From *think* to *remember*: how CPs and NPs combine with attitudes in Buryat

INTRODUCTION In Buryat (Mongolic), the verb *hanaxa* is naturally translated as 'think' when it combines with CPs, (1), and as 'remember' with nominalizations, (2). I show that the sentence in (2) presupposes that Badma broke the cart, while (1) does not. A few other verbs show similiar behavior. Tense and aspect of the verb have no impact on this difference.

(1) sajana   badma   tərgə əmdəl-ə: gəžə   han-a:
     Sajana.NOM Badma.NOM cart   break-PST COMP think-PST

'Sajana **thought** /*remembered ("thought of") that Badma broke the cart.'

(2) sajana   badm-i:n   tərgə əmdəl-ə:ʃ-i:jə   han-a:
     Sajana.NOM Badma-GEN cart   break-PART-ACC   think-PST

'Sajana *thought **/remembered ("thought of")** Badma's breaking the cart.'

THE QUESTION: How does the difference in meaning between (1) and (2) come about?

SOLUTION PREVIEW: The inference in (2) is the result of *hanaxa* being a verb of use: there is an existential presupposition on its object. While the nominalization (NMN) in (2) is the object of the verb, the CP in (1) is not: it is a modifier of the event argument.

ASSUMPTION: CPS ARE PROPERTIES OF EVENTS Following Kratzer 2006, Moulton 2015, Bogal-Allbritten 2017, in attitude ascriptions, quantification over possible worlds comes not from the attitude verb itself, but from the embedded clause. More specifically, following Bogal-Allbritten: there are events that relate to propositional content (for example, a thinking event), and CPs are properties of such events (D_{cv} - domain of contentful events; events are types of individuals). This yields the semantics for CPs in (3):

(3) $[\![$*that Badma broke the cart*$]\!]^{w,g}$ = λe in D_{cv}. $\forall$w'[w' $\in$ Content(e) $\rightarrow$$\exists$e' in D_v [break(the cart)(e') & e' is in w' & Agent(e') = Badma]].

The CP in (3) denotes a property of events such that in all worlds compatible with their propositional content, there is an event of breaking the cart by Badma in those worlds.

THE ANALYSIS: Buryat's *hanaxa* always has the meaning in (4): it takes an individual x (the object of thinking) and an event e (the act of thinking) and returns 1 iff e is a thinking event about x in w. The presupposition states that the left boundary (LB) of the time interval corresponding to the individual x is before the LB of the time interval corresponding to e. This temporal relationship yields the factive presupposition, which, while present both with NPs and with CPs, is detectable only with NPs due to them being objects of the verb.

(4) $[\![$*hanaxa*$]\!]^{w,g}$ = λxλe: LB(τ(x)) <LB(τ(e)). think(x)(e) & e is in w.

CPs modify the event argument of thinking; after the experiencer is introduced by Event Identification (EI), the existential closure "closes off" both the object and the event variables:

(5) $[\![$*Sajana thinks that Badma broke the cart*$]\!]^{w,g}$ = 1 iff
     $\exists$x$\exists$e: LB(τ(x))<LB(τ(e)) [think(x)(e) & e is in w & Exp(e)=Sajana & $\forall$w'[w' $\in$ Content(e) $\rightarrow$$\exists$e' in D_v[break(the cart)(e') & e' is in w' & Agent(e') = Badma]]]

In (5) there is a thinking-about-x event e, the experiencer (Exp) of e is Sajana, and in all worlds compatible with the content of e, there is an event of breaking the cart by Badma. The presupposition of the verb is present, but it's not about the CP: it just states that there is some topic of thoughts x that existed prior to the thinking event. Thus, there is no inference that Badma broke the cart. No pronounced material corresponds to x in (5).

The nominalization in (2) denotes the set of Badma-breaking-the cart events:

(6) ⟦*Badma's breaking the cart*⟧^{w,g} = λe.break(the cart)(e) & Ag(Badma)(e) & e is in w

The factive inference cannot be due to definiteness, because this NMN can be interpreted indefinitely. In such case it combines with a null existential quantifier and undergoes QR. The trace of the NMN saturates the object argument x of the attitude verb. Exp is introduced by EI, the event variable of 'think' is existentially closed, and the QR-ed NMN is merged:

(7) ⟦*Sajana thinks of Badma's breaking the cart*⟧^{w,g} = 1 iff ∃e' ∃e: LB(τ(e')) <LB(τ(e)) [think(e')(e) & e is in w & Exp(e)=S & break(the cart)(e') & e' is in w & Ag(e')=B]

(7) states that there exist two events, e' and e, such that e is a thinking event about e', the Exp of e is Sajana, and e' is an event of breaking the cart by agent (Ag) Badma. The "remember" meaning of (2) is due to the presupposition about the object argument x: an event of Badma breaking the cart started existing before the thinking event.

SOME OF THE SUPPORTING EVIDENCE It can't be that the factivity of (2) is due to the NP: there are non-factive verbs which take NMNs but do not have the presupposition, (8).

(8) sajana   badm-i:n   tərgə əmdəl-ə:ʃ-tə-n'   ətig-ə:,   xarin badma
Sajana.NOM Badma-GEN cart   break-PART-DAT-3 believe-PST but   Badma
tərgə əmdəl-ə:-güj
cart   break-PST-NEG

'Sajana believes in Badma's breaking the cart, but Badma didn't break the cart'.

The non-contradictory (9) shows that NMNs describe beliefs not of Exp, but of the speaker.

(9) badma darimi:n dən   türgö:r maʃina:r jab-a:ʃ-i:jə   hana-na,   xarin
Badma Darima too.much quickly by.car   go-PART-ACC think-PRS but
badma (darima) dən   türgö:r maʃina:r jab-a: gəžə   hana-na-güj
Badma (Darima) too.much quickly by.car   go-PST COMP think-PRS-NEG

Paraphrase: 'Badma remembers the situation that the speaker thinks of as Darima's driving too quickly, but he doesn't think that Darima drove too quickly. '

PREDICTIONS (4) predicts that it should be possible to both attach a CP to the verb (by modifying the event argument **e**) and an overt object (by saturating **x**). This prediction is borne out. We know from the uses in the subject position that **uʃar 'event'** cannot combine with CPs; so in (10) the CP and the NP do not form a constituent; NP is externally merged to saturate **x**. Internal merge is also an option: **accusative subjects** of CPs undergo hyperraising into the matrix clause and saturate the object argument **x**. They are in the matrix clause at LF, hence obligatorily *de re*, (11).

(10) sajana   badma   tərgə əmdəl-ə: gəžə **uʃar-i:jə** han-a:
Sajana.NOM Badma.NOM cart   break-PST COMP **event-ACC** think-PST

'Sajana recalled ('thought of') the event that Badma broke the cart. '

(11) səsəg han garu:di ʃubu:-n   /#**ʃubu:-jə** oi   so:gu:r ni:də gəžə   han-a:
Seseg hon. Garudi bird-NOM /**bird-ACC** forest through flew COMP think-PST

Context: The speaker knows that there is no bird Garudi on Earth.
'Seseg thought that bird Garudi flew through the woods. '

CONCLUSION This analysis supports the decompositional analysis of attitudes (Kratzer 2006) and suggests that factivity alternations can arise due to interaction between the argument structure of an attitude verb and its different ways of combining with CPs and NPs.

REFERENCES

Bogal-Allbritten, Elizabeth. 2017. Basic pieces,complex meanings: Building attitudes in Navajo. 2017. Invited talk at *the Workshop on polysemy and coercion of clause embedding predicates*. 39th Annual Meeting of DGfS. Saarbrucken, Germany.

Kratzer, Angelika. 2006. Decomposing Attitude Verbs. Talk given in honor of Anita Mittwoch. The Hebrew University Jerusalem.

Moulton, Keir. 2015. CPs: Copies and Compositionality. *Linguistic Inquiry* 46: 305-342.