

Factivity from pre-existence: Evidence from Barguzin Buryat

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Abstract This paper examines a factivity alternation in Barguzin Buryat (Mongolic) with the verb *hanaxa*, whose meaning depends on its complement. When *hanaxa* combines with CPs, it behaves like a non-factive verb meaning ‘think’. However, when it takes nominalized clauses as its complement, it exhibits a factive inference and is naturally translated as ‘remember’. I argue that this difference in meaning cannot be explained by positing lexical ambiguity, or by appealing to the nominal status of the complement or its definiteness (Kastner 2015; Hanink & Bochnak 2017a). Instead, I assume the decompositional approach to the semantics of attitude reports (Kratzer 2016; Bogal-Allbritten 2017; Elliott 2017) and argue that the factivity alternation arises because CPs and nominalizations combine in different ways: while CPs modify the verb’s event argument and provide the content of thoughts, nominalizations saturate the internal argument, which for the verb meaning ‘think’ denotes the topic of thoughts — what the thinking is about. I propose that there is a pre-existence presupposition associated with this *about*-argument: an entity that is the topic of thoughts is presupposed to have started existing before the time of the thinking eventuality. I argue that this presupposition is what gives rise to the factive inference with nominalizations and what the ‘remember’ translation is trying to convey, and provide an account of how this presupposition projects in the trivalent system (George 2014; Fox 2013).

Keywords: factivity alternation; pre-existence presupposition, trivalence, nominalized clauses, semantics of attitude verbs, Buryat, Mongolic

1 Introduction

Factivity alternation (Moulton 2009; Abrusán 2011; Özyıldız 2017; Lee 2019) is a phenomenon in which verbs display both factive and non-factive

uses depending on the type of the complement they combine with. This paper discusses a case of such alternation in the Barguzin dialect of Buryat (Mongolic). The data in this paper were gathered in the village Baraghan (Kurumkan district, Republic of Buryatia, Russia) through elicitation sessions with native speakers. Standard procedures for conducting semantics fieldwork (Matthewson 2004; Bochnak & Matthewson 2015; 2020) were followed, with felicity judgments of sentences which follow the verbal presentation of the discourse being the main method. For more details on fieldwork procedures see appendix A.

This language has a verb *hanaxa*, which when combined with indicative CPs, (1a), is naturally translated as ‘think’.¹ The sentence in (1a) does not have a factive inference that there is an event of a cat eating the fish in the actual world. This is illustrated in (1b).

- (1) a. Dugar [_{CP} mi:sgəi zagaha ədj-ə: /ədi-xə gəʒə] han-a:
 Dugar cat.NOM fish eat-PST /eat-POT COMP think-PST
 ‘Dugar **thought** that a cat ate / will eat the fish.’
- b. **Context:**
 The fish was missing; Dugar is wrong about who ate it.
 Dugar [mi:sgəi zagaha əd-jə: gəʒə] han-a: xarin mi:sgəi
 Dugar cat.NOM fish eat-PST COMP think-PST but cat
 zagaha ədj-ə:-güj
 fish eat-PST-NEG
 ‘Dugar **thought** that a cat ate the fish, but a cat didn’t eat the fish.’

In (1b) we observe that it is possible to negate the proposition expressed by the complement without creating a contradiction. This suggests that (1a) does not have a factive inference. All it states is that in worlds compatible with Dugar’s thoughts, there is a past/future event of a cat eating the fish.

When *hanaxa* combines with nominalizations (NMNS), (2a), this verb is naturally translated as ‘remember’. The sentence with the nominalization in (2a) has a factive inference: it entails that a cat ate the fish in the actual world. This is illustrated by the infelicity of (2b) (cf. felicitous (1b) with a CP): negating the proposition expressed by the nominalized complement leads to a contradiction, (2b).

¹ This verb can also describe other mental attitudes — for example, desire (‘want’) — with the help of special verbal forms and / or particles in the embedded CP. I will not discuss such uses of *hanaxa* in this paper, see Bogal-Allbritten (2016; 2017) for discussion of how such attitude meanings are built based on similar data from Navajo. See also (Močnik & Abramovitz 2019) for discussion of another underspecified attitude verb in Koryak.

- (2) a. Dugar [NMN mi:sgəi-n zagaha ədj-ə:ʃ-i:jə-n'] han-a:
 Dugar.NOM cat-GEN fish eat-PART-ACC-3 think-PST
 ‘Dugar **remembered** a cat’s eating the fish.’
- b. **Context:**
 The fish was missing; Dugar is wrong about who ate it.
 #Dugar [mi:sgəi-n zagaha ədj-ə:ʃ-i:jə-n'] han-a: xarin mi:sgəi
 Dugar cat-GEN fish eat-PART-ACC-3 think-PST but cat
 zagaha ədj-ə:güj
 fish eat-PST-NEG
 #‘Dugar **remembered** a cat’s eating the fish, but a cat didn’t
 eat the fish.’

I would like to argue that sentences like in (2) have a **pre-existence presupposition**: they presuppose that an event described by the nominalization has started before the thinking event.² I propose that it is the pre-existence presupposition that gives rise to the factivity inference with nominalizations that we see in (2b): these nominalizations describe events in the world at which *hanaxa* is evaluated, and if these events start before the thinking event, then it means that they must already exist at the time at which *hanaxa* is evaluated. Thus, pre-existence is one of the sources of factivity.³ In this paper I explore the question of how this presupposition arises and why it is observed in sentences with nominalizations, but not with CPs.

The proposal advanced in this paper is different from the approaches that attribute factive inferences to definiteness (Kastner 2015; Hanink & Bochnak 2017a; b), nominal status or referentiality (Kiparsky & Kiparsky 1970; Kallulli 2006; 2010; De Cuba 2007; De Cuba & Urogdi 2010; De Cuba 2017; Haegeman 2014). It is also different from approaches that build the inference into the denotation of the verb (Hintikka 1962; Percus 2006). My proposal shares with approaches developed by Özyıldız (2016; 2017) and Djärv (2019) the idea that the argument structure of attitude verbs has important consequences for the presence of factive inferences. In particular, the idea that attitude verbs can have *res* arguments that describe the topic of the attitude (Özyıldız 2017) will be crucial for my account of the factivity alternation with *hanaxa*.

² In section 2 I show that the temporal inference is indeed only about the starting point: the right boundary of the event described by the nominalization could be after the right boundary of the thinking event.

³ Factive inferences, of course, could also have other sources. E.g., verbs like ‘know’ do not seem to place temporal restrictions on their arguments but still exhibit factive inferences.

In section 2 I argue that the inference that we get in sentences where *hanaxa* takes a direct object is more than just a factive inference: it also has a temporal component. I show that this pre-existence inference is indeed a presupposition and argue that it cannot come from the nominalized complement itself. In section 3 I present my proposal. I argue that when *hanaxa* combines with the functional head θ_{Th} , θ_{Th} introduces an internal argument and establishes ABOUT theta-relation between it and the *hanaxa*'s event argument. In other words, the internal argument is interpreted as specifying the topic of thoughts and functions somewhat like the *res* argument or *about*-argument discussed in the literature (Heim 1994; Moulton 2009; Deal 2018; Rawlins 2013; Özyıldız 2017).⁴ I propose that in addition to establishing ABOUT theta-relation, θ_{Th} also introduces the pre-existence presupposition associated with this internal argument: the left boundary of an individual denoted by the internal argument is presupposed to be before the time at which *hanaxa* is evaluated. In section 3.1 I show how this proposal derives the fact that sentences in which *hanaxa* combines with a CP (1a) do not have a factive inference. Section 3.2 is devoted to deriving the meanings of sentences with nominalizations like the one in (2a). It also addresses the question of how the pre-existence presupposition projects. Section 4 explores two empirical predictions made by my proposal, and discusses a potential extension of my proposal to attitude reports constructed from non-attitude verbs. Section 5 concludes the paper.

2 The presupposition of *hanaxa*

In (1b)-(2b) we have seen that denying the truth of the complement leads to a contradiction when *hanaxa* combines with a nominalization, but not when it combines with a finite CP. Here is another example illustrating the factive component of the presupposition:

- (3) **Context:** The speaker is ignorant about the issue, but wants to report Sajana's opinion/memory.
 # Bi Badma tərgə əmdəl-ə: gü gəžə mədə-nə-güi-b,
 1SG.NOM Badma.NOM cart break-PST Q COMP know-PRS-NEG-1SG

⁴ In the context of this paper, I will use the terms 'the internal argument', 'the Theme argument', 'the *about*-argument', and 'the *res*-argument' interchangeably when referring to the argument of *hanaxa*.

(xarin) Sajana [Badm-i:n tərgə əmdl-ə:ʃ-i:jə] han-a:
 (but) Sajana.NOM Badma-GEN cart break-PART-ACC think-PST
 # ‘I don’t know whether Badma broke the cart, (but) Sajana **re-**
membered that Badma broke the cart.’

- (4) **Context:** The speaker is ignorant about the issue, but wants to report Sajana’s opinion/memory.

Bi Badma tərgə əmdl-ə: gü gəžə mədə-nə-güi-b,
 1SG.NOM Badma.NOM cart break-PST Q COMP know-PRS-NEG-1SG
 (xarin) Sajana [Badma tərgə əmdl-ə: gəžə] han-a:
 (but) Sajana.NOM Badma.NOM cart break-PST COMP think-PST
 ‘I don’t know whether Badma broke the cart, (but) Sajana **thought**
 that Badma broke the cart.’

In (3)-(4) the speaker explicitly says that they are ignorant about the truth of the complement, which makes the NMN complement infelicitous, in contrast to the CP. Thus, we see that the speaker must believe the complement of *hanaxa* to be true when this verb combines with a nominalization. In this section I investigate the entailments that we get in sentences with *hanaxa* taking nominal complements in more detail.

2.1 The temporal component of the presupposition

Consider (5). If the speaker says (5a), they can follow it up by (5b), but not by (5c). In other words, Sajana remembering on Tuesday Badma’s breaking the cart is compatible with Badma starting the breaking on Monday, but not on Wednesday (given that we are talking about the same week).⁵

- (5) a. Garag-ai xojor-to Sajana [Badm-i:n tərgə əmdl-ə:ʃ-i:jə-n’]
 day-GEN two-DAT Sajana.NOM Badma-GEN cart break-PART-ACC-3
 han-a:
 think-PST
 ‘On Tuesday Sajana remembered Badma’s breaking the cart.’

⁵ In Buryat the names of the days of the week are based on numerals, and in the literary Buryat Sunday is viewed as the first day: *garag-ai nəgən* (day-GEN one), ‘Sunday’ (Cheremisov 1973: 147). In the village where we have gathered our data, however, Monday is considered to be the first day of the week, and thus *garag-ai nəgən* (day-GEN one) means ‘Monday’, *garag-ai xojor* (day-GEN two) — ‘Tuesday’, and *garag-ai gurban* (day-GEN three) — Wednesday.

- b. ... Badma tərgə garag-ai nəgən-də əmdələ-ʒə əxil-ə:
 Badma.NOM cart day-GEN one-DAT break-CVB begin-PST
 ‘Badma began to break the cart on Monday.’
- c. ... #Badma tərgə garag-ai gurban-da əmdələ-ʒə əxil-ə:
 Badma.NOM cart day-GEN three-DAT break-CVB begin-PST
 ‘Badma began to break the cart on Wednesday.’

The difference between (5b) and (5c) is that the former specifies the beginning time of the breaking event which is before the time of Sajana’s thinking in (5a), while the latter specifies the beginning time of the breaking event which is after the (5a)’s matrix time. Thus, this example suggests that the nominalization in (5a) describes an event that started prior to Sajana’s mental state described by *hanaxa*.

I would like to argue that the temporal inference that we see in (5) is not about temporal precedence, but about *pre-existence*: an entity or event described by the nominal complement of *hanaxa* must have started existing in the world at which *hanaxa* is evaluated (henceforth matrix world) before the time at which *hanaxa* is evaluated (henceforth matrix time). Pre-existence implies the following two things: (i) the left boundary of the entity or event described by the nominal is before the matrix time; (ii) the right boundary of the individual or event described by the nominal is not set and could in principle be after the matrix time. I will show that these two things hold of the temporal inference that we observe.

That the left boundary of the time interval corresponding to *hanaxa*’s complement is before the matrix time can be illustrated with sentences in which *hanaxa* combines with non-derived noun phrases that denote entities.⁶ I assume that a time interval corresponding to an entity is its life span, the left boundary of which corresponds to the start of its existence, while the right boundary corresponds to the end of its existence. In (6) we see *hanaxa* taking ‘her future child’ as its Theme argument:

- (6) Səsəg gar-ga-x-a: bai-ga:n üxibü-jə: hana-na
 Seseg go.out.-CAUS-POT-REFL be-PFCT child-ACC.REFL think-PRS
 ‘Seseg remembers her future child.’
 (lit. ‘her child that will be caused to go out of her’)
- a. ✓ **Context A:** Seseg is pregnant with a baby, she has seen her/him during an ultrasound.

⁶ I am grateful to two anonymous reviewers for bringing up the question of how *hanaxa* interacts with not-yet-existing and fictional individuals.

- b. # **Context B:** Seseg is not pregnant. But she really wants a baby and is planning to have one.

This sentence is felicitous in a context where Seseg is already pregnant and has a fetus inside of her, but not when she only has a plan to have one, suggesting that *hanaxa*'s Theme has to start existing before the time of the attitude. This is not a property of this noun phrase, but a requirement placed by *hanaxa* on its Theme argument: cf. (7), which differs only in that the object is complement to a postposition *tuxai* 'about' instead of being the complement of the verb.

- (7) Səsəg gar-ga-x-a: bai-ga:n üxibü-n tuxai-ga: hana-na
Seseg go.out.-CAUS-POT-REFL be-PFCT child-NOM about-REFL think-PRS
'Sajana thinks about her future child.'
(lit. 'her child that will be caused to go out of her')
- a. ✓ Context A: Seseg is pregnant with a baby, she has seen her/him during an ultrasound.
- b. ✓ Context B: Seseg is not pregnant. But she really wants a baby and is planning to have one.

As we see, (7) is felicitous independent of whether Seseg is already pregnant. This indicates that being the topic/object of thoughts is not a sufficient requirement to exhibit the pre-existence inference; being the internal argument of the verb is a necessary condition.

Another piece of evidence for the left boundary of the time interval corresponding to *hanaxa*'s internal argument being before the matrix time comes from sentences where *hanaxa* combines with fictional characters that are clearly taken to not be existing at the time of the attitude. Consider (8):

- (8) **Context:** Children at school are asked to imagine a magical animal that does not exist and draw it.
- a. # Badma naiman tarxi-tai mi:sgəj-(ə) hana-na
Badma eight head-COM cat-(ACC) think-PRS
'Badma is remembering an eight-headed cat.'
- b. ? Badma naiman tarxi-tai mi:sgəj tuxai hana-na
Badma eight head-COM cat about think-PRS
'Badma is thinking about an eight-headed cat.'
- c. Badm-ain tarxi so: naiman tarxi-tai mi:sgəj or-o:
Badma-GEN head in eight head-COM cat come-PST
'Badma is thinking of an eight-headed cat.'
(lit. 'An eight-headed cat came into Badma's head.')

In (8) the context is set up in such a way that the object which Badma's thought are about has to not exist before his thoughts. This leads to an infelicitous sentence when such a fictional individual is the internal argument of *hanaxa*. In order to convey the desired meaning, either a PP with *tuxai* 'about' can be used (less preferred option), (8b), or a different construction, (8c), where the mental attitude is expressed without a designated attitude verb (preferred option).

In cases where *hanaxa* combines with a nominalization, showing that it is the requirement placed on the *hanaxa*'s Theme argument that is responsible for the left boundary of a NMN-event being before the matrix time (5) is a more complicated issue, because the question of how this requirement interacts with the temporal/aspectual properties of nominalizations arises (see sections 3.2.1 and 4.2 for discussion). Nevertheless, I take evidence from *hanaxa* combining with non-derived nouns to be suggestive of the requirement that the left boundary of the time interval corresponding to the object of *hanaxa* has to be before the matrix time.

Now let us consider how the right boundary of an entity or event denoted by *hanaxa*'s object can be placed with respect to the matrix time. There are two empirical facts suggesting that the temporal ordering should be formulated in terms of the left boundary only. First, when *hanaxa* combines with entities, e.g., with proper names, (9), the sentence does not presuppose that the individual denoted by the entity has stopped existing: Badma does not need to be dead in order for (9) to be true.

- (9) **Context:** Badma is currently alive.
 Sajana Badm-i:jə han-a:
 Sajana.NOM Badma-ACC think-PST
 'Sajana remembered Badma.'

Provided that when the time function takes an entity, it returns its life span — the time interval corresponding to the entity's existence, (9) suggests that the temporal component does not require the right boundary of the Theme argument to precede the time of the thinking event.

Second, the placement of the right boundary of an event described by the nominalization seems to depend on the aspectual properties of the participle/form that the nominalization is based on.⁷ It is possible to find nom-

⁷ I assume that nominalization-forming participles introduce additional restrictions on the aspectual/temporal interpretation of events denoted by the nominalization (see section 3.2.1 for discussion), which are not present when *hanaxa* combines with individuals like 'Badma', (9), where the pre-existence presupposition is the only temporal relation established (see 3.2.3 for more details on how the composition proceeds in each case).

inalized forms such that the left boundary of a NMN-event is before the matrix time, but the right boundary can be after the matrix time. One such case is presented in (10), where an analytical verbal form consisting of the verb ‘be’ and a converb is nominalized.^{8,9}

- (10) a. **Context:** Ojuna was at a concert and left after Sajana started singing. Sajana is still singing now, and Ojuna is recalling her (ongoing) singing.
 b. Ojuna [Sajan-i:n du: du:la-za bai-x-i:jə] hana-na
 Ojuna Sajana-GEN song sing-CVB be-POT-ACC think-PRS
 ‘Ojuna is remembering that Sajana is singing a song.’

If the pre-existence inference required the right boundary of the nominalization to be before the matrix time, we would have expected interpretations like in (10) to not be possible.

Thus, I conclude that in sentences where *hanaxa* combines with a nominal phrase (noun or nominalization), there is a pre-existence inference, which places a requirement on the left boundary, but not the right boundary of *hanaxa*’s object:

- (11) **The pre-existence inference:**
 (i) The Theme of the event described by *hanaxa* exists in the world at which *hanaxa* is evaluated (matrix world);
 (ii) The left boundary of the time interval that the time function τ returns when applied to the Theme of the event described by *hanaxa* is before the time at which *hanaxa* is evaluated (matrix time).

I would like to propose that the factivity inference that we have seen in (2b) and (3) is a consequence of (11): if the left boundary of an entity/event in the matrix world that one is thinking about is before the thinking, that entity/event has to exist at the time of thinking. I suggest that it is this inference that the translation ‘remember’ is trying to convey.

What could be alternatives to my hypothesis in (11)? One alternative, brought to my attention by an anonymous reviewer, is that *hanaxa* requires

⁸ When used as a finite form, the combination of ‘be’ and a converb usually results in progressive and habitual meanings.

⁹ I would like to note that the interpretation we see in (10) is not the only available interpretation. It is also compatible with a context where Sajana was singing and stopped singing before the time of thinking. This suggests that the future marker that we see on the auxiliary is not interpreted as future. Further investigation of aspectual and temporal properties of this nominalized form is necessary.

that its object has been previously mentioned. This alternative cannot be true for *hanaxa*, because being previously mentioned seems to be neither necessary nor sufficient condition for using a nominal as *hanaxa*'s object. In (12) we see that Badma's breaking a cart has not been previously mentioned in the discourse. Nevertheless, Dugar's utterance, which has the nominalization *Badma's breaking the cart* as the complement of *hanaxa*, is felicitous in this context.

- (12) **Context:** Dugar enters the room, sees Seseg, greets her and sits besides her to have a cup of tea.

Seseg: Ju: honin? Ju: xə-x-ə: bai-na-ʃ?

what news what do-POT-REFL be-PRS-2SG

'How are you? What are you planning to do?'

Dugar: Badm-i:n tərgə əmdəl-ə:ʃ-i:jə-n' han-a:-b. Tərgə

Badma-GEN cart break-PART-ACC-3 think-PST-1SG cart

zaha-lsa-x-u: ali ügi:g hur-a:d jərə-xə-m

fix-SOC-POT-Q DISJ no ask-CVB2 go-POT-1SG

'I remembered that Badma broke a cart. I plan to go ask whether he needs any help to fix it.'

In (13) below Earth being flat is previously mentioned in the discourse. However, this is not sufficient for the nominalization *Earth's being flat* to be a felicitous object of *hanaxa*. Given that Earth's being flat was mentioned as a false belief, *Earth's being flat* cannot be *hanaxa*'s Theme argument.

- (13) A: Urdanai grəg-u:d gazar xabtagar gəžə buru: hana-dag bai-ga:
former Greek-PL Earth flat COMP wrong think-HAB be-PST
'Ancient Greeks mistakenly thought that the Earth is flat.'

B: Gansa greg-u:d bəʃə! # Dugar gazar-ai xabtagar bai-ga:ʃ-i:jə
only Greek-PL not Dugar Earth-GEN flat be-PART-ACC

hana-dag

think-HAB

Intended: 'Not only Greek people (had this opinion)! Dugar thinks that the Earth is flat.'

Comment: 'The reply of the second person contradicts what the first one says.'

Another alternative one could imagine is that the pre-existence inference is not about pre-existence of an entity or event in the matrix world, but about the pre-existence of that entity or event in the mental state of the attitude holder. I think this hypothesis is not correct for *hanaxa* either. Consider

the example in (14), where the verb *hanaxa* takes a nominalization as its complement, and is modified by an adverb *türü:ʃənxijə*: ‘for the first time’.¹⁰

- (14) Üsəgəldər Səlməg Badm-i:n hain xüdəl-dəg-i:jə türü:ʃənxijə:
 yesterday Seseg Badma-GEN well work-HAB-ACC for.the.first.time
 han-a:
 think-PST
 ‘Yesterday Seseg thought for the first time of Badma working well.’
 ✓ **Context A:** We have all known for a long time that Badma works
 very well. Seseg, however, didn’t have any thoughts on whether
 Badma worked well until yesterday.
Comment: ‘*Ojlgoxo* ‘understand, sense’ is better fit for this context,
 but *hanaxa* is acceptable too.’
 # **Context B:** We don’t know if Badma works well. Seseg didn’t
 have any thoughts on whether Badma worked well until yesterday.
Comment: ‘*Ojlgoxo* ‘understand, sense’ must be used in this case,
hanaxa is not acceptable.’

If location of the Theme’s existence was the mental state of the attitude holder, then we would have expected modification of the verb by *türü:ʃənxijə*: ‘for the first time’ to be impossible in the context where the attitude holder had no thoughts about an entity/event denoted by the complement before. We would expect this adverb to contradict the requirement that there was a previous mental state of Seseg in which *Badma’s working well* existed. The fact that such modification is possible suggests that the pre-existence inference is not about the mental state of the attitude holder or their memory, but about existence in the world at which *hanaxa* is evaluated (actual world in (14)). This conclusion is supported by the fact that (14) is acceptable in a context where it is common knowledge that it is true in the actual world that Badma works well, but is infelicitous in a context where the discourse participants are ignorant about Badma’s working skills in the actual world.¹¹

¹⁰ I am grateful to Kai von Fintel for raising the question of whether *hanaxa* can mean ‘realize’.

¹¹ I hypothesize that the preference for using *oilgoxo* ‘understand, sense’ in the context A is due to *Maximize Presupposition*: *oilgoxo* seems to presuppose that the attitude holder was unaware of the individual denoted by its internal argument before, and whenever this presupposition is met, using *oilgoxo* is called for.

2.2 The presuppositional nature of the inference

The pre-existence inference behaves like a presupposition: it introduces backgrounded information which is common knowledge to the participants of the conversation, and it projects in questions and survives under negation, as illustrated in (15) and (16), respectively. I take this evidence to suggest that the inference at hand is a presupposition.

- (15) **Context:** The speaker is ignorant about whether Badma broke the cart or not, and is wondering whether Sajana might have thoughts on the matter.

Bi Badma tərgə əmdəl-ə: gü gəžə mədə-nə-güi-b,
 1SG.NOM Badma.NOM cart break-PST Q COMP know-PRS-NEG-1SG
 Sajana [Badm-i:n tərgə əmdəl-ə:ʃ-i:jə] hana-na gü?
 Sajana.NOM Badma-GEN cart break-PART-ACC think-PRS Q
 Intended: ‘I don’t know whether Badma broke the cart or not. Does Sajana think/remember that Badma broke the cart?’

- (16) **Context:** The speaker wants to convey that Sajana’s thoughts are consistent with reality.

[Badm-i:n tərgə əmdəl-ə:ʃ-i:jə] Sajana han-a:-güi,
 Badma-GEN cart break-PART-ACC Sajana.NOM think-PST-NEG
 Badma tərgə əmdəl-ə:-güi
 Badma.NOM cart break-PST-NEG
 Intended: ‘Sajana didn’t think/remember that Badma broke the cart, (and) Badma didn’t break the cart.’

The projection of the pre-existence presupposition is summarized in (17).

- (17) **Projected inference:**
 There is a NMN-event in the world at which *hanaxa* is evaluated that started before the time at which *hanaxa* is evaluated.

The inference that projects in (15)-(16) is that there is an event of Badma breaking the cart in the actual world that started before the matrix time. If this inference is part of the common ground, then the speaker cannot be ignorant about it (15) or directly contradict it (16).

I would like (17) to follow from the analysis of the factivity alternation: i.e., I take it as a desideratum that the way the pre-existence presupposition is encoded should ensure that the empirical generalization (17) is derived.

2.3 *The presupposition does not come from the complement*

We have seen that factivity is one of the components of the presupposition under consideration. Where is this component coming from — what part of the sentence contributes this inference? There are several hypotheses about the origin of factive presuppositions (see discussion in Özyıldız 2016); one prominent hypothesis is that factive presuppositions are contributed in one way or another by the complement of the verb (Kiparsky & Kiparsky 1970; Kallulli 2006; 2010; De Cuba 2007; De Cuba & Urogdi 2010; De Cuba 2017; Haegeman 2014; Kratzer 2006; Kastner 2015; Hanink & Bochnak 2017a). This hypothesis is attractive in light of cross-linguistic data, which suggests that there are correlations found between the syntactic category of the complement of attitude verbs and their factivity (Moulton 2009; Abrusán 2011; Özyıldız 2017). I will argue that, while attractive, this line of explanation cannot give a satisfying account of the factivity alternation in Buryat.

First, note that the factive inference does not always arise when otherwise non-factive verbs combine with nominalizations. For example, when verbs *ətigəxə* ‘believe’ and *naidaxa* ‘hope’ take NMNS as their complements, no factive inference arises, hence the felicity of (18)-(19).¹²

- (18) Sajana [Badm-i:n tərgə əmdəl-ə:]-tə-n’] ətig-ə:, xarin Badma
 Sajana Badma-GEN cart break-PART-DAT-3 believe-PST but Badma
 tərgə əmdəl-ə:-güi
 cart break-PST-NEG
 ‘Sajana believes that Badma broke the cart (lit. ‘in Badma’s breaking the cart’), but Badma didn’t break the cart’.

¹² Buryat is not unique in allowing non-factive verbs to take nominalized clauses without giving rise to factive inferences. For example, the same happens in Turkish (Özyıldız 2017). An anonymous reviewer points out that in English there are also cases where sentences with nominalizations do not have factive inferences, e.g., (i).

- (i) I imagined her going to a restaurant with them.
 ⇒ She went to a restaurant with them.

This suggests that treating nominalizations as factive across the board cannot be the correct solution to factivity alternations.

- (19) Sajana [Səsəg-əi xada də:rə gar-a:[a-da] naida-na, xarin
 Sajana Seseg-GEN mountain up go.to-PART-DAT hope-PRS but
 Səsəg xada də:rə gar-a:-güi
 Seseg mountain up go.to-PST-NEG
 ‘Sajana hopes that Seseg went up the mountain (lit. ‘in Seseg’s
 going up the mountain’), but Seseg didn’t go up the mountain’.

This suggests that the nominal status of the argument does not suffice for the factive inference to come about. Note that the nominalizations in (18)-(19) are the same as the ones we have seen with *hanaxa*, except for one feature: they are assigned a different case. While *hanaxa* ‘think’ assigns accusative case to nominalizations, (2a), the verbs *ətigəxə* ‘believe’ and *naidaxa* ‘hope’ assign a lexical case — dative. It seems then that the argument structure of the attitude verb, which is reflected in case assignment, might play a role in whether the factive inference is observed. Similar observations have been made by Djärv (2019), who shows that verbs like *believe* and *know* have different argument structures (with different options for case assignment in German): *believe*, but not *know*, selects for individuals that describe source or vessel of the propositional content; *know* on the other hand combines with individuals without any relation to propositional content. We can hypothesize that a distinction along similar lines is present in Barguzin Buryat, although a more thorough investigation of this issue is necessary.¹³

Second, the nominalization under consideration can have indefinite uses, so the factive inference cannot be blamed on the definiteness of the complement (see Kastner 2015; Hanink & Bochnak 2017a for proposals of how definiteness can lead to factivity). Buryat does not have articles, but it can be still shown that the NMN can have indefinite uses.¹⁴ Consider the English examples in (20)-(21):

- (20) **Context:** There were several performers at the concert, one of them was Susi. She sang several songs about New York and a few songs about Paris. A month later, my friends and I discussed our impressions from that concert.

¹³ One could hypothesize that dative case on nominalizations in (18)-(19) has in fact the syntactic structure of a postposition combining with the NMN. If this is so, one could argue that the factivity inference emerges when attitude verbs take NMN complements directly, without the postposition being a mediator. While I have no evidence in favor of treating dative case as a postposition, note that such a view is consistent with my proposal, since it implies that it is not the meaning of the nominalization itself which contributes factivity, but rather its status as the internal argument of the verb which does so.

¹⁴ I am grateful to Deniz Özyıldız for suggesting this diagnostic to me.

- a. I remembered a song about New York, Anton remembered a song about New York, Nadya remembered a song about New York. We recalled different songs, however.
 - b. #I remembered the song about New York, Anton remembered the song about New York, Nadya remembered the song about New York. We recalled different songs, however.
- (21) **Context:** There were several performers at the concert, one of them was Susi. She sang only one song about New York and a few songs about Paris. A month later, my friends and I discussed our impressions from that concert.
- a. ?I remembered a song about New York, Anton remembered a song about New York, Nadya remembered a song about New York. The song was “Autumn in New York.”
 - b. I remembered the song about New York, Anton remembered the song about New York, Nadya remembered the song about New York. The song was “Autumn in New York.”

In (20) the context is set up in such a way that using a definite article is infelicitous due to the uniqueness presupposition that English *the* carries. When indefinite noun phrases are used in the same context, there is no uniqueness presupposition, and the sentence is felicitous, (20a). In (21) we see a context that supports the use of the definite article and makes the use of indefinite one slightly degraded, probably due to a principle like Maximize Presupposition.

In (22) the same diagnostic is applied to the Buryat nominalization.

- (22) Darima Sajana-i:n Burjati tuxai du: du:l-a:ʃ-i:jə han-a:,
 Darima Sajana-GEN Buryatia about song sing-PART-ACC think-PST
 Səsəg Sajana-i:n Burjati tuxai du: du:l-a:ʃ-i:jə han-a:,
 Seseg Sajana-GEN Buryatia about song sing-PART-ACC think-PST
 Narana baha Sajana-i:n Burjati tuxai du: du:l-a:ʃ-i:jə han-a:
 Narana also Sajana-GEN Buryatia about song sing-PART-ACC think-PST
 ‘Darima remembered Sajana’s singing a song about Buryatia, Seseg remembered Sajana’s singing a song about Buryatia, and Narana also remembered Sajana’s singing a song about Buryatia.’
- a. ✓ **Context A: They remembered different singings.**
 There were several performers at the concert, one of them was Sajana. She sang several songs about Buryatia and a few Russian folk songs. After a while I asked three women who were at the concert their impressions.

b. ✓ **Context B: They remembered the same singing.**

There were several performers at the concert, one of them was Sajana. She sang only one song about Buryatia and a few Russian folk songs. After a while I asked three women who were at the concert their impressions.

As we see, nominalizations in a similar context are compatible with both of the presented interpretations. The fact that three women could have each remembered different singing of a song about Buryatia by Sajana suggests that the NMN under consideration does not have to be definite. It is probably ambiguous between the definite and the indefinite readings. The presence of the factive inference observed with NMNs as complements of *hanaxa* does not seem to depend on the context, which suggests that it is present irrespective of definite/indefinite interpretation of the NMN. Thus, an account of the factivity alternation in Buryat has to be able to derive the factive inference even for indefinite uses of nominalizations.

To sum up, we have seen that the factive component cannot be attributed to the meaning of the nominalization: the fact that it is nominalized is not sufficient for the factive inference (NMN's θ -role seems to play a role), definiteness is not necessary for the factive inference (NMNs can have indefinite readings). Therefore, while in (1a)-(2a) we saw that the type of the complement (CP versus NP) correlates with the presence of the presupposition, I would like to argue that this correlation is a result of the fact that CPs and NPs combine with attitude verbs in different ways. The meaning of the nominalization itself does not supply the presupposition.

3 The proposal

I would like to propose that factivity alternations like the one we see in Buryat can arise due to attitude verbs having pre-existence presuppositions associated with their Theme arguments. The main intuition behind this proposal is the following. We know that verbs place restrictions on interpretations of their arguments. One such restriction is that some verbs require their Theme arguments to exist before the verb's time of evaluation. This is the case with verbs of destruction, (23a), and verbs of use, (23b), but, for example, not with verbs of creation, (23c).¹⁵

¹⁵ There is a reason to think that these inferences are not just a consequence of our world knowledge about breaking, reading, and writing: Diesing (1992: 109-126) argues that

- (23) a. Sue broke a vase. \Rightarrow There existed a vase before the time of the breaking event.
 b. Mary read a book \Rightarrow There existed a book before the time of the reading event.
 c. Alice wrote a poem. \Rightarrow There existed a poem before the time of the writing event.

What I would like to suggest is that attitude verbs can also place similar requirements on their arguments, and that these requirements can in certain cases lead to factive inferences.¹⁶

If this intuition is correct, then analyzing the factivity alternation amounts to (i) making some assumptions about the semantics of attitude verbs and (ii) analyzing the argument structure of *hanaxa*. Following the compositional approach to semantics of attitude verbs (Kratzer 2006; 2016; Moulton 2015; Bogal-Allbritten 2016; 2017; Elliott 2017), I will assume that the complementizer of the embedded clause plays the main role in building the meaning of an attitude report by connecting the matrix verb eventuality to the embedded proposition via the Content relation.

As for the argument structure of *hanaxa*, here is my proposal. *Hanaxa* combines with a theta head θ_{Th} , which introduces its internal (Theme) argument. This argument denotes the individual which is the topic of the attitude, which the attitude is “about” — also known as the *res*-argument (Heim 1994; Moulton 2009; Deal 2018; Rawlins 2013; Özyıldız 2017). There is a **pre-existence presupposition** associated with this Theme argument: it is presupposed to have started existing before the time *t* at which the eventuality described by *hanaxa* occurs. Nominalizations (and other nouns) and CPs combine with the attitude verb through different paths: nominalizations saturate the Theme argument, and CPs are modifiers that serve to specify the content of the event described by the verb. The fact

such inferences correlate with certain syntactic properties of these verbs, which would be unexpected if they were not grammatically encoded.

¹⁶ While it would be satisfying if the pre-existence presupposition of *hanaxa* and the inferences in (23a)-(23b) were unifiable as a single phenomenon, I have some doubts about whether this is feasible, because the two inferences seem to differ in their projective behavior. While, as we have seen in section 2.2, the presupposition of *hanaxa* projects out of questions and negative sentences, inferences in (23a) and (23b) do not seem to:

- (i) a. Sue didn't break a vase (because there were none). \Rightarrow There existed a vase before the verb's evaluation time.
 b. Mary didn't read a book (because there were none). \Rightarrow There existed a book before the verb's evaluation time.

that NPs and CPs combine through two different paths explains the contrast in (1a)-(2): NPs, which combine as the Theme argument, are subject to the pre-existence presupposition associated with it; CPs, which combine via the event argument, are not subject to the same presupposition.

My proposal that nominal arguments and CPs combine via different routes makes a prediction about their distribution: given that CPs and NMNS don't compete for the same position, it should be in principle possible for the verb to combine with both arguments at the same time. This prediction is borne out: consider (24) with NMN and CP co-occurring with *hanaxa*.

- (24) **Context:** Last night Badma returned from Kurumkan and made a lot of noise in the middle of the night. Sajana heard the noise and was convinced that a burglar entered the house. She later recalled this event when I spoke with her.

Sajana [_{NMN} Badm-i:n Xurumxa:n-ha: jər-ə:d bai-ga:ʃ-i:jə-n']
 Sajana Badma-GEN Kurumkan-ABL come-CVB2 be-PART-ACC-3
 [_{CP} gər-tə xulgaiʃan or-o: gəʒə] han-a:
 house-DAT burglar go.in-PST COMP think-PST
 'Sajana recalled the/an event of Badma returning from Kurumkan, (thinking) that a burglar entered the house.'

In (24) the NMN describes an event (Badma returning from Kurumkan) which is the topic of Sajana's thoughts. The finite clause describes the thoughts of the attitude holder about that topic. There is an inference that this event has occurred, and it happened before the time of Sajana's thinking.

Examples like (24) are also important in another respect: they allow us to refute the hypothesis that *hanaxa* is simply ambiguous between a factive nominal-selecting *hanaxa*₁ 'remember' and a non-factive CP-selecting *hanaxa*₂ 'think'. The ambiguity hypothesis would not be able to account for sentences like (24), because the verb *hanaxa* that we see in (24) could neither be *hanaxa*₁ 'remember' nor be *hanaxa*₂ 'think'.

There are many ways to implement the proposal sketched out above, and I will comment on the choice points while presenting my implementation. The first choice point comes about when we consider the question of how the Theme argument of *hanaxa* is introduced into the sentence: is it an inherent argument of the verb, or is it introduced by a functional projection? Although either option would in principle work, in my implementation I will assume the second option. I will take logical representations to be strictly neo-Davidsonian in nature (Castañeda 1967; Parsons 1990) and will assume

that this is reflected in syntactic representations: all arguments, including internal arguments of verbs, are introduced by separate functional heads.¹⁷

$$(25) \quad \llbracket \textit{hanaxa} \rrbracket^{w,t,g} = \lambda e_e. \textit{think}_{w,t}(e)$$

As we see from (25), the attitude verb denotes a function that takes an event e as its argument, and returns true iff e is a thinking event in world w at time t (abbreviated as $\textit{think}_{w,t}(e)$). *Hanaxa* is an attitude verb, and so its event argument has some content associated with it.

3.1 *Hanaxa* + CP

3.1.1 The meaning of the CP

According to the decompositional approach to attitude verbs, finite complement clauses denote functions that characterize sets of contentful events or entities. The details of proposals in this framework vary; here I will adopt the proposal in (Elliott 2017) for concreteness. Elliott (2017) argues that CPs denote predicates of events whose content is the proposition denoted by the embedded clause. Thus, the meaning for the CP in (26) is as presented in (27).¹⁸ Following Kratzer (2006; 2016) I will assume that the Content relation is supplied by the complementizer, (28).

¹⁷ I adopt neo-Davidsonian representations in my analysis to avoid postulating pre-existence presuppositions in sentences with CPs. If the Theme argument was a true argument of the verb, then the pre-existence presupposition would always be part of the denotation of the verb. In sentences with CPs, in which the internal argument would be existentially closed, the presupposition would be very weak: ‘Something which the attitude is about pre-exists a thinking event with Content p .’ While it would not lead to factivity, since the *about*-argument in this case need not be related to the embedded proposition, I still find it undesirable to postulate presuppositions that we have no empirical evidence for.

¹⁸ Note that under Elliott’s proposal the result of *Cont* applying to an event stands in the equality relation to the embedded proposition (see Elliott (2017) for arguments in favor of this view). This is different from treating *Cont*(e) as a subset of the embedded proposition (Kratzer 2006; 2016). While I will adopt Elliott’s meaning for CPs, nothing in my analysis hinges on the choice between equality versus subset relation semantics for attitudes. The meaning for the CP in (26) in the system with the subset relation is in (i).

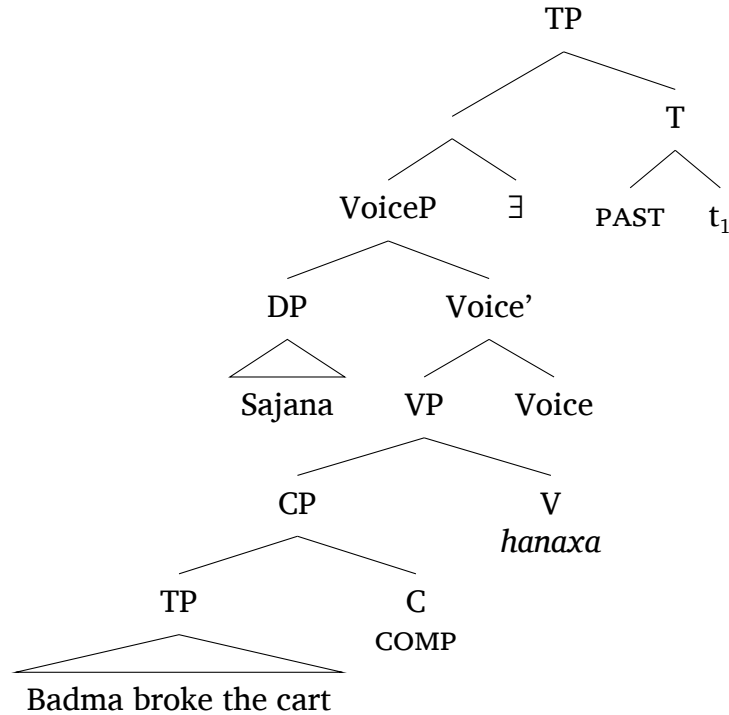
(i) $\llbracket \textit{that Badma broke the cart} \rrbracket^{w,t,g}$
 $= \lambda e_e. \forall w' [w' \in \textit{Cont}(e) \rightarrow \textit{Badma breaks the cart in } w']$

- (26) Sajana [Badma tərgə əmdl-ə: gəžə] han-a:
Sajana.NOM Badma.NOM cart break-PST COMP think-PST
'Sajana thought that Badma broke the cart.'
- (27) \llbracket that Badma broke the cart $\rrbracket^{w,t,g}$
= $\lambda e_e. \text{Cont}(e) = \lambda w'. \lambda t'. \text{Badma broke the cart in } w' \text{ at some time } t'$ that precedes t' .¹⁹
- (28) \llbracket COMP $\rrbracket^{w,t,g} = \lambda p_{sit}. \lambda e_e. \text{Cont}(e) = p$.

3.1.2 Combining CP with *hanaxa*

The LF for the sentence in (26) is in (29).

(29) **The LF of *hanaxa* + CP**



The CP combines with *hanaxa* as a modifier of its eventuality argument by Predicate Modification, as shown in (30).²⁰

¹⁹ A question that might arise is whether the same event could have different Content in different worlds and at different times. I am neutral on this issue, but will assume for convenience that Content of events cannot vary with worlds and times.

²⁰ Other semantic principles, such as Event Identification (Kratzer 1996) or Restrict (Chung & Ladusaw 2003), could also be used for this step.

- (30) $\llbracket \textit{hanaxa that Badma broke the cart} \rrbracket^{w,t,g} =$
 $\lambda e_e. \text{think}_{w,t}(e) \wedge \text{Cont}(e) = \lambda w'. \lambda t'. \text{Badma broke the cart in } w' \text{ at}$
 $\text{some time } t'' \text{ that precedes } t'.$

Then Voice introduces the external argument, the resulting one place predicate of events gets existentially closed, and this proposition is combined by Intensional Functional Application²¹ with the contextually restricted (by the free variable t_1) past tense, which I assume to be an existential quantifier over times (Ogihara 1995).²² Thus, we get the meaning in (32).²³

- (31) $\llbracket \text{PAST } t_1 \rrbracket^{w,t,g} = \lambda p_{sit}. \exists t' < t \wedge t' \subseteq g(1) [p(w)(t') = 1],$
 where \subseteq is a relation between two time intervals such that one falls within the other; a contextually supplied interval $g(1)$ is the value of a free time variable t_1
- (32) $\llbracket \textit{Sajana thought that Badma broke the cart.} \rrbracket^{w,t,g}$
 $= 1 \exists t' < t \wedge t' \subseteq g(1) [\exists e [\text{think}_{w,t'}(e) \wedge \text{Cont}(e) = \lambda w'. \lambda t'. \text{Badma}$
 $\text{broke the cart in } w' \text{ at some time } t'' \text{ that precedes } t' \wedge \text{Exp}(e) = \text{Sajana.}]]$

This sentence is true relative to a world w , a time t and an assignment function g if there is a time within a salient time interval which is in the past relative to t at which there is an event of Sajana thinking whose Content is ‘Badma broke the cart’.

This analysis of sentences with CPs straightforwardly captures the absence of the pre-existence presupposition in them: since the pre-existence presupposition is introduced by θ_{Th} , and CPs do not combine via θ_{Th} , no pre-existence presupposition is expected to occur in sentences with them. *Hanaxa* in sentences with CPs just means ‘think’. The CP specifies the Content of the thinking event, but nothing forces this Content of thoughts to be true in the actual world. Thus, the absence of the factive inference is predicted.

²¹ The intension of the proposition needs to be a function that has not only a world argument, but a time argument as well, (i); so in our case the intension of the proposition is in (ii).

- (i) $\llbracket p \rrbracket_{\check{c}}^g = \lambda w. \lambda t. \llbracket p \rrbracket^{w,t,g}$
- (ii) $\llbracket \textit{Sajana thought that Badma broke the cart.} \rrbracket_{\check{c}}^g$
 $= \lambda w. \lambda t. \exists e [\text{think}_{w,t}(e) \wedge \text{Cont}(e) = \lambda w'. \lambda t'. \text{Badma broke the cart in } w' \text{ at some}$
 $\text{time } t'' \text{ that precedes } t' \wedge \text{Exp}(e) = \text{Sajana.}]$

²² I am simplifying the meaning of tense by disregarding its presuppositional component.

²³ I am simplifying the real facts by not discussing the contribution of aspect.

3.1.3 Buryat's CPs as predicates of (contentful) events

In this section I provide two arguments in favor of treating Buryat CPs with the complementizer *gəžə* as predicates of events.

The first piece of evidence comes from the morphology of the complementizer. The complementizer *gəžə* consists of two morphemes: the root of the verb *gə* ‘say’ and the suffix *-žə*, which is a converbial²⁴ suffix found with analytical verb forms and restructuring verbs, (33a), as well as in sentential adjuncts, (33b).

- (33) a. Badma bəʃəg bəʃə-žə əxil-ə:
Badma letter write-CVB begin-PST
‘Badma began to write a letter.’
- b. [Ojuna üxibü: türə-žə], Badma əsəgə bolo-bo
Ojuna.NOM child give.birth.to-CVB Badma.NOM father become-PST2
‘As Ojuna gave birth to a child, Badma became a father.’

Converbial clauses like those in (33a) or (33b) can be plausibly analyzed as event modifiers (specifying, e.g., the nature of the beginning event in (33a) and the cause of the father-becoming event (33b)). If the morphology (the suffix *-žə*) reflects the denotations of these clauses, then the same morphology on the complementizer could indicate that finite CPs denote functions that characterize sets of events as well.²⁵

Additional evidence for *-žə* on a clause indicating that it is a predicate of events comes from proform substitution. Finite CPs can be substituted by the proform used for sentential adjuncts and restructuring clauses, (34a): *ti:-žə* (do.so-CVB), which is a converbial form of the proform-forming verb *ti:xə* ‘do.so’, (34b). CPs cannot be substituted by a demonstrative pronoun *təṛə* or an adjectival proform *ti:-mə* (do.so-ADJ), which are used for referring back to entities and predicates of entities respectively.

²⁴ I use ‘converb’ as a descriptive notion: a non-finite verbal form that occurs in adverbial subordinate clauses (such as *when/while*-clauses, *before/after*-clauses, among others).

²⁵ An anonymous reviewer raises the question of whether *gəžə* could receive a compositional analysis. While diachronically *gəžə* is indeed a non-finite form of the verb *gəxə* ‘say’, it has undergone significant grammaticalization and now can be used in sentences where no speech act by the subject is entailed: e.g., *gəžə*-clauses can be complements of verbs like *du:laxa* ‘hear’ or *xaraxa* ‘see’. The only compositional analysis that I can think of is that perhaps the root *gə* is what takes a proposition and returns a property of individuals *x* whose Content is *p*, while the suffix *-žə* contributes information that *x* is an eventuality. Whether such a sort-specifying role is something that morphemes can contribute to the meaning of constituents they combine with is a question that needs further inquiry.

- (34) a. Üsəgəldər Badma bəʃəg bəʃə-žə əxil-ə:, ba münödər
yesterday Badma letter write-CVB begin-PST and today
(Badma) baha ti:-žə əxil-ə:
(Badma) also **do.so-CVB** begin-PST
'Yesterday Badma began to write a letter, and today he also
began to do so [= write a letter].'
b. Badma [Sajana bulj-a: gə-žə] han-a:, Ojuna
Badma.NOM Sajana.NOM win-PST say-CVB think-PST Ojuna.NOM
baha ti:-žə / *ti:-mə / *tərən-i:jə han-a:
also **do.so-CVB** do.so-ADJ that-ACC think-PST
'Badma thought that Sajana won, Ojuna also thought so.'

The second piece of evidence comes from the syntactic distribution of CPs: they pattern with adverbs with respect to the positions in the clause they can occupy.²⁶ Both adverbs and CPs can be positioned quite freely with respect to the arguments of the verb, (35).

- (35) a. <Sajana> [_{CP} Badma jər-ə: gə-žə] <Sajana> mədə-nə
Sajana Badma come-PST say-CVB Sajana know-PST
'Sajana found out that Badma came.'
b. <za:bol> Rinčin <za:bol> ajaga <za:bol> uga:-xa
certainly Rinchin certainly dishes certainly wash-POT
'Rinchin will certainly wash the dishes.'

Just like adverbs, non-nominalized CPs in Buryat cannot be subjects, (36). Noun phrases, including nominalizations, are different in this respect: they can occupy subject positions, (37).

- (36) * [_{CP} Badma tərgə əmdəl-hən gə-žə] Sajan-i:jə ga:r-u:l-a:
Badma cart break-PFCT say-CVB Sajana.-ACC anger-CAUS-PST
Intended: 'That Badma broke the cart angered Sajana.'
(37) a. [_{NP} ənə tərgə-n] Sajan-i:jə gar-u:l-a:
this cart-NOM Sajana-ACC anger-CAUS-PST
'This cart angered Sajana.'
b. [_{NMN} Badm-i:n tərgə əmdəl-ə:jə-n'] Sajan-i:jə gar-u:l-a:
Badma-GEN cart break-PART-3.NOM Sajana-ACC anger-CAUS-PST

²⁶ There is one difference between CPs and adverbs, however: while adverbs can never be used in the post-verbal position, CPs are in principle capable of occurring after the verb.

‘That Badma broke the cart angered Sajana.’

Under the assumption that syntactic distribution reflects the denotation of a constituent, we can conclude that finite clauses in Buryat, like adverbs, denote predicates of events.

3.2 *Hanaxa + nominalization*

3.2.1 The meaning of the nominalization

The nominalization under consideration, (38), is built from the following morphological pieces: the verbal root, the participle suffix *-A:fA*²⁷, and the nominal morphology — case and optional possessive marking.²⁸

(38) Sajana [Badm-i:n tərgə əmdl-ə:f-i:jə-(n')] han-a:
Sajana.NOM Badma-GEN cart break-PART-ACC-(3) think-PST
‘Sajana remembered that Badma broke the cart.’

In place of *-A:fA*, a number of different participial suffixes can be used. Participles in Buryat are often used as relative clauses; some of them can also be used in constructing finite forms. Adding case morphology to participles transforms them into event nominalizations.

Participial suffixes add aspectual and temporal specification to the eventuality descriptions they attach to, such as information about (im)perfectivity, habituality, or temporal orientation. These specifications remain to be investigated, and they will not inform the proposed analysis. I make the simplifying assumption that participial suffixes combine with predicates of events and return predicates of events which are supplemented by some aspectual or temporal specification.

The participle *-A:fA*, which forms the nominalization in (38) that I focus on in this paper, is past-oriented:²⁹ it is used when the time of the event

²⁷ Capital letters represent vowels before harmony rules have applied to them.

²⁸ Nominalizations can in principle also attach morphemes encoding valency alternations (passive, causative), and negation, which precede the participial suffix.

²⁹ This description is true only of its uses in nominalizations. In relative clauses, it is commonly used for describing “a permanent property of an individual” (Sanzheev et al. 1962).

(i) [Manai tai]f-a: tuxai du: garg-a:f[a] xün ənəl da:
1SG.GEN tai]i-REFL about song bring.out-PART human this-PTCL EMPH.PTCL
‘Here is that very person who composes songs about our taishi (a community leader in Mongolic culture).’ (Sanzheev et al. 1962: 175)

denoted by the nominalization (t_N) precedes the matrix time (t_m), as is illustrated by the felicity of (39) in context A and by its infelicity in contexts B and C.

- (39) Bi [Dugar-ai Baigal-ha: jər-ə:ʃ-i:jə] mədə-nə-b
 1SG.NOM Dugar-GEN Baikal-ABL come-PART-ACC know-PRS-1SG
 ‘I know that Dugar returned from Baikal.’
 ✓ **Context A** ($t_N < t_m$): Yesterday Dugar returned from Baikal.
 # **Context B** ($t_N \approx t_m$): Dugar is currently on his way here, returning from Baikal.
 # **Context C** ($t_N > t_m$): Next week Dugar will return from Baikal.

While this, again, might be a considerable simplification of -A:ʃA’s meaning, I will assume that this participle suffix sets the right boundary of the time interval corresponding to the nominalization event with respect to the matrix time, (40): there is a time interval t_N at which the event denoted by the nominalization is evaluated, and the right boundary (RB) of this time interval is before the matrix time.

$$(40) \quad \llbracket \text{PART.PAST} \rrbracket^{w,t,g} = \lambda P_{siet} . \lambda e'_e . \exists t_N [\text{RB}(t_N) < t \ \& \ P(w)(t_N)(e') = 1]$$

When -A:ʃA combines with the verb phrase ‘break the cart by Badma’, (41), by Intensional Functional Application (with the intension of the VP as in (42)), it returns a predicate of events such that they are events of breaking the cart by Badma whose right boundary precedes the matrix time, (43). This is the meaning of the nominalization.

- (41) $\llbracket \text{break the cart by Badma}_{VP} \rrbracket^{w,t,g}$
 $= \lambda e'_e . \text{break}_{w,t}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}$
 (42) $\llbracket \text{break the cart by Badma}_{VP} \rrbracket_{\zeta}^g$
 $= \lambda w_s . \lambda t_i . \lambda e'_e . \text{break}_{w,t}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}$
 (43) $\llbracket \text{Badma's breaking.PAST the cart} \rrbracket^{w,t,g} = \lambda e'_e . \exists t_N [\text{RB}(t_N) < t \wedge$
 $\text{break}_{w,t_N}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}]$

In order to simplify future derivations, I introduce the abbreviation in (44):

$$(44) \quad \llbracket \text{Badma's breaking.PAST the cart} \rrbracket^{w,t,g} = (43) =_{ABB} \lambda e'_e . \text{NMN}_{w,t_N < t}(e')$$

The denotation I provide in (43) is not yet the full story: we need to know how such a nominalization combines with the verb. In particular, since we would like to derive the observed presupposition even with indefinite nominalizations, we need to know how this nominalization combines with

the verb when it obtains indefinite interpretations. I address this question in section 3.2.3, where I argue that when θ_{Th} combines with *hanaxa*, it selects directly for a predicate of individuals (and thus takes the nominalization in (43) directly as its argument) and introduces an existential quantifier which binds the argument of that predicate.

For now, I would like to provide some arguments that the nominalization does not specify the propositional content of the thinking event. According to (43), the nominalization does not specify the Content of the event that it takes as its argument (cf. the CP denotation in (27), which does specify the Content of events that it is a predicate of). Thus, it is predicted that this nominalization will not be able to describe beliefs of the attitude holder. In other words, the beliefs of the attitude holder could be compatible with the existence of an event denoted by the nominalization, but they do not have to. I would like to argue that this prediction is borne out. Consider (45):

- (45) **Context:** Badma, Darima and I were in the car. Darima was behind the wheel. Darima was driving way over the speed limit. I was scared the whole trip. I talked after some time to Badma about that trip, and although he generally remembers the trip, he has a different recollection of how fast Darima drove.

Badma [Darim-i:n dən türgö:r maʃina:r jab-a:[-i:jə] hana-na,
 Badma Darima-GEN too.much quickly by.car go-PART-ACC think-PRS
 xarin Badma [(Darima) dən türgö:r maʃina:r jab-a: gəʒə]
 but Badma (Darima) too.much quickly by.car go-PST COMP
 hana-na-güj
 think-PRS-NEG

Paraphrase: ‘Badma remembers an event of Darima’s driving too quickly, but he doesn’t think that Darima drove too quickly.’

In (45) we see two clauses with the verb *hanaxa* and the same attitude holder; in the first clause the verb combines with the nominalization, and in the second it combines with a CP with the lexical material identical to that of the nominalization. If the nominalization described Badma’s beliefs, then this sentence would have been contradictory due to the fact that the second use of *hanaxa* is under negation. However, (45) is felicitous: the description of an event denoted by the nominalization ‘Darima’s driving too quickly’ is the speaker’s description, not Badma’s. While Badma recalled something *about* an event of Darima’s driving too quickly, his thoughts actually were that she didn’t drive too quickly.

Another piece of evidence comes from the fact that nominalizations cannot report false memories. In the context in (46a), while a CP can be used with *hanaxa* to describe Darima's false memory, the NMN cannot: (46c).

- (46) a. **Context:** Darima recalled a situation that happened recently. She heard some unexpected noise in the back yard while she was alone at home. She was afraid to look who it was. Now she is convinced that it was a thief entering the house, but I know for a fact that it was just her brother coming home earlier than expected from Kurumkan.
- b. Darima [gər-tə xulgaiʃan or-o: gəʒə] hana-na,
Darima.NOM house-DAT thief.NOM enter-PST COMP think-PRS
xarin tərə axa-n' Xurumxan-ha: jərə-hən bai-ga:
but that brother-3.NOM Kurumkan-ABL come-PFCT be-PST
'Darima thinks that a thief entered the house, but it was her brother coming back from Kurumkan.'
- c. #Darima [gər-tə xulgaiʃan-ai or-o:ʃ-i:jə] hana-na,
Darima.NOM house-DAT thief-GEN enter-PART-ACC think-PRS
xarin tərə axa-n' Xurumxan-ha: jərə-hən bai-ga:
but that brother-3.NOM Kurumkan-ABL come-PFCT be-PST
Intended: 'Darima thinks that a thief entered the house, but it was her brother coming back from Kurumkan.'

The infelicity of (46c) supports the claim that the nominalization cannot describe the Content of the thinking event.

My proposal that the nominalization denotes a function that characterizes a set of events is also supported by distributional facts. First, the nominalization can be referred to by the noun *uʃar* 'event, situation' and, unlike propositions, can 'happen outside', (47), suggesting that the nominalization can denote a predicate of dynamic events without any Content.

- (47) a. Sajana [Badm-i:n tərgə əmdəl-ə:ʃ-i:jə] han-a:
Sajana.NOM Badma-GEN cart break-PART-ACC think-PST
'Sajana remembered Badma's breaking the cart.'
- b. ... ənə uʃar gaza: bol-o:
this event outside become-PST
'...This event happened outside.'

Second, unlike CPs, NMNs cannot be complements of 'stance' verbs (Cattell 1978)—verbs which require commitment of the attitude holder to some de-

ictic stance on the truth of the complement. For example, a nominalization cannot be a complement of *arsaldaxa* ‘argue’, (48b), unlike a CP, (48a).

- (48) a. Sajana [Səsəg xada də:rə gar-a: gəžə] arsald-na
Sajana Seseg.NOM mountain to go-PST COMP argue-PRS
‘Sajana argues that Seseg went up the mountain.’
b. *Sajana [Səsəg-əi xada də:rə gar-a:[-i:jə] arsald-na
Sajana Seseg-GEN mountain to go-PART-ACC argue-PRS
Intended: ‘Sajana argues that Seseg went up the mountain.’

This restriction is not dependent on whether the context supports a factive interpretation of the complement.³⁰ In (49) it is common knowledge that Seseg went up the mountain. A sentence with a CP can be used in this context, (49a), and it successfully conveys that Sajana was committed to the truth of the embedded proposition all along. A nominalization as the complement of this verb is still ungrammatical, (49b).

- (49) **Context:** There has been a debate about whether Seseg went up the mountain. After a while, Seseg herself came and settled the debate: it turned out that she indeed went up the mountain.
a. Sajana aja:r xəzə:-n-hə: xoi]o [Səsəg xada
Sajana long.ago when-NOM-ABL back Seseg.NOM mountain
də:rə gar-a: gəžə] arsald-a:
to go-PST COMP argue-PST
‘Sajana argued all along that Seseg went up the mountain.’
b. *Sajana aja:r xəzə:-n-hə: xoi]o [Səsəg-əi xada
Sajana long.ago when-NOM-ABL back Seseg-GEN mountain
də:rə gar-a:[-i:jə] arsald-na
to go-PART-ACC argue-PRS
Intended: ‘Sajana argued all along that Seseg went up the mountain.’

I propose that the reason for the ungrammaticality of (49b) is that verbs like *arsaldaxa* ‘argue’ require an argument which specifies their propositional Content. If the nominalization could provide Content, the sentences in (49b) would have been grammatical. However, since the NMN cannot specify Content of the attitude verb, it cannot satisfy this requirement, hence the ungrammaticality of (49b).³¹ Thus, I conclude that analyzing the nom-

³⁰ I am grateful to an anonymous reviewer for bringing up this question.

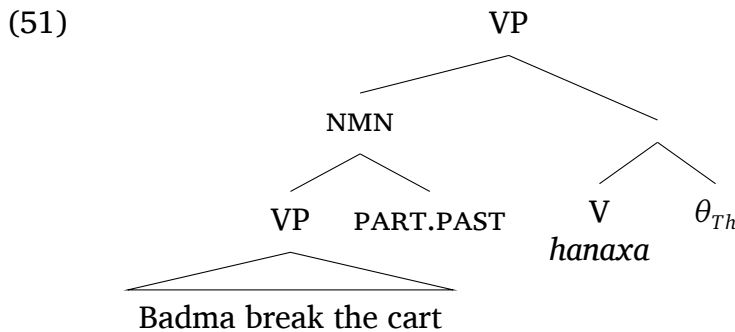
³¹ If my explanation is correct, it raises the question of which verbs *can*, and which *must*, combine with arguments that specify their Content, and how exactly this is encoded in the

inalization as a predicate of events which does not introduce a Content relation between an event and a proposition is supported by the data.

3.2.2 The pre-existence presupposition

I would like to propose that *hanaxa* combines with nominal arguments via the functional head θ_{Th} , and that θ_{Th} is the source of the pre-existence presupposition. The argument that θ_{Th} introduces with *hanaxa* is interpreted as the topic of thoughts — an entity or event which the thinking event is about. The pre-existence presupposition places a restriction on this *about*-argument: the left boundary of the time interval corresponding to it is before the time at which *hanaxa* is evaluated. In (50) I show one possible entry for θ_{Th} that captures this, which is simplified in that the second argument of θ_{Th} is taken to be an individual rather than a predicate of individuals (which will be the final proposal). (51) demonstrates the LF of the VP.

- (50) (to be modified later)
 $\llbracket \theta_{Th} \rrbracket^{w,t,g} = \lambda P_{et} . \lambda x_e . \lambda e_e : LB(\tau(x)) < t. P(e) \wedge ABOUT(e) = x.$
 (where LB is ‘left boundary’; τ is a function which takes an individual and returns its time span³²; ABOUT is a function that takes an event with Content and returns its topic)



This functional head takes a predicate P, an individual x and returns a predicate of events such that P is true of them and they are in an ABOUT relation to x. I view the ABOUT relation as a theta-role, similar to theta-roles like ‘Agent’ and ‘Patient’. I leave the question of what exactly it means for an event to be *about* another event or entity open, see (Rawlins 2013) for a

lexical entries. I do not have a proposal regarding these matters at the moment. Another open question is whether verbs such as *arsaldaxa* ‘argue’ can combine with nominalizations when the requirement to specify propositional content is independently satisfied by a CP.

³² For eventualities the time interval is duration, and for entities, a life/existence span.

recent proposal for semantics of the preposition *about* and (Yablo 2014) for a discussion of aboutness from a philosophical perspective.

The important contribution of θ_{Th} is that in addition to introducing an argument and specifying its theta-role, it introduces a presupposition associated with this argument — $LB(\tau(x)) < t$: the left boundary of an event or the starting point of an entity’s life span has to be before the matrix time. This presupposition is not a consequence of *aboutness*: i.e., I think the theta-relation that is being established between an event and an individual (in this case, *About*-relation) is potentially independent of this presupposition that requires a certain temporal ordering between the left boundary of an argument and the matrix time. A reason for thinking this is that, as we have seen in section 2.1, phrases with a postposition *tuxai* ‘about’, which also denote the topic of thoughts when they combine with *hanaxa*, do not exhibit such a presupposition. Recall (6)-(7), presented here as (52b).

(52) **Context:** Seseg is not pregnant. But she really wants a baby and is planning to have one.

- a. # Səsəg gar-ga-x-a: bai-ga:n üxibü-jə: hana-na
 Seseg go.out.-CAUS-POT-REFL be-PFCT child-ACC.REFL think-PRS
 ‘Sajana remembers her future child.’
 (lit. ‘her child that will be caused to go out of her’)
- b. Səsəg gar-ga-x-a: bai-ga:n üxibü-n tuxai-ga:
 Seseg go.out.-CAUS-POT-REFL be-PFCT child-NOM about-REFL
 hana-na
 think-PRS
 ‘Sajana thinks about her future child.’
 (lit. ‘her child that will be caused to go out of her’)

In (52b) the context is such that Seseg does not have a child yet. While the noun phrase ‘her future child’ (lit. ‘her child that will be caused to go out of her’) in the object position of *hanaxa* is infelicitous in such a context, when the same noun phrase combines with *hanaxa* via the postposition *tuxai* ‘about’, no infelicity arises. This suggests that the presupposition comes from the functional projection that introduces the internal argument, and not just from the fact that the argument is interpreted as the topic of thoughts.

A question that arises with respect to (50) is how common this denotation is: is it a special functional head for *hanaxa*, or do other verbs combine with their internal arguments with its help in Buryat and other languages? To answer this question, I will first make my assumptions about functional

heads like (50) more explicit. I assume that both roots and functional heads can be subject to *allosemy* (Marantz 2013; Wood & Marantz 2017): interpretation of heads can be conditioned by the environment in which they appear. In particular, the interpretation of a Theme-introducing head θ_{Th} is conditioned by which verb it combines with. So its lexical entry has the following shape:

- (53) $[[\theta_{Th}]]^{w,t,g}$
 $\Leftrightarrow \lambda P_{et}.\lambda x_e.\lambda e_e: LB(\tau(x)) < t. P(e) \wedge ABOUT(e) = x. / _ \sqrt{hanaxa}.$
 $\Leftrightarrow \lambda P_{et}.\lambda x_e.\lambda e_e: \neg(LB(\tau(x)) < t). P(e) \wedge R(e) = x. / _ \sqrt{\dots}$
 (where R is some theta-role relation)
 $\Leftrightarrow \dots$

In context of *hanaxa*, θ_{Th} 's denotation will be as in (50). In context of other verbs it could have different denotations. E.g., one can imagine that verbs like *write*, *create*, *invent*, *imagine* would create a context in which θ_{Th} would assign a different theta-role to the internal argument and have an opposite presupposition: a presupposition that the left boundary of the internal argument is not before the matrix time.

Within Buryat, I think there are at least two other verbs which could be candidates for creating the same environment as *hanaxa* does for interpretation of θ_{Th} . These are verbs *du:laxa* 'hear' and *xəlxə* 'say'³³, which are non-factive when they combine with CPs. When they combine with nominalizations, these nominalizations denote the topic of what has been heard or said, and the resulting sentences exhibit factive presuppositions:

- (54) a. Sajana Dugar-ha: Badm-i:n tərgə əmdəl-ə:ʃ-i:jə du:l-a:
 Sajana Dugar-ABL Badma-GEN cart break-PART-ACC hear-PST
 'Sajana heard from Dugar about Badma's breaking the cart.'
 ✓ **Context A:** Badma broke the cart, and Dugar told Sajana about it.
 * **Context B:** Badma didn't break the cart. Dugar lied to Sajana that he did.
- b. # ... xarin Badma tərgə əmdəl-ə:-güi
 but Badma cart break-PST-NEG
 'But Badma didn't break the cart.'

³³ For some consultants, this verb did not take nominalizations as complements at all. The judgments provided here are for those who did accept nominal complements with this verb.

- (55) a. Sajana Səsəg-əi xada də:rə gar-a:ʃ-i:jə xəl-ə:
 Sajana Seseg-GEN mountain to go-PART-ACC say-PST
 ‘Sajana said (something) about Seseg’s going up the mountain.’
 ✓ **Context A:** Seseg went up the mountain.
 * **Context B:** Seseg didn’t go up the mountain. Sajana lied
 about it.
- b. # ... xarin Səsəg xada də:rə gar-a:-güi
 but Seseg mountain to go-PST-NEG
 ‘But Seseg didn’t go up the mountain.’

Sentences (54a) and (55a) are incompatible with contexts in which an event described by the nominalization does not exist in the actual world. This is corroborated by the impossibility of the continuations of (54b) and (55b) respectively. The question whether the temporal component of the presupposition is present with these verbs as well requires further investigation.³⁴

I expect that other languages could also have alloemes for θ_{Th} similar to the one we see with *hanaxa* in Barguzin Buryat, leading to factive inferences with clausal complements (see section 4.3 for some potential candidates cross-linguistically). But more importantly, the proposal advanced in this paper gives rise to a more general expectation that presuppositions of attitude verbs could stem from presuppositions of argument-introducing heads, whatever those might be.

3.2.3 Analysis: existential quantifier from θ_{Th}

In this section, I develop an implementation of my proposal and address the question of how the pre-existence presupposition projects. As mentioned before, I focus on indefinite readings of nominalizations in order to guarantee that the pre-existence presupposition is derived with them as well. The general question of presupposition projection from quantificational sentences

³⁴ Another tentative hypothesis is that θ_{Th} is the functional head that introduces accusative subjects that we see in sentences with CPs, which also seem to describe the topic of the attitude.

- (i) Sajana [Badma / **Badm-i:jə** tərgə əmdəl-ə: gəžə] han-a: / məd-ə:
 Sajana Badma.NOM / **Badma-ACC** cart break-PST COMP think-PST / know-PST
 / xəl-ə: / ojlə-o:
 / say-PST / realize-PST
 ‘Sajana {thought/ found out/said/realized} about Badma that he broke the cart.’

If this hypothesis is correct, then the co-occurrence of *about*-arguments introduced by θ_{Th} and CPs is a widely attested phenomenon.

is an ongoing debate (Heim 1983; Beaver 2001; Chierchia 1995; Chemla 2009; Charlow 2009; Fox 2013). While contributing to this discussion is not a goal of this paper, I would nevertheless like to provide a fleshed-out account of how the the pre-existence presupposition of *hanaxa* functions in sentences with indefinite complements in Barguzin Buryat. E.g., I would like my analysis to capture that the pre-existence inference survives in sentences with negation, as we have seen it does, (16), repeated here as (56).

(56) **Context:** The speaker wants to convey that Sajana’s thoughts are consistent with reality.

[Badm-i:n tərgə əmdəl-ə:ʃ-i:jə] Sajana han-a:güi,
 Badma-GEN cart break-PART-ACC Sajana.NOM think-PST-NEG
 Badma tərgə əmdəl-ə:-güi
 Badma.NOM cart break-PST-NEG
 Intended: ‘Sajana didn’t think/remember that Badma broke the cart, (and) Badma didn’t break the cart.’

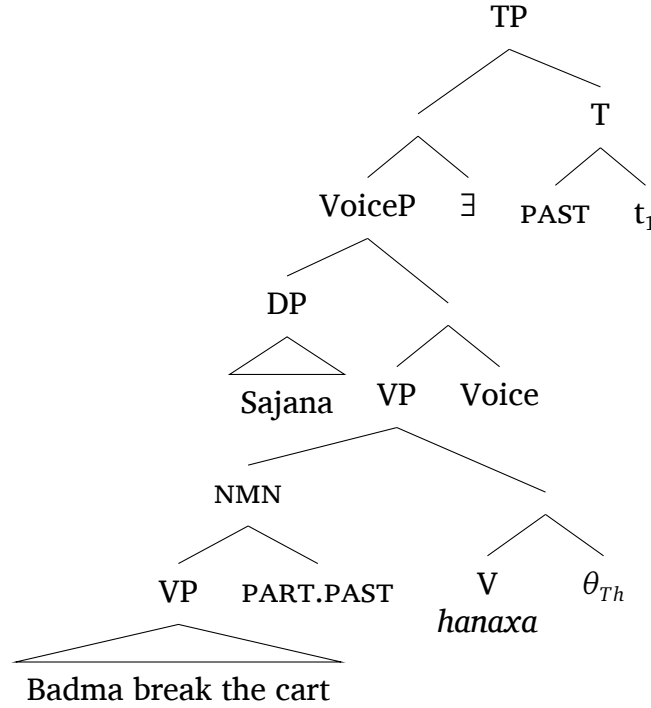
Nominalizations are bare noun phrases, and I will assume that they are predicates of events of type $\langle e,t \rangle$. I propose that the existential quantifier corresponding to the indefinite does not combine with the nominalization directly (see appendix B for some issues with such a view), but is introduced by θ_{Th} when it combines with *hanaxa*.³⁵ Under this approach, the nominalization itself is not a quantificational phrase.

The LF for the sentence with a nominalization, (57), is shown in (58).

(57) Sajana [Badm-i:n tərgə əmdl-ə:ʃ-i:jə-(n’)] han-a:
 Sajana.NOM Badma-GEN cart break-PART-ACC-(3) think-PST
 ‘Sajana **remembered** that Badma broke the cart.’

³⁵ I am grateful to Roger Schwarzschild for his suggestion to put the existential quantifier into the meaning of the thematic role head.

(58)



I assume a standard view that presuppositions are encoded as partial functions. Therefore, the semantics that I will be using is trivalent. Following Karttunen & Peters (1979), George (2008b; a; 2014), Fox (2013), I will make use of Kleene logic to track how presuppositions project.³⁶

The final meaning of θ_{Th} when it combines with *hanaxa* is in (59):

$$(59) \quad \llbracket \theta_{Th} \rrbracket^{w,t,g} = \lambda P_{et} . \lambda Q_{et} . \lambda e_e : \exists x [Q(x) \wedge \text{LB}(\tau(x)) < t]. \exists x [Q(x) \wedge \text{LB}(\tau(x)) < t \wedge P(e) \wedge \text{ABOUT}(e) = x].$$

The nominalization, (43), which is a predicate of events, is able to directly combine with θ_{Th} as its second argument. The fact that θ_{Th} takes the extension of the NMN as its argument means that the nominalization will be interpreted in the same world in which *hanaxa* is evaluated. The existential quantifier in θ_{Th} 's denotation binds the event argument of the nominalization and also places a restriction that the left boundary of that event has to precede the matrix time. This is the pre-existence presupposition.

³⁶ I leave it as an open question whether other approaches to presupposition projection, e.g., dynamic semantics, could make the same predictions as the trivalent approach.

Note that the presuppositional component in this case is repeated in the assertion. This is just a way to write the truth-conditions that are more explicitly stated in (60).³⁷

$$(60) \quad \llbracket \theta_{Th} \rrbracket^{w,t,g} = \lambda P_{et} . \lambda Q_{et} . \lambda e_e . \begin{cases} 1 \text{ iff } \exists x [Q(x) \wedge LB(\tau(x)) < t \wedge P(e) \wedge \text{ABOUT}(e) = x] \\ 0 \text{ iff } \exists x [Q(x) \wedge LB(\tau(x)) < t] \wedge \neg \exists x [Q(x) \wedge LB(\tau(x)) < t \wedge P(e) \wedge \text{ABOUT}(e) = x] \\ \# \text{ otherwise} \end{cases}$$

As the definition in (60) shows, I assume a theory with three truth-values: 1 (true), 0 (false) and # (undefined). The sentences are undefined just in case they are neither true nor false. This means that the presupposition of a given expression is a disjunction of the condition which makes it true and the condition which makes it false. Trivalent logic (strong Kleene logic) provides a general recipe for transforming bivalent semantic values to trivalent ones. Imagine that we have a complex sentence which contains an expression α that receives the third value (#). The main idea of the strong Kleene approach is that the truth value of the complex sentence will be 1 iff all the ways of assigning bivalent truth values to α will make it true; it will be 0 iff all the ways of assigning bivalent truth values to α will make it false; and it will be # otherwise. In other words, # represents uncertainty about which value, 1 or 0, a certain expression has. This uncertainty projects only if it matters for the calculation of the bivalent truth values for the bigger structure.

(60) ensures that $\exists x [Q(x) \wedge LB(\tau(x)) < t]$ is the definedness condition by requiring it to be true both for the sentence to be true and for the sentence to be false. θ_{Th} combines then with the verb (= the first argument P), with the nominalization (= the second argument Q), with the Voice head and the external argument, resulting in the denotation for VoiceP in (61).

$$(61) \quad \llbracket \text{VoiceP} \rrbracket^{w,t,g} = \lambda e_e . \begin{cases} 1 \text{ iff } \exists e' [\text{NMN}_{w,t_N < t}(e') \wedge LB(\tau(e')) < t \wedge \text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \quad \wedge \text{Exp}(e) = \text{Sajana}] \\ 0 \text{ iff } \exists e' [\text{NMN}_{w,t_N < t}(e') \wedge LB(\tau(e')) < t] \\ \quad \wedge \neg [\exists e' [\text{NMN}_{w,t_N < t}(e') \wedge LB(\tau(e')) < t \wedge \text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \quad \wedge \text{Exp}(e) = \text{Sajana}]] \\ \# \text{ otherwise} \end{cases}$$

³⁷ Here and in the discussion to follow I will sometimes use single-bracket notation for better readability.

This VoiceP combines with the existential closure, (62), which, being existential quantifier, has a disjunctive presupposition.³⁸

$$(62) \quad \llbracket \exists \rrbracket^{w,t,g} = \lambda P_{et} : \exists e [P(e) = 1] \vee \forall e [P(e) = 0]. \exists e [P(e) = 1]$$

This, when simplified, results in (63).³⁹

$$(63) \quad \llbracket \text{VoiceP} + \exists \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists e [\exists e' [\text{NMN}_{w,t_N < t}(e') \wedge \text{LB}(\tau(e')) < t \wedge \text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \wedge \text{Exp}(e) = \text{Sajana}]] \\ 0 \text{ iff } \exists e' [\text{NMN}_{w,t_N < t}(e') \wedge \text{LB}(\tau(e')) < t] \\ \wedge \neg \exists e [\exists e' [\text{NMN}_{w,t_N < t}(e') \wedge \text{LB}(\tau(e')) < t \wedge \text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \wedge \text{Exp}(e) = \text{Sajana}]] \\ \# \text{ otherwise} \end{cases}$$

Finally, the proposition in (63) is combined with the contextually restricted tense, (64), by Intensional Functional Application, resulting in (65).

³⁸ Within trivalent logic, the existential quantifier can be treated as a form of disjunction (George 2014). A classical disjunction is true as long as at least one of the disjuncts is true and is false iff all of its disjuncts are false. Thus, $\exists x \phi(x)$ is true if we can find at least one x which makes ϕ true (even if some other values of x are presupposition failures). It is false if for every x , $\phi(x)$ is false. Here's an illustration based on (George 2014:105).

- (i) Some student has stopped smoking.
- a. 1 iff $\exists x [\text{student}(x) \wedge x \text{ smoked before} \wedge x \text{ doesn't smoke now}]$
 - b. 0 iff $\forall x [\text{student}(x) \rightarrow x \text{ used to smoke before} \wedge x \text{ still smokes}]$
 - c. defined ($\neq \#$) iff it is $1 \vee 0$: $[\exists x [\text{student}(x) \wedge x \text{ smoked before} \wedge x \text{ doesn't smoke now}]] \vee [\forall x [\text{student}(x) \rightarrow x \text{ used to smoke before} \wedge x \text{ still smokes}]]$

The sentence in (i) is true iff there is at least one student for whom it is true that they smoked before and don't smoke now. This sentence is false iff for all students it is the case that they smoked before and still smoke. The third value is an elsewhere case: the sentence in (i) will receive it when neither the truth nor the falsity conditions are met. The other way to put it is that this sentence is defined and does not result in presupposition failure if it is either true or false, (ic). As one can see, the presupposition we arrive at for quantificational sentences is a disjunctive presupposition. I will assume that all existential quantifiers have such disjunctive presuppositions.

³⁹ The simplification step uses the equivalence $\forall x [\psi \wedge \phi(x)] \equiv \psi \wedge \forall x [\phi(x)]$, which holds provided that ψ contains no free occurrences of x and that the domain D_e is not empty, and the equivalence $\forall x [\neg \psi(x)] \equiv \neg \exists x [\psi(x)]$.

$$(64) \quad \llbracket \text{PAST } t_1 \rrbracket^{w,t,g} = \lambda_{\mathcal{P}_{sit}} \cdot \begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 1] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 0] \\ \# \text{ otherwise} \end{cases}$$

$$(65) \quad \llbracket \text{TP} \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \quad [\exists e[\exists e'[\text{NMN}_{w,t_N < t'}(e') \wedge \text{LB}(\tau(e')) < t' \wedge \text{think}_{w,t'}(e) \\ \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = \text{Sajana}]]] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \quad [\exists e'[\text{NMN}_{w,t_N < t'}(e') \wedge \text{LB}(\tau(e')) < t'] \\ \wedge \neg \exists e[\exists e'[\text{NMN}_{w,t_N < t'}(e') \wedge \text{LB}(\tau(e')) < t' \wedge \text{think}_{w,t'}(e) \\ \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = \text{Sajana}]]] \\ \# \text{ otherwise} \end{cases}$$

(65) states that the sentence is true iff there exists some past time interval t' within a contextually salient time and there exist events e and e' such that e' is Badma's breaking the cart and e is an event of Sajana thinking about e' , and the left boundary of e' is before t' . This is the right meaning.

(65) also gives the correct falsity condition: in order for it to be met there needs to exist an event denoted by the NMN such that its left boundary is before all times within the contextually given past time interval. This means that if the pre-existence requirement is not met, the sentence will receive the third value ($\#$), and thus be a presupposition failure.⁴⁰

To sum up, we have seen that treating the nominalization as a predicate of events and having the existential quantifier be introduced by θ_{Th} predicts

⁴⁰ "Unwrapping" the meaning of NMN results in (i) (c = the cart, B = Badma, S = Sajana). As one can see, this does not affect presupposition projection.

$$(i) \quad \llbracket \text{Sajana thought of Badma's breaking the cart} \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \\ \quad [\exists e[\exists e'[\exists t_N[\text{RB}(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge \text{Theme}(e') = c \wedge \text{Agent}(e') = B] \\ \quad \wedge \text{LB}(t_N) < t' \wedge \text{think}_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = S]]] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \\ \quad [\exists e'[\exists t_N[\text{RB}(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge \text{Theme}(e') = c \wedge \text{Agent}(e') = B] \\ \quad \wedge \text{LB}(t_N) < t'] \\ \quad \wedge \neg \exists e[\exists e'[\exists t_N[\text{RB}(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge \text{Theme}(e') = c \wedge \text{Agent}(e') = B] \\ \quad \wedge \text{LB}(t_N) < t' \wedge \text{think}_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = S]]] \\ \# \text{ otherwise} \end{cases}$$

the attested projection behavior of the pre-existence presupposition, (17), repeated here as (66).

(66) **Projected inference:**

There is a NMN-event in the world at which *hanaxa* is evaluated that started before the time at which *hanaxa* is evaluated.

However, this implementation raises the question of how a θ_{Th} that combines with *hanaxa* takes individuals like proper names (see ‘Badma’ in (9)) as its arguments, which, I assume, denote entities and not functions that characterize sets of entities. I propose that DPs like ‘Badma’ need to be shifted to predicates by an operator like IDENT (Partee 1986) in order to combine with θ_{Th} in the context of *hanaxa*. After that, the composition proceeds in the same way as with the nominalization: the result of combining θ_{Th} with *hanaxa* takes the property of individuals $\lambda x [x = \textit{Badma}]$ as its argument and states that there exists an individual of this kind whose left boundary (= beginning of the life span) is before the matrix time.

This analysis of the factivity alternation shares some similarity to the proposal in (Özyıldız 2017) for a factivity alternation in Turkish, for which the *res/about* argument of the attitude verb and semantic composition play an important role in generating the factive inference as well. However beyond that, these two approaches are quite different. Özyıldız (2017) analyzes Turkish nominalizations as denoting propositions, something that is implausible for Buryat, given the evidence that participle-based nominalizations cannot describe beliefs of attitude holders in this language (see section 3.2.1). Özyıldız (2017) derives the factive reading by hypothesizing that nominalizations undergo movement, and the binder created in this movement binds not only the trace of the nominalization, but also a situation-denoting pronoun that is part of the covert definite description that is the *res*-argument of the attitude verb. Thus, as he himself points out, his proposal is in line with approaches which derive factivity from definiteness, with the difference that nominalized clauses do not directly compose with the ι -operator. Given that Buryat nominalizations allow indefinite readings (see (22) in section 2.3), it is difficult to see how Özyıldız’s proposal could be extended to the Buryat factivity alternation.

4 Predictions and discussion

In this section, I examine two predictions of my analysis: a prediction about nominalized CPs, 4.1, and a prediction about nominalizations based on fu-

ture/modal morpheme *xa*, 4.2. I also discuss some evidence from Balkar (Turkic), Russian, and Bangla (from Banerjee et al. (2019)) suggesting that Buryat is not unique in having the argument structure of a verb give rise to factive inferences, 4.3.

4.1 Nominalized CPs

I have argued that participle-based nominalizations like (2a) denote functions that characterize sets of events which do not necessarily have any Content associated with them; participle-based nominalizations do not specify Content of events that are in their characteristic set. Barguzin Buryat also has a different kind of nominalization: nominalized CPs, (67).⁴¹

- (67) [Badma üstər nom unʃ-a: g-ə:ʃə] buru:
 Badma yesterday book read-PST say-PART.NOM false
 ‘That Badma read a book yesterday is false.’

The nominalization in (67) involves a finite clause under the complementizer *g-ə:ʃə*, which consists of the root *gə* ‘say’ and participial suffix *-A:ʃA*. Unlike *gəʒə*-CPs, nominalized CPs like (67) have nominal morphology (case, optional possessive markers) and the syntactic distribution of NPs. Given that under my proposal complementizers introduce Content relations, our expectation is that the nominalized CP in (67) is a predicate of entities like *claim/rumor/thought* with Content ‘Badma read a book yesterday’:

- (68) \llbracket Badma read a book yesterday *g-ə:ʃə* $\rrbracket^{w,t,g}$
 $= \lambda x_e. \text{Cont}(x) = \lambda w'. \lambda t'. \text{Badma read a book yesterday in } w' \text{ at}$
 $\text{some time } t'' \text{ that precedes } t'.$

⁴¹ See (Bogal-Allbritten & Moulton 2016) for discussion of a nominalization with similar semantics in Korean. For example, both for the nominalization that they discuss and for the nominalized CP in Buryat it is not sufficient that the attitude holder has the belief described by the embedded proposition to warrant their use, (i).

- (i) Bair-ai əži: [Bair-a: gər-əi da:bari x-ə: g-ə:š-i:jə] hana-na
 Bair-GEN mother Bair-REFL home-GEN task do-PST say-PART-ACC think-PRS
 ‘Bair’s mother recalls (the claim) that Bair did the homework.’
 ✓ **Context A:** Bair told his mother that he did his homework.
 * **Context B:** Bair’s mother went into the room and saw written assignments.
 She concluded Bair did his homework.
 (example inspired by ex. (16)-(17) of (Bogal-Allbritten & Moulton 2016))

Space restrictions prevent me from comparing these two nominalizations in greater detail.

Thus I make the prediction that when a nominalization like (67) is an object of *hanaxa*, there should be no factive inference about the existence of an event of the kind described by the clause under *g-ə:ʃə* (Badma's reading a book yesterday in case of (67)) in the actual world. This is so because an event of the embedded proposition is not itself an object of *hanaxa*. This prediction is borne out, (69).

(69) **Context:** The cat didn't eat the fish, but someone made a false claim that it did.

Dugar [mi:sgəi-n zagaha ədj-ə: g-ə:ʃ-i:jə] han-a:, xarin
 Dugar cat-GEN fish eat-PST say-PART-ACC think-PRS but
 mi:sgəi zagaha ədj-ə:-güi
 cat fish eat-PST-NEG

'Dugar remembers (the claim) that the cat ate the fish, but the cat didn't eat the fish.'

The absence of a factive inference here is not surprising under my proposal. I assume that (68), just like other noun phrases, combines as the second argument of θ_{Th} . The pre-existence presupposition introduced by θ_{Th} is still present in (69), but since θ_{Th} 's argument is a predicate of individuals with Content 'The cat ate the fish', it presupposes that an individual with this propositional Content pre-exists the matrix time rather than that an event of the cat eating fish pre-exists the matrix time.

This presupposition about the existence of an argument with Content is illustrated in (70): in a context where Dugar was the first person to think that the cat ate the fish, (70) is infelicitous.

(70) **Context:** Dugar was the first to think that the cat ate the fish.

Mi:sgəi zagaha ədj-ə: gə-žə xən-ʃjə xəzə:-ʃjə han-a:-güi,
 cat fish eat-PST say-CVB who-PTCL when-PTCL think-PST-NEG

(xarin) dugar [mi:sgəi-n zagaha ədj-ə: g-ə:ʃ-i:jə] han-a:
 (but) Dugar cat-GEN fish eat-PST say-PART-ACC think-PST

'Noone has ever thought that the cat ate the fish, (but) Dugar remembered (the claim) that the cat ate the fish.'

To sum up, the pre-existence presupposition is observed with all nominalized clauses, which combine with *hanaxa* via the θ_{Th} projection. The pre-existence presupposition will lead to a factive inference only if the nominalization denotes a predicate of events of the kind described by the embedded predicate, but not if it denotes a predicate of individuals whose Content is the embedded proposition.

4.2 Nominalizations with a future/modal morpheme *xa*

Another prediction that the current proposal makes is that if there was a participial morpheme in the nominalization that set the left boundary of the NMN-event after the matrix time, then this would result in presupposition failure. This is so because the presupposition introduced by θ_{Th} in (59), repeated in (71), explicitly states that the left boundary of the NMN-event should precede the matrix time.

$$(71) \quad \llbracket \theta_{Th} \rrbracket^{w,t,g} = \lambda P_{et} . \lambda Q_{et} . \lambda e_e : \exists x [Q(x) \wedge LB(\tau(x)) < t]. \exists x [Q(x) \wedge LB(\tau(x)) < t \wedge P(e) \wedge ABOUT(e) = x].$$

Testing this prediction turns out to be quite complicated. The main complication is that we need to find a morpheme that indeed sets the left boundary of an eventuality after the matrix time, and it is not obvious that a morpheme with exactly such meaning exists in Barguzin Buryat. The best candidate is the morpheme *-xA* (POT), which can describe future eventualities when it occurs in finite forms:

$$(72) \quad \text{Bi } j\acute{o}x\acute{o} \text{ bolo-xo-d-o}; \quad \text{tomo } g\acute{e}r \quad \text{aba-xa-b}$$

1SG big become-POT-DAT-REFL huge house buy-POT-1SG
 ‘When I will grow up, I will buy a huge house.’

In addition to future reference, *xa* seems to express modal meanings, as can be seen in the following sentence from (Skribnik & Darzhaeva 2016):

$$(73) \quad T\acute{e}:d\text{-}j\acute{j}\acute{o}, \text{ } j\acute{i} \quad \acute{u}\acute{s}\acute{o}: \text{ } b\acute{a}g\acute{a}\text{-}j, \quad b\acute{u}: \text{ } \acute{u}rg\acute{e}l\text{-}x\acute{o}\text{-}j\acute{n}i \quad \acute{u}\acute{s}\acute{o}: \acute{u}di:$$

but-PTCL you still little-2SG, gun lift-POT-2SG still NEG
 ‘Moreover, you are still little, you still can’t lift a gun.’
 (Skribnik & Darzhaeva 2016: 201)

When *-xA* (POT) occurs in nominalized clauses and other embedded contexts, its interpretation is often not identical to its finite uses, and seems to depend on a number of factors, among which are the meaning of the matrix verb, the type of the embedded clause, aspectual class of the embedded eventuality. A thorough investigation of *-xA* (POT) in embedded contexts would be necessary to properly understand the combination of *xA*-nominalizations with *hanaxa*, which is beyond the scope of this paper. Here I only present some initial observations related to this issue.

Consider the sentence in (74), in which *hanaxa* combines with a *xA*-nominalization.

- (74) Badm-ain gurbaŋ butylka hū aba-x-i:jə hana-n-u:-ʃ?
 Badma-GEN three bottle milk buy-POT-ACC think-PRS-Q-2SG
 ‘Do you remember Badma’s buying three bottles of milk?’
 ✓ **Context A:** Some time ago Badma bought three bottles of milk.
 ✓ **Context B:** Someone is making a list of things to buy, and I see them write “3 bottles of milk” on that list. They might not realize that Badma already has planned to buy 3 bottles of milk himself.⁴²

The interpretation corresponding to context A seems to be the most prominent one, which is surprising given how *xA*-forms are interpreted in finite sentences, (72)-(73). One could hypothesize that the pre-existence presupposition introduced by *hanaxa* somehow is able to override the semantic contribution of *xA*, but what kind of mechanism would be responsible for that is unclear.⁴³

The second interpretation requires more support from the context, but seems to be generally available. When (74) is uttered in context B, the eventuality of buying three bottles of milk is in the future with respect to the matrix time, and what is being remembered, it seems, is the plan to buy three bottles of milk. As two anonymous reviewers point out, this pattern is similar to English *remember*, which when taking a future-oriented complement, also requires that there is a plan in place already at the time of the remembering.⁴⁴

⁴² The other logically possible interpretation, according to which Badma is buying three bottles of milk at the matrix time, does not seem to be available for this sentence. I suspect that existence of the nominalized progressive form (see (10)), which is most appropriate for such contexts, might be blocking the use of the *xA*-nominalization.

⁴³ Note that some other matrix verbs, e.g. *mədxə* ‘know’, seem to not allow such past-oriented readings of *xA*:

- (i) Context: Dugar returned from Baikal yesterday.
 # Bi Dugar-ai Baikal-ha: jərə-x-i:jə mədə-nə-b
 1SG Dugar-GEN Baikal-ABL come-POT-ACC know-PRS-1SG
 Intended: ‘I know about Badma’s returning from Baikal.’

⁴⁴ A reviewer also points out that non-attitude verbs like *buy*, which normally involve a Theme argument that already exists, can also sometimes be used in cases where the Theme has not yet come into being but when its existence is planned for:

- (i) John bought three bottles of wine before the grapes were even harvested.

This is an interesting parallel. It would be interesting to see if the analysis of (i), whatever it might be, could be also extended to attitude verbs like in (74).

- (75) Pam remembered she would go to Boston in the morning.
 ⇒ there is a plan for Pam to go to Boston in the morning.

Does the existence of such an interpretation for the *x*A-nominalization with *hanaxa* pose a problem for my proposal about the pre-existence presupposition? It seems impossible to answer this question without an understanding of how (and why) the “planned eventuality” reading comes about. Given that the idea that a plan for an event can constitute an early stage of the event has been entertained in the literature (Dowty 1979; Cipria & Roberts 2000), it could be that the shift observed in the meaning of the nominalization is happening in order to satisfy *hanaxa*’s pre-existence presupposition.

While the question of why a plan could count as an early stage of an event is beyond the scope of this paper (see Copley (2008; 2014) for discussion of this issue in light of futurates), I would like to provide some evidence that it is indeed the plan, and not the event itself, that *x*A-nominalizations denote when they combine with *hanaxa*. Consider (76):

- (76) **Context:** The speaker knows that Badma was planning to buy meat at the store. Then they realize that the store he was thinking of going to is closed for the day.
 Oi. Badm-i:n mjaxa aba-x-i:jə-n’ haja: hana-ba-b.
 oh Badma-GEN meat buy-POT-ACC-3 just.now think-PST2-1SG
 Ba:ran Badma, mjaxa aba-xa-güi.
 poor Badma meat buy-POT-NEG
 ‘Oh. I just remembered (about) Badma’s buying meat. Poor Badma, he will not buy meat.’

In this example the speaker doesn’t think that Badma will buy meat at a future time, but the use of a *x*A-nominalization with *hanaxa* is still acceptable. What the speaker recalls in this case is Badma’s plan to buy meat, not his future buying (which now the speaker knows will not occur).

A similar point is illustrated in (77), where the speaker recalls Dugar’s obligation, which they know he will not fulfill.

- (77) **Context:** Dugar’s vacation is over next week, and he should return back from Baikal. However, I know he will not return: Dugar likes Baikal too much, and he will pretend to be sick at work to stay there a bit longer.
 Bi [Dugar-ai Baikal-ha: jərə-x-i:jə] hana-na-m, xarin bi
 1SG Dugar-GEN Baikal-ABL come-POT-ACC think-PRS-1SG but 1SG

Dugar Baikal-ha: jəɾə-xə-güi gəʒə mədə-nə-b
 Dugar Baikal-ABL come-POT-NEG COMP know-PRS-1SG
 ‘I remember that Dugar should/is supposed to return from Baikal,
 but I know that Dugar will not return from Baikal.’

I would like to tentatively suggest that in cases like (76) and (77) the pre-existence presupposition applies to the modal statement that *xA* introduces. E.g., in (77) it is the necessity for Dugar to return next week which pre-exists the matrix time. Further research is necessary to test this hypothesis.

4.3 Beyond Buryat

One broader implication that arises from my proposal is that some factivity inferences that we observe in sentences with attitude verbs are reducible to restrictions that predicates place on their internal arguments. My proposal facilitates a view according to which there are no significant differences between predicates of events without propositional Content and attitude verbs (predicates of events with propositional Content). Both can presuppose that their internal argument pre-exists the event described by them.

Support for this view comes from languages which use simple, non-attitude verbs in order to describe attitudes: we see that the restrictions these verbs place on their arguments carry over into their attitudinal uses. I will briefly discuss three such cases from different languages: Balkar (Turkic), Russian and Bangla (from Banerjee et al. 2019).⁴⁵

Here is an example of this from Balkar.⁴⁶ The verb ‘drop’ (‘cause to fall’) requires that its direct object pre-exists the dropping, (78). When what is being dropped is an event (denoted by the nominalization) and the location of the dropping is one’s memory, we arrive at an attitude report meaning ‘remember’, (79). Naturally, this attitude report has a factive inference: there has to exist an event of Fatima winning the contest.

(78) alim-de alma-la zoqe-le. # alim alma-ni tüf-ür-gen-di
 Alim-LOC apple-PL exist-PL Alim apple-ACC fall-CAUS-PFCT-3
 ‘Alim had no apples. # Alim dropped an apple.’

⁴⁵ See also (Banerjee 2019; to appear) for more details on these constructions.

⁴⁶ Balkar (also known as Malkar) is a dialect of the Karachay-Balkar language (Kipchak branch of the Turkic family). I have elicited these Balkar data in the village Verkhnyaya Balkaria in Kabardino-Balkar Republic of Russia.

- (79) alim [fatima-ni sabij-i erifü-de qat-xan-i-n] es-i-ne
 Alim Fatima-GEN child-3 contest-LOC win-PFCT-3-ACC memory-3-DAT
 tüş-ür-gen-di, #alaj fatima-ni sabij-i erifü-de qitdir-ğan-di
 fall-CAUS-PFCT-3 but F.-GEN child-3 contest-LOC lose-PFCT-3
 ‘Alim remembered that Fatima’s child won the contest (lit. ‘dropped
 Fatima’s child’s winning the context into his memory’), # but Fa-
 tima’s child lost the contest’.

Thus, it seems that the pre-existence requirement that we see in (78) with respect to the internal argument of ‘drop’ is retained when the internal argument is an event-denoting nominalization and the resulting meaning is that of an attitude report.⁴⁷

Here is another example of a verb which is not designated for expressing attitudes expressing an attitude report from Russian. The verb *vyletet’* ‘fly out’ presupposes that the individual that is flying out is situated in the specified location before the flight. When the location is one’s head, and the embedded clause is the thing flying out, a factive attitude report meaning ‘forget’ is created, (80).⁴⁸

- (80) Sovsem iz golovy vyletelo, [čto ja obeščal vstretit’sja
 completely out.of head flew.out COMP I promised to.meet
 s nim v sem’ časov].
 with him in seven hours
 ‘I completely forgot (lit. ‘it flew out of head’) that I promised to
 meet with him at seven o’clock.’
 ✓ **Context A:** The speaker promised to meet with him at seven
 o’clock.
 # **Context B:** The speaker didn’t promise to meet with him at seven
 o’clock.

Banerjee et al. (2019) discuss attitude reports in Bangla that are built from the preverb *mone* ‘in mind’ and different light verbs. They observe that the properties of the light verb that is used play a crucial role in whether the attitude report has a factive inference. E.g., the object of the verb *fall*, as opposed to the object of *happen*, has to exist before the matrix time. When these verbs are used for creating attitude reports, the former exhibits factive inferences, while the latter does not.

⁴⁷ For my consultants, both the inference in (78) and the inference in (79) project, and thus seem to behave like presuppositions.

⁴⁸ The data reported here comes from judgment tasks with three native speakers of Russian.

- (81) Rahuler mone hoy /#pore [je Ram mithye
 Rahul.(GEN) mind.LOC happen.PRS.3 fall.PRS.3 that Ram lie
 bolechilo], kintu Ram mithye boleni.
 tell.PST.3 but Ram lie tell.PST.NEG.3
 ‘Rahul thinks /#recalls that Ram lied, but he didn’t.’
 (examples (1)-(2) from Banerjee et al. 2019)

Banerjee et al. (2019) conclude that “it is the semantics of ‘mind-predicates’ which is crucial to impose (non)presuppositionality...”.⁴⁹ I agree with this conclusion: the argument structure of embedding verbs, and in particular, the presuppositions associated with their internal arguments, is what stands behind (at least some, but potentially all) factive inferences.⁵⁰

While it is beyond the scope of the paper to conclude whether examples like (79), (80), and (81) all indeed involve the same alloeme of θ_{Th} which introduces a pre-existence presupposition, these examples suggest that natural languages widely make use of non-attitude verbs for constructing attitudinal meanings, and the inferences we get from sentences with clausal complements seem to parallel those that are present in sentences with nominal ones. I take this as tentative evidence that argument-introducing heads could be responsible for creating factive inferences cross-linguistically.

5 Conclusion

In this paper I have examined a case of factivity alternation in Barguzin Buryat: this language has a verb *hanaxa* which is naturally translated as ‘think’ when it combines with CPs, but as ‘remember’ when it combines with nominalizations. I have argued that this is not a case of ambiguity. The two different translations reflect the two different paths that CPs and nominals take when combining with the verb: CPs combine by modifying the event argument of *hanaxa* and specifying the Content of thoughts, while nominal arguments combine via a functional head θ_{Th} which introduces internal arguments. In the context of *hanaxa*, the internal argument is interpreted as the topic of thoughts (what the thinking is about). θ_{Th} places a

⁴⁹ I was made aware of Banerjee et al. (2019)’s work on Bangla only after I have come up with my proposal for Buryat’s *hanaxa*. Given that my knowledge of their proposal is limited to the slides of their presentation (as far as I know, the paper based on it has not yet been published), I refrain from comparing their proposal to mine.

⁵⁰ Note that both in Russian and Bangla examples above, (80)-(81), the embedded clauses are finite CPs. It seems that these CPs combine with the predicate differently (as internal arguments/modifiers of internal arguments) from how Buryat non-nominalized CPs do.

pre-existence presupposition on this argument: the *about*-argument is presupposed to have started existing before the time of thinking. I have argued that this presupposition is what the ‘remember’ translation is trying to convey and provided an analysis of how this presupposition projects. Since CPs do not combine as Theme arguments, no pre-existence presupposition is present in sentences with them. Thus, my proposal suggests that one source of factive inferences is presuppositions of verbs about their internal arguments, and that one source of factivity alternations is the availability of several paths for combining with the verb.

6 Appendix A: Fieldwork and methodology

This appendix describes how the fieldwork on Barguzin Buryat that is reported in this paper was conducted.

6.1 Background

The data reported in this paper were gathered in the village Baraghan, Kurumkan district, Republic of Buryatia, Russian Federation. The author of this paper was a member of a group of linguists who came to the village to work on various aspects of Barguzin Buryat in 2014-2018. I did preliminary work on clausal embedding in 2014-2017, but all the data present in this paper was either gathered or rechecked in 2018.

6.2 The sociolinguistic situation

Baraghan is a village with a population of ~1000 people. The sociolinguistic situation in Baraghan can be characterized as diglossia: most speakers speak both Barguzin Buryat and Russian fluently, with the former being used more in informal settings (e.g., at home, in stores), and the latter being used more in formal settings (e.g., at school).

6.3 Recruitment

In 2018 the data were gathered with 3 speakers that the author had previously closely worked with in 2014-2017. In 2014-2017, there were ~10 consultants working with the group of linguists. The recruitment of consultants was done through the governor of the village. The only conditions for

being recruited were: (i) being an adult; (ii) being a native speaker of the language.

6.4 Conditions of elicitation

Language consultants participated in ~4 elicitation sessions (sometimes less) each day, each of which lasted 45 minutes. There were 15 minute breaks between the sessions. The metalanguage that was used for conducting fieldwork was Russian.

The research presented in this paper was approved for an exemption protocol from the organization which is established to act as the Institutional Review Board (IRB) for the author's institution, and the consultants were asked to sign consent forms that comply with this protocol.

6.5 Methodology techniques

Data elicitations conformed both to the general principles for conducting fieldwork (Kibrik 1972; 2017) and to the standards for semantics fieldwork (Matthewson 2004; Bochnak & Matthewson 2015; 2020). Translations of elicited sentences were taken as 'clues', but not as objects of investigation (Matthewson 2004: 389-391). The main method of elicitation was felicity judgments with verbal presentation of the discourse. The discourse was usually presented in the metalanguage (Russian). Before evaluating a given sentence with respect to the context, a judgment of grammaticality was elicited to ensure that the sentence under consideration is indeed a possible sentence of Barguzin Buryat.

Sometimes when a sentence was judged as infelicitous, an additional judgment task was performed. Consultants were asked to compare the target sentence that was judged as infelicitous with a sentence that explicitly involved a contradiction (e.g., of the form '*The sun is shining, but the sun is not shining.*'): they were asked if the two sentences feel "bad, inappropriate" in the same way. This technique seemed to work quite nicely for identifying infelicities that arose due to the presence of a presupposition. While assertions containing a contradiction and sentences in which presuppositions contradict what is being asserted are not the same thing, they bear enough similarity that comparing them seemed like a good way to ensure that the observed infelicity is not due to an independent factor.

7 Appendix B: Indefinite NMNS as GQs

In section 3.2.3 I proposed that the existential quantifier that binds the event argument of nominalizations is introduced by the functional head θ_{Th} . An alternative to this is treating indefinite nominalizations as generalized quantifiers. Under this approach, indefinite NMNS are formed by combining participles like in (43), repeated here as (82) and abbreviated later as $\lambda e'.NMN_{w,t_N < t}(e')$, with a null existential generalized quantifiers as in (83).

$$(82) \quad \llbracket \text{Badma's breaking.PAST the cart} \rrbracket^{w,t,g} = \lambda e'. \exists t_N [\text{RB}(t_N) < t \wedge \text{break}_{w,t_N}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}]$$

$$(83) \quad \llbracket \emptyset_a \rrbracket^{w,t,g} = \lambda p_{et}. \lambda q_{et}: \exists x [p(x) = 1 \ \& \ q(x) = 1] \vee \forall x [p(x) = 1 \rightarrow q(x) = 0]. \exists x [p(x) = 1 \ \& \ q(x) = 1]$$

Such an existential quantifier takes two predicates of individuals as its arguments and asserts that there is an individual that makes both of these predicates true. Like all existential quantifiers in the trivalent system, it has a disjunctive presupposition: it presupposes that either there is an individual which makes both predicates true, or any individual who makes the first predicate true, makes the second one false. It turns out that assuming that the NMN combines with an existential quantifier leads to incorrect predictions with respect to presupposition projection. Here I briefly illustrate the derivation and where it runs into a problem.

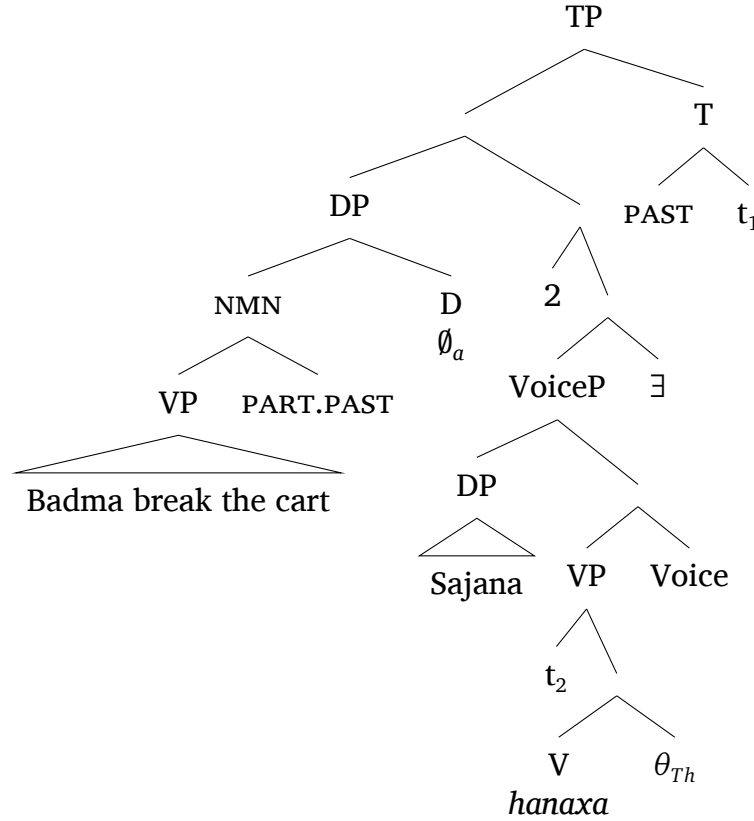
The NMN saturates the first argument of \emptyset_a , giving rise to the DP in (84).

$$(84) \quad \begin{aligned} & \llbracket \emptyset_a \text{ NMN} \rrbracket^{w,t,g} \\ & = \lambda q_{et}. \left\{ \begin{array}{l} 1 \text{ iff } \exists e' [\text{NMN}_{w,t_N < t}(e') = 1 \wedge q(e') = 1] \\ 0 \text{ iff } \forall e' [\text{NMN}_{w,t_N < t}(e') = 1 \rightarrow q(e') = 0] \\ \# \text{ otherwise} \end{array} \right. \end{aligned}$$

This DP is a quantificational phrase, so I assume that it needs to undergo QR from its base-generated position as the Theme argument. In that case, sentences like (38), repeated below as (85), have LFs like in (86).

$$(85) \quad \begin{array}{l} \text{Sajana} \quad [\text{Badm-i:n} \quad \text{tərgə} \quad \text{əmdl-ə:ʃ-i:jə}] \quad \text{han-a:} \\ \text{Sajana.NOM Badma-GEN cart} \quad \text{break-PART-ACC think-PST} \\ \text{'Sajana remembered that Badma broke the cart.'} \end{array}$$

(86)



Under this implementation, the meaning of the functional θ_{Th} head when it combines with *hanaxa* is as in (50), repeated below as (87).

$$(87) \quad \llbracket \theta_{Th} \rrbracket^{w,t,g} = \lambda P_{et} . \lambda x_e . \lambda e_e : LB(\tau(x)) < t. P(e) \wedge ABOUT(e) = x.$$

θ_{Th} takes a predicate of events P and an individual x as its arguments and returns a predicate of events such that P is true of them and they are about x . It also introduces the pre-existence presupposition: the left boundary of the *about*-argument has to be before the matrix time.

The attitude verb combines with the θ_{Th} head, with the trace of the QR-ed nominalization, the Voice head, the external argument, and finally the existential closure, resulting in (88):

$$(88) \quad \llbracket \text{VoiceP } \exists \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists e [LB(\tau(g(2))) < t \wedge \text{think}_{w,t}(e) \wedge ABOUT(e) = g(2) \wedge Exp(e) = \text{Sajana}] \\ 0 \text{ iff } \forall e [LB(\tau(g(2))) < t \wedge \neg[\text{think}_{w,t}(e) \wedge ABOUT(e) = g(2) \wedge Exp(e) = \text{Sajana}]] \\ \# \text{ otherwise} \end{cases}$$

Predicate Abstraction happens over $g(2)$, which creates a predicate of individuals out of (88). This predicate then saturates the argument of the QR-ed existential quantifier in (84), the simplified result of which is in (89).⁵¹

$$(89) \quad \llbracket \text{NMN} + \text{Predicate} \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists e' [\text{NMN}_{w,t_N < t}(e') = 1 \wedge LB(\tau(e')) < t \wedge \exists e [\text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \wedge \text{Exp}(e) = \text{Sajana}]] \\ 0 \text{ iff } \forall e' [\text{NMN}_{w,t_N < t}(e') = 1 \rightarrow LB(\tau(e')) < t \wedge \neg \exists e [\text{think}_{w,t}(e) \wedge \text{ABOUT}(e) = e' \\ \wedge \text{Exp}(e) = \text{Sajana}]] \\ \# \text{ otherwise} \end{cases}$$

Finally, contextually restricted tense, (64), repeated here as (90), combines with the proposition in (89). This results in (91).

$$(90) \quad \llbracket \text{PAST } t_1 \rrbracket^{w,t,g} = \lambda p_{sit} \cdot \begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 1] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 0] \\ \# \text{ otherwise} \end{cases}$$

$$(91) \quad \llbracket \text{TP} \rrbracket^{w,t,g} = \begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \quad [\exists e' [\text{NMN}_{w,t_N < t'}(e') = 1 \wedge LB(\tau(e')) < t' \\ \wedge \exists e [\text{think}_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = \text{Sajana}]]] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \quad [\forall e' [\text{NMN}_{w,t_N < t'}(e') = 1 \rightarrow LB(\tau(e')) < t' \\ \wedge \neg \exists e [\text{think}_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge \text{Exp}(e) = \text{Sajana}]]] \\ \# \text{ otherwise} \end{cases}$$

(91) states that the sentence “Sajana remembered Badma’s breaking the cart”, (85), is true iff there is a past time within a salient interval such that there is a thinking event by Sajana at that time and there is an event e' which the thinking is about, and e' is an event of Badma’s breaking the cart which pre-existed the thinking event. This result is correct.⁵²

However, (91) gives us a problematic falsity condition. The problem stems from the universal quantification over events. Whenever the restrictor of a universal quantifier is empty, the whole statement is true. This

⁵¹ The simplification can be done provided that the domain D_e is not empty and given that “ $LB(\tau(e')) < t$ ” contains no free occurrences of “ e ”. The equivalence statements used for the simplification are: (i) $\exists x[\psi \wedge \phi(x)] \equiv \psi \wedge \exists x[\phi(x)]$; (ii) $\forall x[\psi \wedge \phi(x)] \equiv \psi \wedge \forall x[\phi(x)]$; (iii) $\forall x[\neg\psi(x)] \equiv \neg\exists x[\psi(x)]$.

⁵² If we “unwrap” the abbreviated meaning of the NMN, the result will be the following:

means that if there are no events of Badma breaking the cart, the falsity condition of (91) will be satisfied, and the sentence “Sajana remembered Badma’s breaking the cart”, (85), will be predicted to be false.

This is an incorrect prediction. We have seen in section 2 that the inference about the existence of a NMN-event projects over negation and in questions. If there is no event of Badma breaking the cart, the sentence in (85) is considered by native speakers to be infelicitous, not false.

A way to “save” (91) is to assume that the null existential quantifier that the NMN combines with comes with the presupposition that its restrictor is not empty. It has been argued (Diesing 1992; von Stechow 1998) that some indefinites are presuppositional: maybe \emptyset_a produces such indefinites.

A problem with this solution is that the nominalization under consideration is not presuppositional across the board. For example, when it occurs as a direct object of verbs like *xaraxa* ‘see’, the inference about the existence of an event denoted by the nominalization does not project over negation, suggesting that it is not part of the presupposition component in this case.

- (92) Bi [Badm-i:n tərgə əmdəl-ə:]-i:jə] xar-a:-güj-b, ju:n-də-b
 1SG Badma-GEN cart break-PART-ACC see-PST-NEG-1SG what-DAT-Q
 gə-xə-də Badma tərgə əmdəl-ə:-güj
 say-POT-DAT Badma cart break-PAST-NEG
 ‘I didn’t see Badma’s breaking the cart, because Badma didn’t break
 the cart.’

The sentence in (92), according to my consultants, has a different status with respect to the similar sentence with *hanaxa* in (16): while the latter is perceived as being contradictory, the former does not. However, (91) predicts them to have the same status.

- (i) $\llbracket \text{Sajana thought of Badma’s breaking the cart} \rrbracket^{w,t,g} =$

$$\left\{ \begin{array}{l} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \\ \quad [\exists e' [\exists t_N [RB(t_N) < t' \wedge break_{w,t_N}(e') \wedge Theme(e') = \text{the cart} \\ \quad \wedge Agent(e') = \text{Badma}]] \wedge LB(t_N) < t' \\ \quad \wedge \exists e [\text{think}_{w,t'}(e) \wedge ABOUT(e) = e' \wedge Exp(e) = \text{Sajana}]]] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \\ \quad [\forall e' [\exists t_N [RB(t_N) < t' \wedge break_{w,t_N}(e') \wedge Theme(e') = \text{the cart} \\ \quad \wedge Agent(e') = \text{Badma}]] \rightarrow LB(t_N) < t' \\ \quad \wedge \neg \exists e [\text{think}_{w,t'}(e) \wedge ABOUT(e) = e' \wedge Exp(e) = \text{Sajana}]]] \\ \# \text{ otherwise} \end{array} \right.$$

It could be the case that verbs like ‘see’ select for non-presuppositional indefinites, while verbs like *hanaxa* select presuppositional ones. However, postulating this accidentally co-occurring difference in selectional requirements of verbs seems like missing a generalization: the presuppositional nature of the existential inference is dependent on the verb.

Abbreviations

1 — 1st person, 2 — 2nd person, 3 — 3rd person, ABL — ablative, ACC — accusative, ADJ — adjective, CAUS — causative, COM — comitative, COMP — complementizer, CVB — converb with the suffix *-žA*, CVB2 — converb with the suffix *-A:d*, DAT — dative, DISJ — disjunction, EMPH — emphatic, GEN — genitive, HAB — habitual, LOC — locative, NEG — negation, NMN — nominalization, NOM — nominative, PART — participle, PFCT — perfect, PL — plural, POT — potential mood/tense, PRS — present, PST — past with the suffix *-AA*, PST2 — past with the suffix *-bA*, PTCL — particle, Q — question particle, REFL — reflexive, SG — singular, SOC — sociative.

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The author declares that they have no competing interests.

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