Factivity from pre-existence: Evidence from Barguzin Buryat

Tatiana Bondarenko
Massachusetts Institute of Technology
tbond@mit.edu

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 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 nominalized expressions combine in different ways: while CPs modify the verb's event argument and provide the content of thoughts, nominalized clauses 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 nominalized expressions and what the 'remember' translation is trying to convey.

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

1 Introduction

Factivity alternation (Moulton 2009; Abrusán 2011; Özyıldız 2017a; 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 details, see Appendix A in the supplementary materials).

Barguzin Buryat has a verb *hanaxa*, which when combined with indicative CPs, is naturally translated as 'think'.[1] The sentence in (1a) does not have a factive inference, as illustrated in (1b).

(1) a. Dugar [$_{CP}$ mi:sgəi zagaha ədj-ə: /ədi-xə gəžə] 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 was wrong about who ate it.
Dugar [mi:sgəi zagaha əd-jə: gəžə] han-a: xarin mi:sgəi zagaha ədj-ə:-güj
Dugar cat.NOM fish eat-PST COMP think-PST but cat fish eat-PST-NEG
'Dugar **thought** that a cat ate the fish, but a cat didn't eat the fish.'

All (1) states is that in worlds compatible with Dugar's thoughts, there is an event of a cat eating the fish. Thus, negating the proposition expressed by the complement is felicitous.

When *hanaxa* combines with nominalized expressions (NMNs), (2a), it is naturally translated as 'remember'. The sentence with the NMN 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): negating the proposition expressed by the nominalized complement leads to a contradiction.

(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.

[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) and Močnik & Abramovitz (2019) for discussion of similar phenomena in Navajo and Koryak respectively.

Dugar [mi:sgəi-n zagaha ədj-ə:ʃ-i:jə-n'] han-a: xarin
Dugar cat-GEN fish eat-PART-ACC-3 think-PST but
mi:sgəi zagaha ədj-ə:-güj
cat 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 nominalized clause has started before the thinking event. I propose that this presupposition gives rise to the factivity inference with NMNs that we see in (2b): these nominalized clauses 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. In this paper I explore the question of how this presupposition arises and why it is observed in sentences with nominalized expressions, 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 2010; De Cuba 2007; De Cuba & Urogdi 2010; Haegeman 2014). It is also different from approaches that build the inference into the denotation of the verb (Hintikka 1969; Percus 2006). My proposal shares with approaches developed by Özyıldız (2016; 2017a) 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 2017a) will be crucial for my account of the factivity alternation with *hanaxa*.

In section 2 I argue that the inference that we observe when *hanaxa* takes a direct object is the pre-existence presupposition and that it cannot be coming 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

2017a).[2] I propose that 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 nominalized expressions 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 saw that denying the truth of the complement leads to a contradiction when *hanaxa* combines with a nominalized clause, but not when it combines with a 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
'I don't know whether Badma broke the cart...'

a. # ...(xarin) Sajana [Badm-i:n tərgə əmdl-ə:ʃ-i:jə]
(but) Sajana.NOM Badma-GEN cart break-PART-ACC
han-a:
think-PST
'...(but) Sajana remembered that Badma broke the cart.'

b. ...(xarin) Sajana [Badma tərgə əmdl-ə: gəžə] han-a:
(but) Sajana.NOM Badma.NOM cart break-PST COMP think-PST
'...(but) Sajana thought that Badma broke the cart.'

In (3) the speaker explicitly says that they are ignorant about the truth of the complement, which makes the NMN complement infelicitous, in contrast to

[2] 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*.

the CP. 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 (4). If the speaker says (4a), they can follow it up with (4b), but not with (4c). 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).[3]

(4) a. Garag-ai xojor-to Sajana [Badm-i:n tərgə əmdəl-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.'

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.'

(4b) specifies the beginning time of the breaking event which is before the time of Sajana's thinking in (4a), while (4c) specifies the beginning time of the breaking event which is after (4a)'s matrix time. This example suggests that the NMN in (4a) 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 (4) 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). This implies 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 indi-

[3] 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 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.

vidual or event described by the nominal is not set and could in principle be after the matrix time. I will show that these are the characteristics 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.[4] 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 (5) we see *hanaxa* taking 'her future child' as its Theme argument:

(5) **Context:** Currently Seseg has a child. The speaker is talking about some time 7 years ago.
Səsəg gar-ga-x-a: bai-ga:n üxibü-jə: han-a:
Seseg go.out-CAUS-POT-REFL be-PFCT child-ACC.REFL think-PRS
'Seseg remembered her future child.'
(lit. 'her child that will be caused to go out of her')
a. ✓ **Context A:** 7 years ago, Seseg was pregnant with a baby, she has seen her/him during an ultrasound.
b. # **Context B:** 7 years ago, Seseg was not pregnant. But she really wanted a baby and was planning to have one.

Seseg's child exists in the actual world at the utterance time, but this is not enough for (5) to be felicitous: the child needs to have existed before the matrix time, which in this case is some contextually salient time 7 years ago. This suggests that *hanaxa*'s Theme has to *pre-exist* its event argument: Theme's left boundary must be before the matrix time.

Another piece of evidence for the pre-existence inference comes from sentences where *hanaxa* combines with fictional characters that are clearly taken to not be existing at the time of the attitude. Consider (6).

(6) **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.'

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

b. 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 (6) the object which Badma's thoughts 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*. The desired meaning can be conveyed if a different construction, (6b), is used, where the mental attitude is expressed without a designated attitude verb.

The fact that noun phrases 'her future child' and 'an eight-headed cat' are internal arguments of *hanaxa* is crucial for the infelicity of (5b) and (6a). When such noun phrases combine via a postposition *tuxai* 'about', there is no pre-existence requirement. (7a) is fine in a context where Seseg is not pregnant, and (7b), although less preferred compared to (6b), is acceptable in a context where Badma imagines a non-existing animal.

(7) a. Səsəg gar-ga-x-a: bai-ga:n üxibü-n tuxai-ga:
Seseg go.out-CAUS-POT-REFL be-PFCT child-NOM about-ACC.REFL
hana-na
think-PRS
'Seseg is thinking about her future child.'
✓ **Context:** Seseg is not pregnant.

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.'
✓ **Context:** Badma is imagining a non-existing magical animal.

This suggests that being the topic/object of thoughts is not a sufficient requirement for being subject to the pre-existence inference; being the internal argument of the verb is a necessary condition.

When *hanaxa* combines with nominalized expressions, showing the pre-existence requirement is more complicated, because of the question of how it interacts with the temporal/aspectual properties of nominalized clauses (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 *hanaxa*'s Theme can be placed with respect to the matrix time. There are two facts suggesting that there is no restriction placed on it. First, when *hanaxa* combines with enti-

ties, e.g., with proper names, (8), the sentence does not presuppose that the individual denoted by the entity stopped existing: Badma does not need to be dead in order for (8) to be true.

(8) **Context:** Badma is currently alive.
Sajana Badm-i:jɔ 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, (8) 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 NMN depends on the aspectual properties of the participle/form that it is based on.[5] There are nominalized 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 form is presented in (9), where an analytical verbal form consisting of the verb 'be' and a converb is nominalized.[6,7]

(9) 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-ʒa bai-x-i:jɔ] 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 an event described by the nominalized expression to be before the matrix time, we would have expected interpretations like in (9) to not be possible.

Thus, I conclude that in sentences where *hanaxa* combines with a nominal phrase (noun or nominalized clause), there is a pre-existence inference,

[5] I assume that NMN-forming participles introduce additional restrictions on the aspectual/temporal interpretation of events denoted by the nominalized expression (see section 3.2.1 for discussion), which are not present when *hanaxa* combines with individuals like 'Badma', (8), where the pre-existence presupposition is the only temporal relation established (see 3.2.3 for more details on how the composition procedes in each case).

[6] When used as a finite form, the combination of 'be' and a converb usually results in progressive and habitual meanings.

[7] The sentence in (9) is also compatible with a context where Sajana was singing and stopped singing before the time of thinking.

which places a requirement on the left boundary, but not the right boundary of *hanaxa*'s object:

(10) **The pre-existence inference:**
(i) The Theme of the event described by *hanaxa* exists in the world at which *hanaxa* is evaluated (in the 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 (before the matrix time).

I propose that the factivity inference that we saw in (2b) and (3) is a consequence of (10): 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.

Is this pre-existence presupposition responsible for turning 'thinking' into 'remembering'? I would like to argue that *hanaxa* in sentences with nominal arguments does not in fact get the meaning that verbs meaning 're-member' in other languages have, but that the pre-existence presupposition is responsible for *hanaxa* being translated as 'remember'. Buryat does not seem to have a designated verb whose meaning would describe memories of attitude holders, and *hanaxa* with nominal arguments does not have to describe memories either, as can be seen from examples like (11). In (11) *hanaxa* takes a nominalized clause as its complement, and is modified by an adverb *türü:ʃənxijə:* 'for the first time'.[8]

(11) Üsəgəldər Səlməg Badm-i:n hain xüdəl-dəg-i:jə türü:ʃənxijə:
yesterday Selmeg Badma-GEN well work-HAB-ACC for.the.first.time
han-a:
think-PST
'Yesterday Selmeg thought for the first time of Badma working well.'
✓ **Context A:** We have all known for a long time that Badma works very well. Selmeg, 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.'[9]

[8] I am grateful to Kai von Fintel for raising the question of whether *hanaxa* can mean 'realize'.
[9] I hypothesize that the preference for using *oilgoxo* 'understand, sense' in the context A is due to *Maximize Presupposition*: *oilgoxo* presupposes that the attitude holder was unaware of

Context B: We don't know if Badma works well. Selmeg didn't have any thoughts on whether Badma worked well until yesterday.

If *hanaxa* with a direct object described memories, then modification by *türü:ʃənxijə:* 'for the first time' should have been impossible: the attitude holder needs to have previous thoughts about an entity/event in order to remember them. The fact that such modification is possible suggests that *hanaxa*'s meaning does not directly reference memories or previous mental states, and its pre-existence presupposition is about existence in the world at which *hanaxa* is evaluated. This conclusion is supported by the fact that (11) is infelicitous in the context B, where the discourse participants are ignorant about Badma's working skills in the actual world.

While *hanaxa*'s meaning does not appeal to memories, its presupposition might be similar enough to presuppositions of verbs like *remember* to warrant the 'remember' translation in sentences with nominal complements. While *hanaxa* presupposes that its internal argument existed in the actual world before the matrix time, it could be that verbs like *remember* presuppose that their internal arguments existed in both the memory/mental state of the attitude holder and in the actual world before the matrix time. If that is so, then *remembering* an individual entails *hanaxa*-ing that individual. Thus, in the absence of a more specific verb like *remember*, *hanaxa* + *NP* can be used for describing remembering situations in a language like Buryat. I leave further comparison between *hanaxa* with nominal complements and verbs like *remember* for further research.

An anonymous reviewer raises an alternative hypothesis that *hanaxa* just requires that its object has been previously mentioned. I don't think *hanaxa* has such requirement. In (12) Badma's breaking a cart has not been previously mentioned in the discourse. Nevertheless, Dugar's utterance, which has the nominalized expression *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

the individual denoted by its internal argument before, and whenever this presupposition is met, using *oilgoxo* is called for.

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) Earth being flat is previously mentioned in the discourse. However, this is not sufficient for the nominalized clause *Earth's being flat* to be used felicitously as the object of *hanaxa*.

(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.'

Thus, being previously mentioned is neither necessary nor sufficient condition for using a nominal as *hanaxa*'s object.

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 (14) and (15), respectively. This suggests that the inference at hand is a presupposition.

(14) **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?'

(15) **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 (16).

(16) **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 (14)-(15) 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 (14) or directly contradict it (15). The analysis of how the pre-existence presupposition is encoded should ensure that the empirical generalization in (16) is derived.

2.3 The presupposition does not come from the complement

Factivity is one of the components of the presupposition under consideration. 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 by the complement of the verb (Kiparsky & Kiparsky 1970; Kallulli 2010; De Cuba 2007; De Cuba & Urogdi 2010; 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 2017a). I will argue that this hypothesis cannot be maintained for Buryat.

First, the factive inference does not always arise when otherwise non-factive verbs combine with nominalized expressions. For example, when

verbs *ətigəxə* 'believe' and *naidaxa* 'hope' take NMNs as their complements, no factive inference arises, hence the felicity of (17)-(18).[10]

(17) Sajana [Badm-i:n tərgə əmdəl-ə:ʃ-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 believed that Badma broke the cart (lit. 'in Badma's breaking the cart'), but Badma didn't break the cart.'

(18) Sajana [Səsəg-əi xada də:rə gar-a:ʃa-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 nominalized expressions in (17)-(18) are the same as the ones we have seen with *hanaxa*, except that they bear a different case. While *hanaxa* 'think' assigns accusative case to nominalized clauses, (2a), the verbs *ətigəxə* 'believe' and *naidaxa* 'hope' assign a lexical case — dative. The argument structure of the attitude verb, reflected in case assignment, seems to play a role in whether the factive inference is present. Similiar 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 the 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.

Second, the nominalized expression under consideration can have indefinite uses, so the factive inference cannot be due to the definiteness of the complement (see Kastner 2015; Hanink & Bochnak 2017a for proposals of

[10] The same has been observed for other languages too, e.g. for Turkish in (Özyıldız 2017a). An anonymous reviewer points out that in English there are also cases where sentences with nominalized expressions 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.

how definiteness can lead to factivity). Buryat does not have articles, but it can be still shown that the NMN can have indefinite uses.[11] Consider (19).

(19) Darima Sajan-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 Sajan-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 Sajan-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.

The fact that three women could have each remembered different singing of a song about Buryatia by Sajana suggests that the NMN does not have to be definite: definite descriptions have uniqueness presuppositions, and having a uniqueness presupposition would have made (19) infelicitous in the context A. Thus, given that NMNs can denote indefinite descriptions and that the presence of the factive inference does not seem to depend on the context, I conclude that an account of the factivity alternation has to be able to derive the factive inference even for indefinite uses of NMNs.

To sum up, the factive component cannot be attributed to the meaning of the nominalized clause: 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 conclude that the meaning of the nominalized expression itself does not supply the

[11] I am grateful to Deniz Özyıldız for suggesting this diagnostic to me.

presupposition. I propose that the correlation is a result of CPs and NPs combining with attitude verbs in different ways.

3 The proposal

I 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, (20a), and verbs of use, (20b), but, for example, not with verbs of creation, (20c).[12]

(20) a. Sue broke a vase. ⇒ There existed a vase before the time of the breaking event.
b. Mary read a book ⇒ There existed a book before the time of the reading event.
c. Alice wrote a poem. ⇏ 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.[13]

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 decompositional approach to semantics of attitude verbs (Kratzer 2006; 2016; Moul-

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

[13] It might be difficult to completely unify the pre-existence presupposition of *hanaxa* and the inferences in (20a)-(20b) as a single phenomenon due to the difference in their projective behavior. While, as we saw in section 2.2, the presupposition of *hanaxa* projects out of questions and through negation, inferences in (20a) and (20b) do not seem to:

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

ton 2015; Bogal-Allbritten 2016; 2017; Elliott 2017), I 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 2017a). 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. Nominalized expressions (and other nouns) and CPs combine with the attitude verb through different paths: nominalized clauses saturate the Theme argument, and CPs are modifiers that serve to specify the content of the event described by the verb. The fact that NPs and CPs combine through two different paths explains the contrast in (1b)-(2b): 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 nominals and CPs combine via different routes makes a prediction about their distribution (first discussed by Özyıldız (2017b) for Turkish, which also allows examples like (21)): given that CPs and NMNs don't compete for the same position, it should in principle be possible for the verb to combine with both a CP and a NMN at the same time. This is borne out: consider (21) with NMN and CP co-occuring with *hanaxa*.

(21) **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: gəžə] 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 (21) 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 occured, and it happened before the time of Sajana's thinking.

Examples like (21) 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 (21), because the verb *hanaxa* that we see in (21) could neither be *hanaxa*$_1$ 'remember' nor be *hanaxa*$_2$ 'think'.

There are many ways to implement the proposal sketched out above. One question that arises is 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 one. 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.[14]

(22) $[\![hanaxa]\!]^{w,t,g} = \lambda e_e.\text{think}_{w,t}(e)$

As we see from (22), 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 $think_{w,t}(e)$). *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

[14] Adopting neo-Davidsonian representations allows me to avoid postulating pre-existence presuppositions in sentences with CPs, which we have no empirical evidence for. 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, even in sentences with CPs. This would not lead to factivity, because CPs don't combine as Theme arguments. A very weak presupposition, which is difficult to test for, would be predicted: 'Something which the attitude is about pre-exists a thinking event with Content p.'

the embedded clause. Thus, the meaning for the CP in (23) is as presented in (24).[15] Following Kratzer (2006; 2016) I will assume that the Content relation is supplied by the complementizer, (25).

(23) 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.'

(24) $[\![$that Badma broke the cart$]\!]^{w,t,g}$
$= \lambda e_e$.Cont(e) $= \lambda$w'.λt'.Badma broke the cart in w' at some time t" that precedes t'.[16]

(25) $[\![\text{COMP}]\!]^{w,t,g} = \lambda p_{sit}.\lambda e_e$.Cont(e) = p.

3.1.2 Combining CP with *hanaxa*

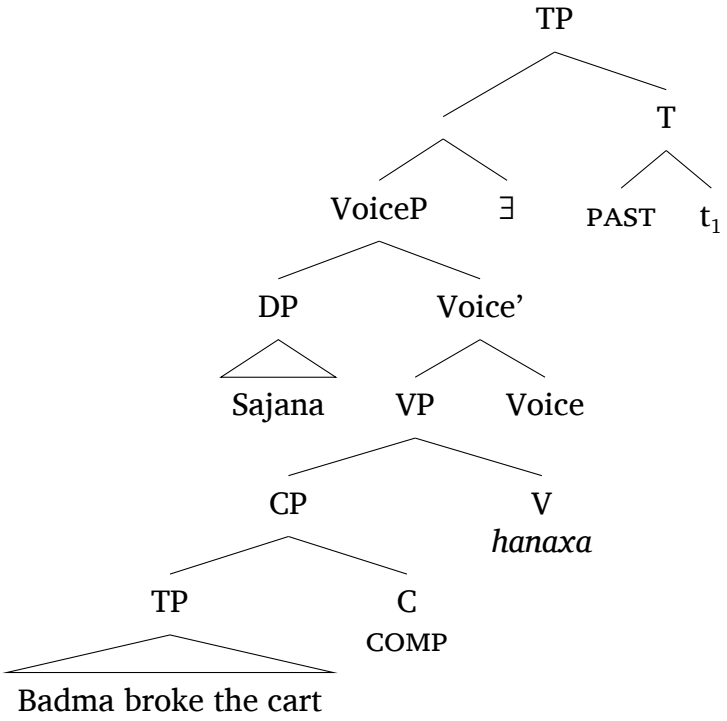
The LF for the sentence in (23) is in (26).

[15] 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 (23) in the system with the subset relation is in (i).

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

[16] 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.

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



The CP combines with *hanaxa* as a modifier of its eventuality argument by Predicate Modification, as shown in (27).

(27) $[\![$*hanaxa that Badma broke the cart*$]\!]^{w,t,g}$ =
λe_e.think$_{w,t}$(e) $\wedge$ Cont(e) = λw'.λt'.Badma broke the cart in w' at some time t" that precedes t'.

Then Voice introduces the external argument, with the resulting one-place predicate of events getting existentially closed, and this proposition is combined by Intensional Functional Application[17] with the contextually restricted (by the free variable t_1) past tense, which I assume to be an ex-

[17] 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) $[\![p]\!]^g_{\dot{C}} = \lambda w.\lambda t.\ [\![p]\!]^{w,t,g}$

(ii) $[\![$*Sajana thought that Badma broke the cart.*$]\!]^g_{\dot{C}}$
= λw.λt. $\exists$e [think$_{w,t}$(e) $\wedge$ Cont(e) = λw'.λt'. Badma broke the cart in w' at some time t" that precedes t' $\wedge$ Exp(e) = Sajana.]

istential quantifier over times (Ogihara 1995).[18] Thus, we get the meaning in (29).[19]

(28) $[\![\text{PAST } t_1]\!]^{w,t,g} = \lambda p_{sit}.\ \exists t' < t \wedge t' \subseteq g(1)\ [p(w)(t') = 1]$,
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

(29) $[\![$*Sajana thought that Badma broke the cart.*$]\!]^{w,t,g} = 1$ iff
$\exists t' < t \wedge t' \subseteq g(1)$ [$\exists$e [think$_{w,t'}$(e) $\wedge$ Cont(e) = $\lambda w'.\lambda t'$.Badma broke the cart in w' at some time t" that precedes t' $\wedge$ Exp(e) = 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.

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 converbial[20] suffix found with analytical verb forms and restructuring verbs, (30a), as well as in sentential adjuncts, (30b).

(30) a. Badma bəʃəg bəʃə-**žə** əxil-ə:
Badma letter write-**CVB** begin-PST
'Badma began to write a letter.'

[18] I am simplifying the meaning of tense by disregarding its presuppositional component.
[19] I am simplifying the real facts by not discussing the contribution of aspect.
[20] 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).

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 (30a) or (30b) can be plausibly analyzed as event modifiers (specifying, e.g., the nature of the beginning event in (30a) and the cause of the father-becoming event (30b)). 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.[21]

Additional evidence comes from proform substitution. Finite CPs can be substituted by the proform used for sentential adjuncts and restructuring clauses, (31a): *ti:-žə* (do.so-CVB), which is a converbial form of the proform-forming verb *ti:xə* 'do.so', (31b). CPs cannot be substitued for by a demonstrative pronoun *tərə* or an adjectival proform *ti:-mə* (do.so-ADJ), which are used for refering back to entities and predicates of entities respectivelly.

(31) 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

[21] 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 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.

can occupy.[22] Both adverbs and CPs can be positioned quite freely with respect to the arguments of the verb, (32).

(32) 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, (33). Noun phrases, including nominalized clauses, are different in this respect: they can occupy subject positions, (34).

(33) *[$_{CP}$ 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.'

(34) 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:ʃə-n'] Sajan-i:jə gar-u:l-a:
Badma-GEN cart break-PART-3.NOM Sajana-ACC anger-CAUS-PST
'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 + NMN*

3.2.1 The meaning of the nominalized clause

The nominalized expression under consideration, (35), is built from the following morphological pieces: the verbal root, the participle suffix *-A:ʃA*[23], and the nominal morphology — case and optional possessive marking.[24]

[22] 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 occuring after the verb.
[23] Capital letters represent vowels before harmony rules have applied to them.
[24] Nominalized clauses can in principle also attach morphemes encoding valency alternations (passive, causative), and negation, which precede the participial suffix.

(35) 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.'

In place of *-A:ʃA*, 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 nominalized expressions that describe events.

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:ʃA*, which forms the NMN in (35) that I focus on in this paper, is past-oriented:[25] it is used when the time of the event denoted by the NMN (t_N) precedes the matrix time (t_m), as is illustrated by the felicity of (36) in context A and by its infelicity in contexts B and C.

(36) Bi [Dugar-ai Baigal-ha: jər-**ə:ʃ**-i:jə] məd-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 NMN event with respect to the matrix time, (37): there is a time interval t_N at which the event denoted by the nominalized expression is evaluated, and the right boundary (RB) of this time interval is before the matrix time.

[25] This is true only of its uses in nominalized expressions. In relative clauses, it is commonly used for describing "a permanent property of an individual" (Sanzheev et al. 1962).

(i) [Manai taiʃ-a: tuxai du: garg-a:ʃa] xün ənə-l da:
1SG.GEN taiʃi-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)

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

When *-A:ʃA* combines with the verb phrase 'break the cart by Badma', (38), by Intensional Functional Application (with the intension of the VP as in (39)), it returns a predicate of events such that they are events of breaking the cart by Badma whose right boundary precedes the matrix time, (40). This is the meaning of the nominalized clause.

(38) $[\![\textit{break the cart by Badma}_{VP}]\!]^{w,t,g}$
$= \lambda e'_e.\ \text{break}_{w,t}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}$

(39) $[\![\textit{break the cart by Badma}_{VP}]\!]^{g}_{\text{Ç}}$
$= \lambda w_s.\lambda t_i.\lambda e'_e.\text{break}_{w,t}(e') \wedge \text{Theme}(e') = \text{the cart} \wedge \text{Agent}(e') = \text{Badma}$

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

In order to simplify future derivations, I introduce the abbreviation in (41):

(41) $[\![\text{Badma's breaking.PART.PAST the cart}]\!]^{w,t,g} =$
(40) $=_{ABB} \lambda e'_e.\ \text{NMN}_{w,t_N<t}(e')$

The denotation in (40) does not specify how such a NMN combines with the verb. This issue will be discussed in detail in section 3.2.3.

For now, I would like to provide some arguments that this nominalized expression does not specify the propositional content of the thinking event (unlike CPs, see (24)). The denotation in (40) predicts that this NMN will not be able to describe beliefs of the attitude holder. While the beliefs of the attitude holder could be compatible with the existence of an event denoted by the nominalized clause, they do not have to be. I would like to argue that this prediction is borne out. Consider (42).

(42) **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:ʃ-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: gəžə]
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 (42) we see two clauses with the verb *hanaxa* and the same attitude holder; in the first clause the verb combines with the nominalized expression, and in the second it combines with a CP with the lexical material identical to that of the NMN. If the nominalized clause 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, (42) is felicitous. The description of an event denoted by the NMN 'Darima's driving too quickly' is the speaker's description, not Badma's: while Badma recalls something *about* an event of Darima's driving too quickly, his thoughts actually are that she didn't drive too quickly.

Another piece of evidence comes from the fact that nominalized clauses cannot report false memories. In the context in (43), while a CP can be used with *hanaxa* to describe Darima's false memory, the NMN cannot:

(43) **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.

a. Darima [gər-tə xulgaiʃan or-o: gəžə] 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.'

b. # 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 (43b) supports the claim that the nominalized expression cannot describe the Content of the thinking event.

My proposal that the NMN denotes a function that characterizes a set of events is also supported by distributional facts. First, the nominalized clause can be referred to by the noun *uʃar* 'event, situation' and, unlike propositions, can 'happen outside', (44), suggesting that the NMN can denote a predicate of dynamic events without any Content.

(44) 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 deictic stance on the truth of the complement. For example, a nominalized clause cannot be a complement of *arsaldaxa* 'argue', unlike a CP, even if the context supports a factive interpretation of the complement, (45).[26]

(45) **Context:** There has been a debate about whether Seseg went up the mountain. After a while, Seseg herself came and settled the debate. Now everyone knows that Seseg indeed went up the mountain.
a. Sajana aja:r xəzə:-n-hə: xoiʃo [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: xoiʃo [Səsəg-əi xada
Sajana long.ago when-NOM-ABL back Seseg-GEN mountain
də:rə gar-a:ʃ-i:jə] arsalda-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 (45b) is that verbs like *arsaldaxa* 'argue' require an argument which specifies their propositional Content. If the NMN could provide Content, the sentences in (45b) would have been grammatical. However, since the NMN cannot specify Content of the attitude verb, it cannot satisfy this requirement, hence the

[26] I am grateful to an anonymous reviewer for bringing up this question.

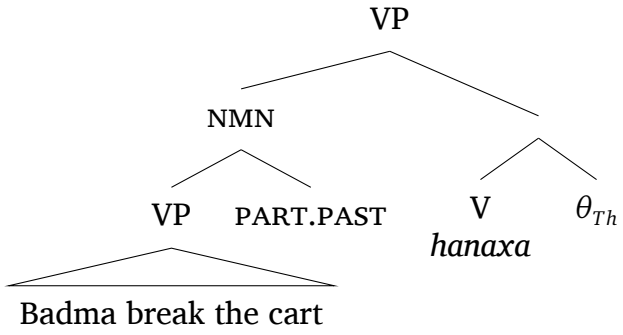
ungrammaticality of (45b).[27] Thus, I conclude that analyzing the nominalized clause as a predicate of events which does not introduce a Content relation between an event and a proposition is supported by the data.

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 (46) 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). (47) demonstrates the LF of the VP.

(46) *(to be modified later)*
$[\![\theta_{Th}]\!]^{w,t,g} = \lambda P_{et}.\lambda x_e.\lambda e_e$: $LB(\tau(x)) < t.\ P(e) \wedge \textsc{about}(e) = x.$
(where LB is 'left boundary'; τ is a function which takes an individual and returns its time span[28]; ABOUT is a function that takes an event with Content and returns its topic)

(47)



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

[27] 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 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 NMNs when the requirement to specify propositional content is independently satisfied by a CP.

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

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 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., 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:

(48) **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: 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')

While NP 'her future child' in the object position of *hanaxa* is infelicitous in a context where it is common knowledge that Seseg does not have or bear a child yet, no infelicity arises when the same noun phrase combines via the postposition *tuxai* 'about'. 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 about the denotation in (46) is whether some verbs besides *hanaxa* combine with their internal arguments via θ_{Th}. To address this question, I need to make my assumptions about functional heads like

θ_{Th} explicit. I assume that both roots and functional heads can be subject to *allosemy* (Marantz 2013; Wood & Marantz 2017), i.e., interpretation of heads can be conditioned by the environment in which they appear similar to how exponents of heads are sometimes conditioned by their environment (*allomorphy*). Both processes obey locality restrictions. For the present purposes, it is enough to assume that the sister of a head can trigger allosemy.

I propose that θ_{Th} is the functional head that introduces internal arguments of all verbs that take such arguments, but that its interpretation is subject to allosemy conditioned by the verb, which is the sister to θ_{Th} (47). Thus, the denotation of θ_{Th} has the following shape:

(49) $[\![\theta_{Th}]\!]^{w,t,g}$
$\Leftrightarrow \lambda P_{et}.\lambda x_e.\lambda e_e$: $LB(\tau(x)) < t.\ P(e) \wedge \textsc{about}(e) = x$ /__ $\sqrt{hanaxa}$
$\Leftrightarrow \lambda P_{et}.\lambda x_e.\lambda e_e$: $\neg(LB(\tau(x)) < t).\ P(e) \wedge \textsc{r}(e) = x$ /__ $\sqrt{\ldots}$
(where R is some theta-role relation)
$\Leftrightarrow$ ...

To the right of each double arrow is the denotation that θ_{Th} will have provided that the context, which in this case is the verbal root that θ_{Th} combines with, is met. In the context of *hanaxa*, θ_{Th}'s denotation will be as in (46). In context of other verbs it could have different denotations. For example, perhaps verbs like *write, create, invent, imagine* create a context in which θ_{Th} assigns a different theta-role to the internal argument and has an opposite presupposition, i.e., a presupposition that the left boundary of the internal argument is not before the matrix time.[29]

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 *xələxə* 'say'[30], which are non-factive when they combine with CPs. When they combine with nominalized clauses, these NMNs denote the topic of what has been heard or said, and the resulting sentences exhibit factive presuppositions:

[29] I acknowledge that there are bigger questions that arise with respect to an analysis that makes use of allosemy: e.g., why do different roots condition θ_{Th}'s meaning the way they do? Is this conditioning arbitrary or predictable from some properties of the eventualities denoted by the root? I have to leave these issues open for now.

[30] For some consultants, this verb did not take nominalized expressions as complements at all. The judgments provided here are for those who did accept nominal complements with this verb.

(50) 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.'

(51) 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.

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 (50a) and (51a) are incompatible with contexts in which an event described by the NMN does not exist in the actual world. This is corroborated by the impossibility of the continuations of (50b) and (51b) respectively. The question whether the temporal component of the presupposition is present with these verbs as well requires further investigation.[31]

I expect that other languages could also have allosemes 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

[31] 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: / ojlg-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-occurence of *about*-arguments introduced by θ_{Th} and CPs is a widely attested phenomenon.

of attitude verbs could stem from presuppositions of argument-introducing heads, whatever those might be.

3.2.3 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. I focus on indefinite readings of nominalized expressions in order to guarantee that the pre-existence presupposition is derived with them as well. The general question of presupposition projection from quantificational sentences 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 an account of how the pre-existence presupposition of *hanaxa* functions in sentences with indefinite complements in Barguzin Buryat. For example, I would like my analysis to capture that the pre-existence inference survives in sentences with negation, as we have seen in (15), repeated here as (52).

(52) **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.'

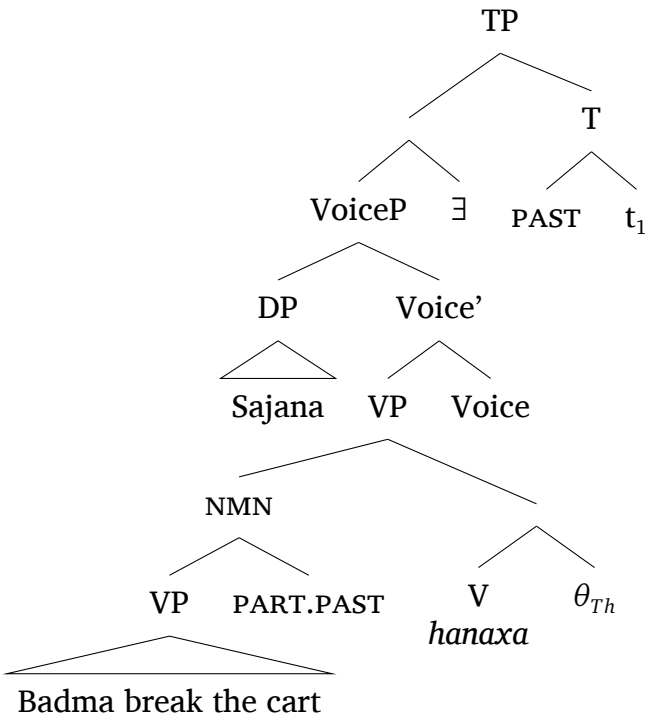
Nominalized clauses are bare noun phrases, and I will assume that they are predicates of events of type $<$e,t$>$. I propose that the existential quantifier corresponding to the indefinite does not combine with the NMN directly (see appendix B in the supplementary materials for some issues with such a view), but is introduced by θ_{Th} when it combines with *hanaxa*.[32] Under this approach, the nominalized expression itself is not a quantificational phrase.

The LF for the sentence with a NMN, (53), is shown in (54).

(53) 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.'

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

(54)



I assume the standard view that presuppositions are encoded as partial functions (Frege 1892), and therefore, the semantics that I am using is trivalent. More concretely, following Karttunen & Peters (1979), George (2008b; a; 2014), Fox (2013), I make use of Kleene logic to track how presuppositions project.[33]

In the light of the foregoing, the final meaning of θ_{Th} when it combines with *hanaxa* is in (55).

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

The nominalized clause, (40), 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 nominalized expression 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 NMN and also places a restriction that the left boundary of that event has to precede the matrix time. This is the pre-existence presupposition.

[33] I leave it open 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 (56).[34]

(56) $[\![\theta_{Th}]\!]^{w,t,g} = \lambda \mathrm{P}_{et}.\lambda \mathrm{Q}_{et}.\lambda \mathrm{e}_{e}.$

$$\begin{cases} 1 \text{ iff } \exists x[Q(x) \wedge LB(\tau(x)) < t \wedge P(e) \wedge \textsc{about}(e) = x] \\ 0 \text{ iff } \exists x[Q(x) \wedge LB(\tau(x)) < t] \wedge \neg\exists x[Q(x) \wedge LB(\tau(x)) < t \wedge P(e) \\ \qquad\qquad\qquad\qquad\qquad\qquad \wedge \ \textsc{about}(e) = x] \\ \# \text{ otherwise} \end{cases}$$

As the denotation in (56) 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. Thus, 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.

(56) 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 nominalized clause (= the second argument Q), with the Voice head and the external argument, resulting in the denotation for VoiceP in (57).

(57) $[\![\text{VoiceP}]\!]^{w,t,g}$
$= \lambda \mathrm{e}_{e}.$

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

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

This VoiceP combines with the existential closure, (58), which, being existential quantifier, has a disjunctive presupposition.[35]

(58) $[\![\exists]\!]^{w,t,g} = \lambda \text{P}_{et}\text{: } \exists\text{e}[\text{P(e)} = 1] \vee \forall\text{e}[\text{P(e)} = 0].\ \exists\text{e}[\text{P(e)} = 1]$

This, when simplified, results in (59).[36]

[35] 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 ϕ(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, ϕ(x) is false. Here's an illustration based on (George 2014:105).

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

The sentence in (i) is true iff there is at least one student who smoked before and doesn't smoke now. This sentence is false iff all students 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. In other words, 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.

[36] 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[ψ(x)].

(59) $[\![\text{VoiceP} + \exists]\!]^{w,t,g} =$

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

Finally, the proposition in (59) is combined with the contextually restricted tense, (60), by Intensional Functional Application, resulting in (61).

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

(61) $[\![\text{TP}]\!]^{w,t,g} =$

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

(61) 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.

(61) 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.[37]

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

[37] "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.

predicts the attested projection behavior of the pre-existence presupposition, (16), repeated here as (62).

(62) **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 θ_{Th}, when it combines with *hanaxa*, takes individuals like proper names (see 'Badma' in (8)) as its arguments, which I assume to denote entities and not functions that characterize sets of entities. I propose that DPs like 'Badma' are 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 NMN: the result of combining θ_{Th} with *hanaxa* takes the property of individuals λx *[x = 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 2017a) 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. Beyond that however, these two approaches are quite different. Özyıldız (2017a) analyzes Turkish nominalized expressions as denoting propositions, something that is implausible for Buryat, given the evidence that participle-based NMNs cannot describe beliefs of attitude holders in this language (see section 3.2.1). Özyıldız (2017a) derives the factive reading by hypothesizing that nominalized clauses undergo movement, and the binder created in this movement binds not only the trace of the NMN, but also a situation-denoting pronoun that is part of the covert definite description that is the *res*-argument

(i) $[\![\text{Sajana thought of Badma's breaking the cart}]\!]^{w,t,g} =$

$$\begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \\ \quad [\exists e[\exists e'[\exists t_N[RB(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge Theme(e') = \text{c} \wedge Agent(e') = \text{B}] \\ \qquad \wedge LB(t_N) < t' \wedge \text{think}_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge Exp(e) = \text{S}]]] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \\ \quad [\exists e'[\exists t_N[RB(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge Theme(e') = \text{c} \wedge Agent(e') = \text{B}] \\ \qquad \wedge LB(t_N) < t'] \\ \quad \wedge \neg\exists e[\exists e'[\exists t_N[RB(t_N) < t' \wedge \text{break}_{w,t_N}(e') \wedge Theme(e') = \text{c} \wedge Agent(e') = \text{B}] \\ \qquad \wedge LB(t_N) < t' \wedge think_{w,t'}(e) \wedge \text{ABOUT}(e) = e' \wedge Exp(e) = \text{S}]] \\ \# \text{ otherwise} \end{cases}$$

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 NMNs allow indefinite readings (see (19) 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

4.1 Nominalized CPs

I have argued above that participle-based nominalized clauses like (2a) do not specify Content of events that are in their characteristic set. Barguzin Buryat also has a different kind of nominalized expressions: nominalized CPs, (63).[38]

(63) [Badma üstər nom unʃ-a: **g-ɔ:ʃɔ**] buru:
Badma yesterday book read-PST **say-PART.NOM** false
'That Badma read a book yesterday is false.'

The NMN in (63) involves a finite clause under the complementizer *g-ɔ:ʃɔ*, which consists of the root *gɔ* 'say' and participial suffix *-A:ʃA*. Unlike *gɔžɔ*-CPs, nominalized CPs like (63) 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 (63) is a predicate of entities like *claim/rumor/thought* with Content 'Badma read a book yesterday':

(64) ⟦Badma read a book yesterday *g-ɔ:ʃɔ*⟧^{w,t,g}
= λx_e. Cont(x) = λw'.λt'. Badma read a book yesterday in w' at some time t" that precedes t'.

Thus I make a prediction that when a NMN like (63) is an object of *hanaxa*, there should be no factive inference that an event of the kind described by the clause under *g-ɔ:ʃɔ* (Badma's reading a book yesterday) exists 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:

[38] See (Kim 2004; 2009; Bogal-Allbritten & Moulton 2016) for discussion of a Korean nominalized clause with *ta* and *kes* morphemes with similar semantics to the NMN in (63).

(65) **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 (64), 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 (65), 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 (66): in a context where Dugar was the first person to think that the cat ate the fish, (66) is infelicitous.

(66) # 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 nominalized expression 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 NMNs with a future/modal morpheme xa

Another prediction that the current proposal makes is that combining *hanaxa* with a nominalized clause based on a participle that sets the left boundary of the NMN-event after the matrix time should result in presupposition failure. This is so because the presupposition introduced by θ_{Th} in (55), repeated

in (67), explicitly states that the left boundary of the NMN-event should precede the matrix time.

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

Testing this prediction turns out to be quite complicated. The main issue 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:

(68) Bi jəxə bolo-xo-d-o:, tomo gər 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):

(69) Tə:d-ʃjə, ʃi üʃö: baga-ʃ, bu: ürgəl-xə-ʃni üʃö: üdi:
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 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*-NMNs 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 (70), in which *hanaxa* combines with a nominalized clause based on the *-xA* participle.

(70) Badm-ain gurban butylka hü 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.

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, (68)-(69). 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.[39]

The second interpretation requires more support from the context, but seems to be generally available. When (70) 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.[40]

(71) 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 *xA*-NMN 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 the literature (Dowty 1979; Cipria & Roberts 2000), it

[39] Some other matrix verbs, e.g. *mədəxə* ‘know’, seem to not allow such past-oriented readings of *xA*:

(i) Context: Dugar returned from Baikal yesterday.
Bi Dugar-ai Baigal-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.’

[40] 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 intriguing 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 (70).

could be that the shift observed in the meaning of the nominalized clause 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 *xA*-NMNs denote when they combine with *hanaxa*. Consider (72).

(72) **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 *xA*-NMN with *hanaxa* is still acceptable, and what the speaker recalls is Badma's plan to buy meat.

A similiar point is illustrated in (73), where the speaker recalls Dugar's obligation, which they know he will not fulfill.

(73) **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 Baigal-ha: jərə-x-i:jə] hana-na-m, xarin bi
1SG Dugar-GEN Baikal-ABL come-POT-ACC think-PRS-1SG but 1SG
Dugar Baigal-ha: jərə-xə-güi gəžə 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 (72) and (73) the pre-existence presupposition applies to the modal statement that *xA* introduces: e.g., in (73) 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 implication of 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. This facilitates a view that unifies attitude verbs and predicates of events without propositional Content: both can presuppose that there exists an individual described by their internal argument that pre-exists the event described by them. When the internal argument is a predicate of events, we get a factive inference.

Support for this view comes from languages which use 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).[41]

Here is an example of this from Balkar.[42] The verb 'drop' ('cause to fall') requires that its direct object pre-exists the dropping, (74). When what is being dropped is an event (denoted by the nominalized clause) and the location of the dropping is one's memory, we arrive at an attitude report meaning 'remember', (75). Naturally, this attitude report has a factive inference: there has to exist an event of Fatima winning the contest.

(74) alim-de alma-la zoqe-le. # alim alma-nɨ tüʃ-ür-gen-di
Alim-LOC apple-PL exist-PL Alim apple-ACC fall-CAUS-PFCT-3
'Alim had no apples. # Alim dropped an apple.'

(75) alim [fatima-nɨ sabij-i eriʃü-de qat-xan-ɨ-n] es-i-ne
Alim Fatima-GEN child-3 contest-LOC win-PFCT-3-ACC memory-3-DAT
tüʃ-ür-gen-di, # alaj fatima-nɨ sabij-i eriʃü-de qɨtdɨr-ʁan-dɨ
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 Fatima's child lost the contest'.

Thus, it seems that the pre-existence requirement that we see in (74) with respect to the internal argument of 'drop' is retained when the internal argu-

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

[42] 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 the Kabardino-Balkarian Republic of Russia.

ment is an event-denoting nominalized expression and the resulting meaning is that of an attitude report.[43]

Here is another example. Russian verb *vyletet'* 'fly out', which seems to presuppose that an individual flying out was in the specified location prior to flying, can occur with a PP 'out of head' and a CP clause, and a factive attitude report meaning 'forget' is created in such cases, (76).[44]

(76) 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) and Banerjee & Karmakar (2020) 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 play a crucial role in whether the attitude report has a factive inference. For example, 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.

(77) 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...".[45] I agree with this

[43] For my consultants, both the inference in (74) and the inference in (75) project, and thus seem to behave like presuppositions.

[44] The data reported here comes from judgment tasks with three native speakers of Russian.

[45] I was made aware of Banerjee et al. (2019)'s work on Bangla only after completing my work on Buryat's *hanaxa*. I have to leave a detailed comparison between Buryat and Bangla for future work.

conclusion: the argument structure of embedding verbs, in particular the presuppositions associated with their internal arguments, is what stands behind (at least some, but potentially all) factive inferences.[46]

While it is beyond the scope of this paper to conclude whether examples like (75), (76), and (77) all indeed involve the same alloseme 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 examined a case of factivity alternation in Barguzin Buryat: this language has an attitude verb *hanaxa* which is non-factive in sentences with CPs, but exibits factive inferences when it combines with nominal complements. I have argued that this is not a case of ambiguity, but rather a consequence of CPs and nominals combining with the verb in different ways: 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), and θ_{Th} places a 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 (i) is responsible for the factive inference; (ii) is what the 'remember' translation in sentences with nominal complements is trying to convey. Since CPs do not combine as Theme arguments, no pre-existence presupposition is present in sentences with them.

The proposal advanced in this paper suggests that one source of factive inferences is presuppositions of verbs about their internal arguments, and one source of factivity alternations is the availability of several paths for combining with the verb.

[46] Note that both in Russian and Bangla examples above, (76)-(77), 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.

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 — nominalized expression, 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.

References

Abrusán, Márta. 2011. Predicting the presuppositions of soft triggers. *Linguistics and Philosophy* 34(6). 491–535.

Banerjee, Arka. 2019. On Belief Reports in Bangla. *Jadavpur Journal of Languages and Linguistics* 3(2). 29–41.
Banerjee, Arka. to appear. Gerunds and Bangla clause-embedding verbs. In *Proceedings of ESSLLI 31*.
Banerjee, Arka & Samir Karmakar. 2020. How light verbs shed light on attitude building. In *Proceedings of the 22nd Seoul International Conference on Generative Grammar*. 21–37.
Banerjee, Arka, Samir Karmakar & Sujata Ghosh. 2019. Factivity and nominalization: A study on 'mind-predicates' in Bangla. ICLA presentation.
Beaver, David I. 2001. *Presupposition and assertion in dynamic semantics*, vol. 29. CSLI publications Stanford.
Bochnak, M. Ryan & Lisa Matthewson. 2015. *Methodologies in semantic fieldwork*. Oxford University Press, USA.
Bochnak, M. Ryan & Lisa Matthewson. 2020. Techniques in complex semantic fieldwork. *Annual Review of Linguistics* 6. 261–283.
Bogal-Allbritten, Elizabeth. 2016. *Building meaning in Navajo*: University of Massachusetts Amherst dissertation.
Bogal-Allbritten, Elizabeth. 2017. Basic pieces, complex meanings: Building attitudes in Navajo and beyond. Invited talk at the Workshop on polysemy and coercion of clause embedding predicates. 39th Annual Meeting of DGfS. Saarbrucken, Germany.
Bogal-Allbritten, Elizabeth & Keir Moulton. 2016. Nominalized clauses and reference to propositional content. In *Proceedings of Sinn und Bedeutung*, vol. 21. 215–232.
Castañeda, Hector-Neri. 1967. Comments. In Nicholas Resher (ed.), *The logic of decision and action*, 104–112. Pittsburgh: University of Pittsburgh Press.
Cattell, Ray. 1978. On the source of interrogative adverbs. *Language* 61–77.
Charlow, Simon. 2009. Strong predicative presuppositional objects. In *Proceedings of New Directions in the Theory of Presupposition, ESSLLI 2009, Bordeaux.*, vol. 109. (11pp). https://simoncharlow.com/papers/presupp.pdf.
Chemla, Emmanuel. 2009. Presuppositions of quantified sentences: Experimental data. *Natural Language Semantics* 17(4). 299–340.
Cheremisov, K.M. 1973. *Buryat-Russian dictionary*. Soviet encyclopedia, Moscow.
Chierchia, Gennaro. 1995. *Dynamics of Meaning. Anaphora, Presupposition and the Theory of Grammar*. University of Chicago Press.
Cipria, Alicia & Craige Roberts. 2000. Spanish imperfecto and pretérito: Truth conditions and aktionsart effects in a situation semantics. *Natural*

Language Semantics 8(4). 297–347.
Copley, Bridget. 2008. The plan's the thing: Deconstructing futurate meanings. *Linguistic Inquiry* 39(2). 261–274.
Copley, Bridget. 2014. Causal chains for futurates. In Philippe De Brabanter, Mikhail Kissine & Saghie Sharifzadeh (eds.), *Future Times, Future Tenses* (Oxford Studies of Time in Language and Thought), 72–86. Oxford University Press. https://hal.archives-ouvertes.fr/hal-01018865.
De Cuba, Carlos & Barbara Urogdi. 2010. Clearing up the facts on complementation. *University of Pennsylvania Working Papers in Linguistics* 16(1). 41–50. https://repository.upenn.edu/pwpl/vol16/iss1/6.
De Cuba, Carlos Francisco. 2007. *On (non) factivity, clausal complementation and the CP-field*: The Graduate School, Stony Brook University: Stony Brook, NY. dissertation.
Deal, Amy Rose. 2018. Compositional paths to *de re*. In *Semantics and Linguistic Theory*, vol. 28. 622–648.
Diesing, Molly. 1992. *Indefinites*. MIT press.
Djärv, Kajsa. 2019. *Factive and assertive attitude reports*: University of Pennsylvania dissertation.
Dowty, David R. 1979. *Word meaning and Montague Grammar (Synthese Language Library 7)*. Dordrecht: Reidel Publishing Company.
Elliott, Patrick. 2017. *Elements of Clausal Embedding*: University College London dissertation.
Fox, Danny. 2013. Presupposition Projection from Quantificational Sentences: Trivalence, Local Accommodation, and Presupposition Strengthening. In Ivano Caponigro & Carlo Cecchetto (eds.), *From Grammar to Meaning*, 201–232. Cambridge: Cambridge University Press.
Frege, Gottlob. 1892. Über sinn und bedeutung. *Zeitschrift für Philosophie und philosophische Kritik* 100. 25–50.
George, Benjamin. 2008a. Predicting presupposition projection: Some alternatives in the strong Kleene tradition. Manuscript, UCLA. https://semanticsarchive.net/Archive/DY0YTgxN/.
George, Benjamin R. 2008b. A new predictive theory of presupposition projection. In *Semantics and Linguistic Theory*, vol. 18. 358–375.
George, Benjamin R. 2014. Some remarks on certain trivalent accounts of presupposition projection. *Journal of Applied Non-Classical Logics* 24(1-2). 86–117.
Haegeman, Liliane. 2014. Locality and the distribution of main clause phenomena. In Enoch Obladé Aboh, Maria Teresa Guasti & Ian Roberts (eds.), *Locality*, vol. 10 (Oxford Studies in Comparative Syntax), 186–222. Oxford University Press.

Hanink, Emily & M. Ryan Bochnak. 2017a. Factivity and two types of embedded clauses in Washo. In *North-East Linguistic Society (NELS)*, vol. 47. 65–78.

Hanink, Emily & M. Ryan Bochnak. 2017b. Selection and complement clause size in Washo. *Paper presented at the Selection Fest Berlin 2017 workshop at the Leibniz-Zentruem für Allgemeine Sprachenwissenschaft* .

Heim, Irene. 1983. On the projection problem for presuppositions. In *Proceedings of WCCFL 2*. 114–125.

Heim, Irene. 1994. Comments on Abusch's theory of tense. In Hans Kamp (ed.), *Ellipsis, tense, and questions*, 143–170. University of Amsterdam.

Hintikka, Jaakko. 1969. Semantics for propositional attitudes. In J.W. Davis, D.J. Hockney & W.K. Wilson (eds.), *Philosophical logic*, 21–45. Dordrecht: Reidel.

Kallulli, Dalina. 2010. Belief will create fact: On the relation between givenness and presupposition, and other remarks. *Theoretical Linguistics* 36(2-3). 199–208.

Karttunen, Lauri & Stanley Peters. 1979. Conventional Implicature in Montague Grammar. In *Proceedings of the Berkeley Linguistics Society I*. 226–278.

Kastner, Itamar. 2015. Factivity mirrors interpretation: The selectional requirements of presuppositional verbs. *Lingua* 164. 156–188.

Kim, Min-Joo. 2004. Three types of kes-nominalization in Korean. *Harvard Studies in Korean Linguistics* 10. 479–492.

Kim, Min-Joo. 2009. E-type anaphora and three types of kes-construction in Korean. *Natural Language & Linguistic Theory* 27(2). 345–377.

Kiparsky, Paul & Carol Kiparsky. 1970. Fact. In Manfred Bierwisch & Karl E. Heidolph (eds.), *Progress in linguistics*, 143–173. The Hague: Mouton.

Kratzer, Angelika. 2006. Decomposing attitude verbs. Talk given in honour of Anita Mittwoch.

Kratzer, Angelika. 2016. Evidential Moods and the Semantics of Attitude and Speech Reports. Talk given at the University of Pennsylvania (May 5, 2016), the 1st Syncart Workshop (Siena, July 13, 2016), and the University of Connecticut (September 9, 2016).

Lee, Chungmin. 2019. Factivity alternation of attitude 'know' in Korean, Mongolian, Uyghur, Manchu, Azeri, etc. and Content Clausal Nominals. *Journal of Cognitive Science* 20(4). 449–503.

Marantz, Alec. 2013. Locality domains for contextual allomorphy across the interfaces. In Ora Matushansky & Alec Marantz (eds.), *Distributed morphology today: Morphemes for Morris Halle.*, 95–113. Cambridge Massachussetts: The MIT Press.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International journal of American linguistics* 70(4). 369–415.
Močnik, Maša & Rafael Abramovitz. 2019. A Variable-Force Variable-Flavor Attitude Verb in Koryak. In Julian J. Schlöder, Dean McHugh & Floris Roelofsen (eds.), *Proceedings of the 22nd Amsterdam Colloquium*. 494–503.
Moulton, Keir. 2009. *Natural selection and the syntax of clausal complementation*: University of Massachusetts Amherst dissertation.
Moulton, Keir. 2015. CPs: Copies and compositionality. *Linguistic Inquiry* 46(2). 305–342.
Ogihara, Toshiyuki. 1995. The semantics of tense in embedded clauses. *Linguistic Inquiry* 663–679.
Özyıldız, Deniz. 2016. Knowledge reports without truth. *Proceedings of the European Summer School in Logic, Language, and Information (ESSLLI)* 184–196.
Özyıldız, Deniz. 2017a. Attitude reports with and without true belief. In *Semantics and Linguistic Theory*, vol. 27. 397–417.
Özyıldız, Deniz. 2017b. Knowledge reports with and without true belief. Generals Paper. UMass Amhest.
Parsons, Terence. 1990. *Events in the semantics of English: a study in subatomic semantics.* The MIT Press.
Partee, Barbara H. 1986. Noun phrase interpretation and type-shifting principles. In J. Groenendijk, D. de Jongh & M. Stokhof (eds.), *Studies in discourse representation theory and the theory of generalized quantifiers*, 115–143. Dordrecht: Foris.
Percus, Orin. 2006. Antipresuppositions. In A. Ueyama (ed.), *Theoretical and empirical studies of reference and anaphora: Toward the establishment of generative grammar as an empirical science*, vol. 52, 52–73. Japan Society for the Promotion of Science, Tokyo.
Rawlins, Kyle. 2013. About *about*. In *Proceedings of SALT*, vol. 23. 336–357.
Sanzheev, G. D., T. A. Bergataev & C. B. Cidendambaev (eds.). 1962. *Grammar of Buryat*. Moscow: Publishing House of Oriental Literature.
Skribnik, E.K. & N.B. Darzhaeva. 2016. *Grammatika buryatskogo yazyka. [Grammar of the Buryat language]. Sintaksis slozhnogo (polipredikativnogo) predlozheniya. [Syntax of complex (polypredicative) sentences.]*, vol. 1. Russian Academy of Sciences. Siberian department.
Wood, Jim & Alec Marantz. 2017. The interpretation of external arguments. In Roberta D'Allesandro, Irene Franco & Ángel J. Gallego (eds.), *The Verbal Domain*, 255–278. Oxford, New York: Oxford University Press.
Yablo, Stephen. 2014. *Aboutness*. Princeton University Press.

Appendix A: Fieldwork and methodology

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

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.

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).

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.

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.

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 well 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.

References

Bochnak, M. Ryan & Lisa Matthewson. 2015. *Methodologies in semantic fieldwork*. Oxford University Press, USA.

Bochnak, M. Ryan & Lisa Matthewson. 2020. Techniques in Complex Semantic Fieldwork. *Annual Review of Linguistics* 6. 261–283.

Kibrik, Aleksandr Evgen′evič. 1972. *Metodika polevych issledovanij [methodology of fieldwork]: (k postanovke problemy) [towards posing the problem]*.

Monograph 10. Publications of the Department of Structural and Applied Linguistics, Moscow State University.

Kibrik, Aleksandr Evgen′evič. 2017. *The methodology of field investigations in linguistics: (Setting up the problem)*, vol. 142. Walter de Gruyter GmbH & Co KG.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International journal of American linguistics* 70(4). 369–415.

Appendix B: Indefinite NMNs as GQs

In section 3.2.3. of the paper I proposed that the existential quantifier that binds the event argument of NMNs 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 with the semantics in (1), abbreviated later as $\lambda e'_e.NMN_{w,t_N<t}(e')$, with a null existential generalized quantifier in (2).

(1) $[\![$Badma's breaking.PART.PAST the cart$]\!]^{w,t,g} = \lambda e'_e.\ \exists t_N [RB(t_N) < t \wedge break_{w,t_N}(e') \wedge Theme(e') = \text{the cart} \wedge Agent(e') = \text{Badma}]$

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

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.

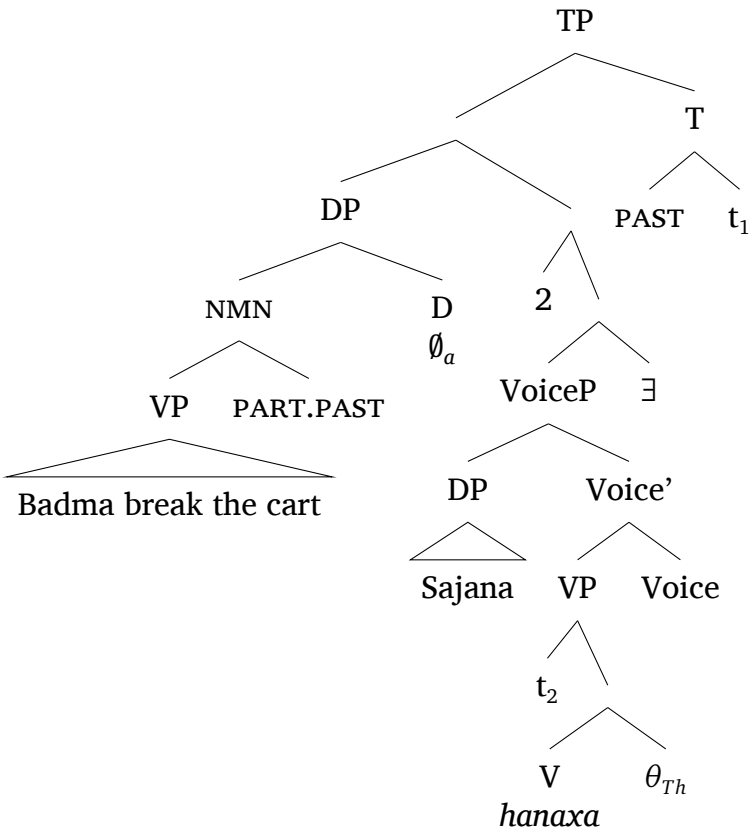
The NMN saturates the first argument of $\emptyset_a$, giving rise to the DP in (3).

(3) $[\![\emptyset_a\ \text{NMN}]\!]^{w,t,g}$
$= \lambda q_{et}.$
$$\begin{cases} 1 \text{ iff } \exists e'[\text{NMN}_{w,t_N<t}(e') = 1 \wedge q(e') = 1] \\ 0 \text{ iff } \forall e'[\text{NMN}_{w,t_N<t}(e') = 1 \rightarrow q(e') = 0] \\ \# \text{ otherwise} \end{cases}$$

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 in (4) have LFs like in (5).

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

(5)



Under this implementation, the meaning of the functional head θ_{Th} when it combines with *hanaxa* is in (6).

(6) $[\![\theta_{Th}]\!]^{w,t,g} = \lambda P_{et}.\lambda x_e.\lambda e_e$: 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 θ_{Th}, with the trace of the QR-ed nominalization, the Voice head, the external argument, and finally the existential closure, resulting in (7):

(7) $[\![\text{VoiceP } \exists]\!]^{w,t,g} =$

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

Predicate Abstraction happens over g(2), which creates a predicate of individuals out of (7). This predicate then saturates the argument of the QR-ed existential quantifier in (3), the simplified result of which is in (8).[1]

(8) $[\![\text{NMN} + \text{Predicate}]\!]^{w,t,g} =$

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

Finally, contextually restricted tense, (9), combines with the proposition in (8). This results in (10).

(9) $[\![\text{PAST } t_1]\!]^{w,t,g}$

$= \lambda p_{sit}.$

$$\begin{cases} 1 \text{ iff } \exists t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 1] \\ 0 \text{ iff } \forall t' < t \wedge t' \subseteq g(1) \quad [p(w)(t') = 0] \\ \# \text{ otherwise} \end{cases}$$

(10) $[\![\text{TP}]\!]^{w,t,g} =$

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

(10) states that the sentence "Sajana remembered Badma's breaking the cart", (4), is true iff there is a past time within a salient interval such that

[1] The simplification can be done provided that the domain D_e is not empty and given that "$LB(\tau(e')) < t$" contains no free occurences 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) $\forall x[\neg\psi(x)] \equiv \neg\exists x[\psi(x)]$.

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.[2]

However, (10) 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 means that if there are no events of Badma breaking the cart, the falsity condition of (10) will be satisfied, and the sentence "Sajana remembered Badma's breaking the cart", (4), will be predicted to be false.

This is an incorrect prediction. Section 2.2 of the paper shows 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 (4) is considered by native speakers to be infelicitous, not false.

A way to "save" (10) 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 Fintel 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 a presupposition in this case.

[2] If we "unwrap" the abbreviated meaning of the NMN, the result will be the following:

(i) $[\![\text{Sajana thought of Badma's breaking the cart}]\!]^{w,t,g} =$

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

(11) Bi [Badm-i:n tərgə əmdəl-ə:ʃ-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 (11), according to my consultants, has a different status with respect to the similiar sentence with *hanaxa* in (12): while the latter is perceived as being contradictory, the former does not. However, (10) predicts them to have the same status.

(12) **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.'

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

References

Diesing, Molly. 1992. *Indefinites*. MIT press.
von Fintel, Kai. 1998. Evidence for presuppositional indefinites. Manuscript, MIT. http://mit.edu/fintel/fintel-1998-presupp-indef.pdf.