaps more conclusive. Since ? (see Deal and Hohaus 2019 for a recent discussion with regard to the relevance of this kind of evidence to tell apart degree and degreeless languages), it has been generally agreed upon that the existence of a differential comparative constitutes rather conclusive evidence for the presence of degrees. This construction is illustrated in (94) in English, in which the difference between the two paths is 5 m. This reading is possible because the two measurements are compared.

- (94) This path is 5 m longer than that path.

Importantly, Aymara has this kind of construction, as shown in (95). I take this to suggest that Aymara does have gradable predicates involving degree arguments.

- (95) Aka thaki-xa phisqa metro-mpi uka thaki-tha jisk'a/j'acha-Ø-wa.
this path-TOP five meter-INST that path-ABL small/big-COP.3S-EVI
'This path is 5 meters smaller/bigger than that path.'

²⁹ I thank Hiromune Oda for providing these Japanese examples.

The discussion thus suggests that Aymara would count as a degree language. In fact, Aymara is also sensitive to the different kinds of scales discussed in (12) in the sense of Kennedy and McNally (2005). These authors point out that, in English, the presence or absence of absolute degrees can be tested via the adjunction of adverbials, e.g., *100%* or *completely*, that target these degrees. The idea is that the ends of the scales where such degrees are absent are degraded, whereas, when they are present, the adverbials are grammatical. This is shown in (96). The examples in (96a)–(96b), with *ugly* and *beautiful*, and *short* and *long* respectively, are degraded, since these gradable predicates have open scales associated with them, so the adjunction of adverbials targeting absolute degrees yields degradation. The example in (96c) illustrates a mixed pattern with a case where the predicates have a partially closed scale associated with them. The element with an ordering towards an absolute degree, *clean* in this case, is fine when the adverbials are attached, whereas the element with an ordering towards an open end, *dirty* here, is degraded with them. Finally, in (96d), since *empty* and *full* have a closed scale associated with them, the adjunction of these adverbials is grammatical.

- (96) a. The table is 100%/completely ??ugly/??beautiful.
 b. The path is 100%/completely ??small/??big.
 c. The table is 100%/completely clean/??dirty.
 d. The box is 100%/completely empty/full.

Degreeless languages are not sensitive to such distinctions. For instance, as Bochnak (2015b) discusses (see also Kapitonov 2019), a good candidate similar to *completely* in Washo is the lexical item *šemu*, which is translated as ‘very, really’ (see also Beltrama and Bochnak 2015; Bochnak 2012, 2013). This element does not show any sensitivity to scale structure in the above sense; it can modify both relative and absolute standard gradable predicates. This is exemplified in (97). A case that would involve an open scale is shown in (97a); a case that would involve a top closed scale is shown in (97b) (Bochnak 2015b does not include an example with a closed scale in this regard).

- (97) a. ?il-kaykay-i? šemu
 ATTR-tall-ATTR ŠEMU
 ‘very tall’
 b. ?il-ši:šib-i? šemu
 ATTR-straight-ATTR ŠEMU
 ‘really straight’
 (Bochnak 2015b, p. 25)

Turning to Aymara, I test the relevant scale structure with the expression *100%* (the actual expression used in this regard was the Spanish loan *cien por ciento* ‘one hundred percent’).³⁰ Importantly, the application of the test suggests that Aymara is sensitive to scale structure. The examples appear in (98).³¹ Aymara behaves like English: the adverbial is allowed with closed ends in the scales associated with the predicates and degraded with open ends. There is only one case that contrasts with English, namely, the sentence in (98b) with *j’acha* ‘big’, since the adverbial is grammatical in this case, whereas English *big* in (96b) is degraded. These results are telling regarding two issues. On the one hand, Aymara appears to be sensitive to scalar properties of predicates similar to English. On the other hand, what properties a given scale associated with a predicate have can vary from

³⁰ Two reviewers pointed out that the use of *100%* as the sole test to target scalar differences is not ideal. In this regard, I make some comments. First, I tried to find an equivalent of English *completely*, which is an element that, in this language, has been analyzed as a degree modifier that targets absolute endpoints (Kennedy and Levin 2008); unfortunately, I could not find an element such as *completely* in that it displayed the relevant sensitivity. What one finds are intensifiers such as *sinti* ‘very, a lot’ (Beltrama and Bochnak 2015), which, unfortunately, do not tell apart the relevant property. While mathematical, the use of *100%* seemed fairly natural to my consultants, and, in this sense, seemed to be a valid test for my purposes (as indicated in the main text, the actual expression used in this regard was the Spanish loan *cien por ciento* ‘one hundred percent’). Nonetheless, I take the reviewers’ points and will look for an additional test in this regard in future research.

³¹ I set aside the irrelevant reading in which the theme as a whole (i.e., the 100% of theme) holds a given property.

language to language. This is reminiscent of the discussion in Kennedy and McNally (2005) regarding predicates such as *expensive* and *old*, in that it would seem that there should be an absolute minimal value, i.e., one representing the zero age and the zero cost. As they point out, however, this is not necessarily the case when the relevant tests are run. Along the same lines, a predicate such as *j'acha* 'big' would intuitively be open regarding the maximal value, but this is not the case in Aymara, where the pair formed by *jisk'a* 'small' and *j'acha* 'big' has a partially closed scale associated with it.

- (98) a. Misa-xa 100% ??phiru/??k'acha-Ø-wa.
table-TOP 100% ugly/ beautiful-COP.3S-EVI
'The table is 100% ugly/beautiful.'
- b. Thaki-xa 100% ??jisk'a/j'acha-Ø-wa.
path-TOP 100% small/big-COP.3S-EVI
'The path is 100% small/big.'
- c. Misa-xa 100% q'uma/??qañu-Ø-wa.
table-TOP 100% clean/ dirty-COP.3S-EVI
'The table is 100% clean/dirty.'
- d. Kaja-xa 100% ch'usa/phuqa-Ø-wa.
box-TOP 100% empty/full-COP.3S-EVI
'The box is 100% empty/full.'

To sum up, the discussion in this section suggests that Aymara is a degree language. Specifically, Aymara has gradable predicates in the split of languages according to the Degree Semantics Parameter in (87) (Beck et al. 2009; Bochnak 2015b), i.e., lexical items introduce degree arguments. I presented evidence for this claim examining the comparative construction, in particular, showing that, in addition to allowing crisp judgments and degree modification with elements that are similar to English *more*, there is a differential comparative. I further showed that bases in Aymara are sensitive to scalar properties.

References

- Abusch, Dorit. 1986. *Verbs of Change, Causation, and Time*. Stanford: Center for the Study of Language and Information.
- Beavers, John. 2011. On affectedness. *Natural Language and Linguistic Theory* 29: 335–70.
- Beck, Sigrid, Sveta Krasikova, Daniel Fleischer, Remus Gergel, Christiane Savelsberg Hofstetter, John Vanderelst, and Elisabeth Villalta. 2009. Crosslinguistic variation in comparative constructions. In *Linguistic Variation Yearbook*. Edited by Jeroen van Craenenbroeck and Johan Rooryck. Philadelphia: John Benjamins, vol. 9, pp. 1–66.
- Beck, Sigrid, Toshiko Oda, and Koji Sugisaki. 2004. Parametric variation in the semantics of comparison: Japanese and English. *Journal of East Asian Linguistics* 13: 289–344.
- Beltrama, Andrea, and M. Ryan Bochnak. 2015. Intensification without degrees cross-linguistically. *Natural Language & Linguistic Theory* 33: 843–79.
- Bierwisch, Manfred. 1989. The semantics of gradation. In *Dimensional Adjectives*. Edited by Manfred Bierwisch and Ewald Lang. Berlin: Springer, pp. 71–262.
- Bobaljik, Jonathan David. 2012. *Universals in Comparative Morphology: Suppletion, Superlatives, and the Structure of Words*. Cambridge: Massachusetts Institute of Technology Press.
- Bochnak, M. Ryan. 2012. Managing vagueness, imprecision and loose talk in washo: The case of šemu. *Semantics of Underrepresented Languages of the Americas* 6: 1–14.
- Bochnak, M. Ryan. 2013. Cross-linguistic Variation in the Semantics of Comparatives. Doctoral dissertation, University of Chicago, Chicago, IL, USA.
- Bochnak, M. Ryan. 2015a. Degree achievements in a degree-less language. *Proceedings of Semantics of Underrepresented Languages of the Americas (SULA)* 8: 17–32.
- Bochnak, M. Ryan. 2015b. The Degree Semantics Parameter and cross-linguistic variation. *Semantics and Pragmatics* 8: 1–48.
- Bochnak, M. Ryan, and Lisa Matthewson, eds. 2015. *Methodologies in Semantic Fieldwork*. Oxford: Oxford University Press.
- Burnett, Heather. 2014. A Delineation solution to the puzzles of absolute adjectives. *Linguistics and Philosophy* 37: 1–39.
- Burnett, Heather. 2017. *Gradability in Natural Language: Logical and Grammatical Foundations*. Oxford: Oxford University Press.
- Cerrón-Palomino, Rodolfo. 2008. *Quechumara: Estructuras pParalelas del Quechua y del Aimara*. La Paz: UMSS, PROEIB Andes, Plural Editores.
- Davis, Henry, Carrie Gillon, and Lisa Matthewson. 2014. How to Investigate Linguistic Diversity: Lessons from the Pacific Northwest. *Language* 90: 180–226.
- Deal, Amy Rose & Vera Hohaus. 2019. Vague predicates, crisp judgments. *Sinn und Bedeutung* 23: 347–64.

- Deo, Ashwini, Itamar Francez, and Andrew Koontz-Garboden. 2013. From change to value difference in degree achievements. *Semantics and Linguistic Theory* 23: 97–115.
- Di Sciullo, Anna Maria. 1997. *Projections and Interface Conditions. Essays on Modularity*. New York: Oxford University Press.
- Dowty, David R. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Kluwer.
- Fox, Danny, and Roni Katzir. 2011. On the Characterization of Alternatives. *Natural Language Semantics* 19: 87–107.
- Gajewski, Jon, and Yael Sharvit. 2012. In defense of the grammatical approach to local implicatures. *Natural Language Semantics* 20: 31–57.
- Gazdar, Gerald. 1979. *Pragmatics: Implicature, Presupposition, and Logical Form*. New York: Academic Press.
- Gonzalo Segura, Roger. 2011. *La derivación verbal en el aimara de Pomata*: Pontificia Universidad Católica del Perú master thesis, Lima.
- Hay, Jennifer, Christopher Kennedy, and Beth Levin. 1999. Scalar structure underlies telicity in “Degree achievements”. *Semantics and Linguistic Theory* 9: 127–44.
- Hayashishita, J. -R. 2009. Yori-comparatives: A reply to Beck et al. (2004). *Journal of East Asian Linguistics* 18: 65–100.
- Heim, Irene. 1985. *Notes on Comparatives and Related Matters*. Austin: University of Texas Austin.
- Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Malden: Blackwell.
- Hohaus, Vera, and M. Ryan Bochnak. 2020. The Grammar of Degree: Gradability Across Languages. *Annual Review of Linguistics* 6: 235–59.
- Horn, Lawrence. 1972. On the Semantic Properties of Logical Operators in English. Doctoral dissertation, University of California Los Angeles, Los Angeles, CA, USA.
- Instituto Nacional de Estadística e Informática. 2010. Censos de Población y Vivienda 2007. Available online: <http://ineidw.inei.gob.pe/ineidw/> (accessed on December 10th, 2020).
- Kapitonov, Ivan. 2019. Degrees and scales of Kunbarlang. *The Semantics of African, Asian and Austronesian Languages (Triple A)* 5: 91–105.
- Katzir, Roni. 2007. Structurally-defined alternatives. *Linguistic and Philosophy* 30: 669–90.
- Kearns, Kate. 2007. Telic senses of deadjectival verbs. *Lingua* 117: 26–66.
- Kennedy, Christopher. 1999. *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. New York: Routledge.
- Kennedy, Christopher. 2007a. Modes of comparison. *Chicago Linguistics Society* 43: 141–165.
- Kennedy, Christopher. 2007b. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy* 30: 1–45.
- Kennedy, Christopher. 2012. The composition of incremental change. In *Telicity, Change, State: A Cross-Categorical View of Event Structure*. Edited by Violeta Demonte and Louise McNally. New York: Oxford University Press, pp. 103–21.
- Kennedy, Christopher, and Beth Levin. 2008. Measure of change: The adjectival core of degree achievements. In *Adjectives and Adverbs: Syntax, Semantics and Discourse*. Edited by Louise McNally and Christopher Kennedy. Oxford: Oxford University Press, pp. 156–82.
- Kennedy, Christopher, and Louise McNally. 2005. Scale structure, degree modification, and the semantics of gradable predicates. *Language* 81: 345–81.
- Klein, Ewan. 1991. Comparatives. In *Semantik: Ein Internationales Handbuch der zeitgenössischen Forschung*. Edited by Arnim von Stechow and Dieter Wunderlich. Berlin: Walter de Gruyter. pp. 673–91.
- Klose, Claudius. 2015. Sentence Type and Association with Focus in Aymara. In *Mood, Exhaustivity & Focus Marking in non-European Languages*. Potsdam: Universitätsverlag Potsdam. pp. 63–86.
- Martínez Vera, Gabriel. 2016. Syntactic structure of Spanish parasyntesis: Towards a split little-*v* via affectedness. *Isogloss* 2: 63–94.
- Martínez Vera, Gabriel. 2018. Superlatives across domains: Evidence from degree achievements in Southern Aymara. *Semantics and Linguistic Theory* 28: 1–20.
- Martínez Vera, Gabriel. 2020. Degree achievements and degree morphemes in competition in Southern Aymara. *Linguistics and Philosophy*. doi:10.1007/s10988-020-09299-3.
- Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International Journal of American Linguistics* 70: 369–415.
- Matthewson, Lisa, Lisa Quinn, and Lynsey Talagi. 2015. Inchoativity meets the Perfect Time Span: The Niuean perfect. *Lingua* 168: 1–36.
- Morzycki, Marcin. 2009. Degree modification of gradable nouns: size adjectives and adnominal degree morphemes. *Natural Language Semantics* 17: 175–203.
- Pedersen, Walter A. 2015. A scalar analysis of *again*-ambiguities. *Journal of Semantics* 32: 373–424.
- Piñón, Christopher. 2008. Aspectual composition with degrees. In *Adjectives and Adverbs: Syntax, Semantics, and Discourse*. Edited by Louise McNally and Christopher Kennedy. New York: Oxford University Press, pp. 183–219.
- Piñón, Christopher. 2011. Result states in Hungarian. In *Approaches to Hungarian. Volume 12: Papers from the 2009 Debrecen Conference*. Edited by Tibor Laczkó and Catherine O. Ringen. Amsterdam/Philadelphia: John Benjamins. pp. 109–34.
- Sapir, Edward. 1944. Grading, a study in semantics. *Philosophy of Science* 11: 93–116.
- Sauerland, Uli. 2001. On the Computation of Conversational Implicatures. *Semantic and Linguistic Theory* 11: 388–403.
- Sauerland, Uli. 2004. The interpretation of traces. *Natural Language Semantics* 12: 63–127.
- Sauerland, Uli. 2012. The computation of scalar implicatures: Pragmatic, lexical or grammatical? *Language and Linguistics Compass* 6: 36–49.

- Sawada, Osamu, and Thomas Grano. 2011. Scale structure, coercion, and the interpretation of measure phrases in Japanese. *Natural Language Semantics* 19: 191–226.
- Sharvit, Yael. 2017. A note on (Strawson) entailment. *Semantics and Pragmatics* 10: 1–38.
- Spalek, Alexandra Anna. 2014. Verb Meaning and Combinatory Semantics: A Corpus-Based Study of Spanish Change of State Verbs. Doctoral dissertation, Universitat Pompeu Fabra, Barcelona, Spain.
- Stassen, Leon. 1985. *Comparison and Universal Grammar*. Oxford: Basil Blackwell.
- von Stechow, Arnim. 1984a. Comparing semantic theories of comparison. *Journal of Semantics* 3: 1–77.
- Tenny, Carol L. 1994. *Aspectual Roles and the Syntax-Semantics Interface*. Dordrecht: Springer.
- van Rooij, Robert. 2011. Measurement and interadjective comparisons. *Journal of Semantics* 28: 335–58.
- von Fintel, Kai. 1999. NPI Licensing, Strawson Entailment, and Context Dependency. *Journal of Semantics* 16: 97–148.
- Winter, Yoad. 2006. Closure and telicity across categories. *Semantics and Linguistic Theory* 16: 329–46.