

Nez Perce embedded indexicals*

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1. The problem

Sue, a young student, has fallen sick. She tells this to her classmate, who proceeds to inform the teacher of Sue's misfortune. In Nez Perce, as in English, there are two major ways for the classmate to pass on Sue's report.

- (1) Sue hi-i-caa-qa [*pro*_{subj} [hi]-k'oomay-ca- \emptyset]
Sue 3SUBJ-say-IMPERF-REC.PAST [(subject) 3SUBJ-be.sick-IMPERF-PRES]
Sue_i said that she_i is sick.
- (2) Sue hi-i-caa-qa ['iin [\emptyset]-k'oomay-ca- \emptyset]
Sue 3SUBJ-say-IMPERF-REC.PAST [I 1SUBJ-be.sick-IMPERF-PRES]
Sue said, "I am sick."

When Nez Perce speakers were presented with a cartoon depicting the interactions between Sue, the classmate, and the teacher, they judged both (1) and (2) to be appropriate utterances by the classmate. In (1), a 3rd person pronoun in the embedded clause co-refers with the matrix subject, *Sue*. In (2), a 1st person pronoun replaces it, with the same reference. In English, this second pattern is a good sign of the presence of a clausal quotation.

Over the last decade, it has been shown quite convincingly that not all languages are like English in this respect. Let us call an embedded indexical which refers to an argument of the matrix clause but not to a participant of the overall utterance by the relatively neutral term of "quotation-like indexical", or QLI. Thus 'iin 'I' in (2) is a QLI. Arguments that QLIs are possible in non-quoted clauses have been made for languages including Amharic

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Gloss line abbreviations: 3/3 3rd person subject / 3rd person object portmanteau agreement, 3OBJ 3rd person object agreement (always with 1st or 2nd person subject), 3SUBJ 3rd person subject agreement (with or without 1st or 2nd person object), AGT agentive nominalizer, DEM demonstrative, ERG ergative, GEN genitive, HAB.SG habitual aspect and singular subject, IMPERF imperfective aspect, LOC locative case, μ object possessor raising suffix, MOD(AL) modal suffix, OBJ objective case, O.PL plural object agreement, P P aspect (perfect/perfective), PRES present tense, PROSP prospective aspect, REC.PAST recent past tense, REL relativizer, REM.PAST remote past tense, S.PL plural subject agreement, Y.N yes-no question particle.

(Schlenker 1999), Matses (Munro et al. 2012), Navajo (Speas 2000), Slave (Rice 1986), Uyghur (Sudo 2010), Zazaki (Anand and Nevins 2004) and a long list of sign languages (Zucchi 2004, Quer 2005). This literature highlights several types of sentences in which QLI is possible but sentential quotation is not. Two of these are readily reproduced in Nez Perce.

The first sentence type to consider involves *wh*-extraction. *Wh*-dependencies are not possible across a quotation operator: **Who did Katie say “I see t”?* Yet in Nez Perce it is possible to *wh*-extract from a clause containing a QLI. In (3), the 1st person subject of the embedded clause is a QLI, and the object has been *wh*-moved into the matrix.

- (3) Isii-ne Angel hi-i-caa-qa [cewcewin’is-ki *pro*_{subj}
 who-OBJ Angel 3SUBJ-say-IMPERF-REC.PAST [phone-with *pro*
 ’e-muu-ce- \emptyset *t*]
 1SUBJ/3OBJ-call-IMPERF-PRES *t*]
colloquial: Who did Angel say she was calling?
literal: Who did Angel_i say I_i am calling *t*?

We can be sure that there is indeed cross-clausal movement here due to the case-marking of the *wh*-word *’isiine* ‘who’. This bears an objective case marker which could only have been licensed in the lower clause.¹ The same combination of movement and a QLI subject is seen in relativization in (4). Note that this is possible whether extraction comes from the complement of *hi* ‘say’ or *neki* ‘think’.

- (4) kii hii-wes ’iniit
 this 3SUBJ-be.PRES house
 yoŋ ke Jack { hi-hi-ce- \emptyset / hi-neki-se- \emptyset , }
 DEM REL Jack { 3SUBJ-say-IMPERF-PRES / 3SUBJ-think-IMPERF-PRES }
 [’iin \emptyset -hani- \emptyset -ya *t*]
 [I 1SUBJ-make-P-REM.PAST *t*]
colloquial: This is the house that Jack says / thinks he built
literal: This is the house that Jack_i says / thinks I_i built

The pattern can also be demonstrated with indexicals other than the 1st person. In the following sentence *wh*-extraction is possible despite locative QLI *kinix* ‘from here’ in the embedded clause.

- (5) Context: Elicited in Lapwai, ID. Lewiston is the closest major city.
 Miniku cewcewin’es *pro*_{subj} hi-i-caa-qa Simiinikem-pe
 which phone *pro* 3SUBJ-say-IMPERF-REC.PAST Lewiston-LOC
 [*t* hi-muu-no’qa ki-nix met’u weet’u *t* hi-muu-no’qa ko-nix]?
 [*t* 3SUBJ-call-MOD here-from but not *t* 3SUBJ-call-MOD there-from]?
colloquial: Which phone did they say in Lewiston can call from Lewiston but not from Lapwai?
literal: Which phone did they say in Lewiston_i *t* can call from here_i but not from there_j?

¹On case patterns in Nez Perce, see Deal 2010a, 2010b.

Such facts suggest that the presence of a QLI is not a clear indication that an indexical element finds itself in the scope of a clausal quotation. This immediately calls into question the treatment of (2) as a clausal quote. Sentential quotation is a possible analysis for that sentence, but (3)-(5) suggest it is not the *only* analysis consistent with the QLI subject.

The second relevant sentence type involves description *de re*. Quotations do not support *de re* construal; in *Katie said, "I see that idiot"* the description *that idiot* must be read *de dicto*. The same does not go for descriptions inside clauses containing a QLI. In (6), the description 'the teacher' is read *de re*, despite the QLI subject of the embedded clause.

- (6) Context: Beth told me she met Harold. She doesn't know he is a teacher. When we are in class, I say to someone else:

Beth-nim hi-hi-n-e *pro_{obj}*
 Beth-ERG 3SUBJ/1OBJ-say-P-REM.PAST *pro*
 [*pro_{subj}* 'e-wewkuny-θ-e sepehitemenew'etuu-ne]
 [*pro* 1SUBJ/3OBJ-meet-P-REM.PAST teacher-OBJ]
colloquial: Beth told me she met the teacher.
literal: Beth_i told me_j I_i met the teacher.

Such facts reinforce the conclusion from *wh*-extraction. QLIs in Nez Perce must be possible even outside the scope of clausal quotation.

What is the proper analysis of sentences like (3)-(6), which contain QLIs but are not sentential quotations? This paper takes up the challenge first by considering a series of hypotheses discussed for QLIs in other languages—namely that they are non-indexical pronouns (§2), partial quotations (§3), or bound (§4). Testing these hypotheses reveals data which progressively constrains possible analyses of Nez Perce QLIs. Section 5 outlines, and section 6 fleshes out, an analysis in terms of context shift which responds to the facts as a whole, drawing from and revising the approach of Anand and Nevins (2004). Section 7 considers the interaction of context shift and *de se* interpretation.

2. The non-indexical analysis

A first possibility for examples like (3) and (6) centers on the meaning of the Nez Perce 1st person. We might consider whether it is possible to analyze the 1st person pronouns/agreement here as ordinary descriptions, akin to English 'the speaker'. On this analysis, the 1st person is not an indexical at all. The best English paraphrase of (3) will be *Who did Angel say the speaker was calling?*, where indeed it is possible for *the speaker* to refer either to Angel or to the person asking the overall question. Such an analysis is considered by Ninan 2010 for Amharic, and Sudo 2010 for Uyghur.

It is easy to show, however, that this analysis will not yield the right results. The argument turns on Kaplan (1989)'s famous observations on the difference between indexicals and ordinary descriptions in environments of quantification. Kaplan observes that while ordinary descriptions like *the speaker* may co-vary with quantifiers, the reference of indexicals remains rigidly determined. This makes for a sharp difference in the meaning of the two examples below.

- (7) a. Whenever Obama is speaking, the speaker is president.
 b. # Whenever Obama is speaking, I am president.

When we run this test in Nez Perce, we find exactly the same distinction between a description like *c'iiχnew'eeet* 'the speaker' and the 1st person. The former co-varies with a quantifier, but the latter cannot.

- (8) a. ke mawa Tatlo hi-c'iiq-tetu- \emptyset ,
 whenever Tatlo 3SUBJ-speak-HAB.SG-PRES
c'iiχ-new'eeet hii-wes haama
 speak-AGT 3SUBJ-be.PRES man
 Whenever Tatlo speaks, the speaker is a man.
 b. # ke mawa Tatlo hi-c'iiq-ce- \emptyset , **'iim** \emptyset -wees haama
 whenever Tatlo 3SUBJ-speak-IMPERF-PRES I 1SUBJ-be.PRES man
 Consultant (female): "Whenever Tatlo is speaking, I am a man. . . ?!"

The same fact is in evidence for the 2nd person pronoun *'iim*, (9), which thus should not be taken to mean 'the listener'. The same goes as well as for the locative adverb *kíne* ([kɪnə]) 'here', (10), which thus does not mean 'the speech location'. Note that these expressions are different from the locative expression *koná* 'there', which may co-vary with a quantifier just as its English translation may, (11). We thus diagnose *koná* as non-indexical.

- (9) # ke kaa Angel-nim pee-c'iiq-ce- \emptyset Payton-a,
 when Angel-ERG 3/3-speak-IMPERF-PRES Payton-OBJ,
'iim \emptyset -wees haacwal
 you 2SUBJ-be.PRES boy
 When Angel talks to Payton, you are a boy.
 Consultant: "You are a boy?"
- (10) # ke mine Obama hi-c'iiq-tetu- \emptyset ,
 wherever Obama 3SUBJ-speak-HAB.SG-PRES
'ilχnii-we **kíne** hi-wsiix titooqan
 many-HUMAN there 3SUBJ-be.PRES.PL person
 Wherever Obama speaks, many people are here.
 Consultant: "I don't think you say *kíne* [here]... you're saying *ke mine*, 'wherever', so I think you have to say *koná* [there]."
- (11) ke mine Obama hi-c'iiq-tetu- \emptyset ,
 wherever Obama 3SUBJ-speak-HAB.SG-PRES,
'ilχnii-we **koná** hi-wsiix titooqan
 many-HUMAN there 3SUBJ-be.PRES.PL person
 Wherever Obama speaks, many people are there.

We conclude that Nez Perce, just like English, has a set of indexical elements which can be distinguished from non-indexicals by Kaplan's test. Nez Perce unembedded 1st person, 2nd person, and *kíne* 'here' behave like English unembedded indexicals. The apparent non-rigidity of QLIs in sentences like (3)-(6) must result from some special property of embedded clauses.

3. The partial quotation analysis

In this connection it may be helpful to return to the idea that clauses embedded under speech and attitude verbs are special in their ability to host quotation operators. We have seen that QLI subjects are possible in environments where the object is *wh*-moved or interpreted *de re*; the object could not, thus, be in the scope of quotation. Rather than abandoning a quotation analysis entirely, let us now consider that we might revise it, in particular by assigning a rather more narrow scope to the operator of quotation. Instead of applying at the sentence level, it applies only to the subject indexical (and perhaps its associated agreement). QLIs thus fall under the purview of theories of partial or mixed quotation. This analytical strategy is explored by Maier (2007).

The essential advantage of the partial quotation view is that it lets quotation of the subject indexical be independent of complications that might arise for the object. Putting one indexical under a quotation operator has no bearing on anything else in the clause. Yet it is precisely for this reason that the partial quotation view runs into trouble. When one person indexical in a given embedded clause does not behave as a QLI, other person indexicals in the clause cannot do so either.

To see this, first consider (12). Here the embedded subject is an ordinary indexical, 'ee 'you'. Also inside the embedded clause is a 3rd person pronoun co-referring with the matrix subject *Lori*.

- (12) Lori hi-neki-se- \emptyset ['ee \emptyset -wees qetu kuhet
 Lori 3SUBJ-think-IMPERF-PRES [you 2SUBJ-be.PRES more tall
 'ip-nim-x]
 3SG-GEN-from]
 Lori_i thinks that you_j are taller than her_i

If QLIs arise through quotation of the individual indexicals, we might expect to be able to swap the 3rd person pronoun of this sentence for a 1st person QLI referring to Lori. But this is completely impossible. The sentence that results from this swap, (13), does not allow its 1st person indexical to be interpreted as a QLI.

- (13) Lori hi-neki-se- \emptyset ['ee \emptyset -wees qetu kuhet
 Lori 3SUBJ-think-IMPERF-PRES [you 2SUBJ-be.PRES more tall
 'in-im-x]
 1SG-GEN-from]
 Lori_i thinks that you_j are taller than me_k / * "me"_i

The interaction between QLI and ordinary indexical that we see here is remarkably robust. It holds also in a case where the two embedded indexicals are separated by a clause boundary. Consider first (14) as a base case, as before. The first embedded clause has a 3rd person subject which co-refers with the matrix subject. This clause embeds a further clause, which contains a 1st person indexical referring to the utterer of sentence (14).

- (14) Base case: 3person_j ... 3person_j ... I_k

| | | |
|---|------------------------------|--|
| Katie hi-hi-ce- \emptyset | [<i>pro</i> _{subj} | hi -neki-se- \emptyset |
| Katie 3SUBJ-say-IMPERF-PRES | [<i>pro</i> | 3SUBJ -think-IMPERF-PRES |
| ['iin-k'u \emptyset -wees kíne]] | | |
| [I-too 1SUBJ-be.PRES here]] | | |
| Katie _j says she _j thinks I _k am also here | | |

Once again it is impossible to switch the 3rd person pronoun which co-refers with the matrix subject with a 1st person QLI, *salva veritate*.

- (15) Test case: 3person_j ... "I"_j ... I_k
- | | | |
|--|------------------------------|--|
| Katie hi-hi-ce- \emptyset | [<i>pro</i> _{subj} | \emptyset -neki-se- \emptyset |
| Katie 3SUBJ-say-IMPERF-PRES | [<i>pro</i> | 1SUBJ -think-IMPERF-PRES |
| ['iin-k'u \emptyset -wees kíne]] | | |
| [I-too 1SUBJ-be.PRES here]] | | |
| Katie _j says I _k / *"I" _j think I _k am also here | | |
| OR: Katie _j says "I" _j think "I" _j am also here | | |

The pattern here is one familiar from Rice (1986) and especially Anand and Nevins (2004):

- (16) *Shift together: person*
 In a given embedded clause, either all or no person indexicals are QLIs.

Given (16), the essential trouble for the partial quotation view is that it posits too fine-grained a tool. Patterns of "shift together" call for a treatment of embedded indexicals above the level of the indexicals themselves.

4. The binding analysis

We are now at the point of requiring some kind of mechanism which assures that elements with a particular referent take a particular shape—1st person QLI vs. 3rd person pronoun—in the environment of other elements with similar reference. Such mechanisms are familiar, of course, in the domain of binding theory, and this suggests that perhaps binding effects could be responsible for the restrictions on Nez Perce QLIs. This type of hypothesis is naturally coupled with a treatment of QLIs as bound pronouns in disguise, which has been explored in work by Stechow (2003).

To assess this view, let us first rephrase generalization (16) as a constraint on binding: in a given embedded clause, either all or no person indexicals are bound. Then we ask: does a parallel generalization hold for bindable non-indexical elements?

A ready test is afforded by Nez Perce temporal adverbials. Applying Kaplan's test to the translation equivalents of *today* and *tomorrow-kii taaqc* and *watixx*, respectively—we find that these adverbials are in fact not indexical, in spite of their colloquial translations:

- (17) *kii taaqc* 'today' \neq *today*
- | | |
|--|------------------|
| a. weet'u <i>pro</i> _{subj} hipt ha-ani-siix- \emptyset | kii taaqc |
| not <i>pro</i> food 3SUBJ-make-IMPERF.PL-PRES same.day | |
| They're not making food today | |

- b. kem kaa *pro_{subj}* 'ew-'nii-se- \emptyset laqaas-na
 when-2 *pro* 2SUBJ/3OBJ-give-IMPERF-PRES mouse-OBJ
 cicyuk'iisin' k'atk'ał,
 cookie

When you give a mouse a cookie,

- kaa *pro_{subj}* hi-wewluq-o'qa qahasnim wee'ikt **kii taqc**
 then *pro* 3SUBJ-want-MODAL milk same.day

he wants some milk that same day (#today).²

Comment: "It would mean the same day, it doesn't mean right then and there."

- (18) *watiisx* 'tomorrow' \neq *tomorrow*

- a. **watiisx** *pro_{subj}* ciq'aamqal-niin 'itamyaaanwas-x \emptyset -pe-ki-yu'
 1.day.away *pro* dog-with town-to 1SUBJ-S.PL-go-PROSP
 Tomorrow I'm going into town with my dog.

- b. kex mawa *pro_{subj}* \emptyset -capaakayx-tato- \emptyset 'atamooc,
 whenever-1 *pro* 1SUBJ-wash-HAB.SG-PRES car

kaa **watiisx** hi-weqi-yo'qa
 then 1.day.away 3SUBJ-rain-MODAL

Whenever I wash my car, the next day (#tomorrow) it rains.

This gives us the fodder we need to test whether an effect like (16) is a general principle of binding that holds for indexicals and non-indexicals alike. Is it the case, in a given embedded clause, that either all or none of the temporal adverbials must be bound? It is not, as the interpretation of (19) shows. In this sentence embedded *kii taaqc* is interpreted as bound ("the same day as the reported speech event") whereas embedded *watiisx* is interpreted as free ("one day after the overall utterance / tomorrow").

- (19) Naaqc k'ay'x-pa, weet 'aayat hi-i-cee-ne
 one week-LOC, Y.N lady 3SUBJ-say-IMPERF-REM.PAST
 [*pro_{subj}* \emptyset -ki-yu' kii taaqc 'itq'o watiisx]
 [*pro* 1SUBJ-go-PROSP same.day or 1.day.away] ?

One week ago_{t₁}, did the lady say_{t₁} she would go that same day_{t₁} or tomorrow_{t₁+1}?

Such findings point to an important difference between indexical elements and non-indexical temporal adverbs. This of course is unexpected if both types of elements are to be handled by the same general set of binding constraints. The data set points to an analysis of the shift-together constraint on QLI's which is particular to indexical elements.

²The phrase *qahasnim wee'ikt* literally means 'butter'.

person QLIs show shift together effects, (13). This suggests positing a single operator which shifts both speaker and addressee coordinates. A clause hosting this operator will be interpreted with respect to a context shifted in these two respects. We now ask if person indexicals and the locative indexical show shift together effects. If they do, that supports the postulation of an operator OP_{\forall} which shifts Speaker, Addressee, and Location parameters together. If they don't, that supports separation of an operator OP_{pers} for Speaker and Addressee parameter shifting from a distinct operator OP_{loc} for Locative parameter shifting.

We will now see that it is this second situation to which the facts point. There is a certain independence of locative QLIs and person QLIs. This independence is not total, however. There are four combinations of person and locative QLIs to consider, as shown in the table below. We will see that cases A, B and D are possible, but case C is impossible.

(22) Interaction of person and locative shift

| | Locative Shift | No Locative Shift |
|-----------------|-----------------|-------------------|
| Person Shift | A BOTH | B JUST PERS |
| No Person Shift | **C JUST LOC | D NEITHER |

Consider first (23) as an example of case A: both person and locative indexicals shift. We know this example is not a clause-level quotation due to the interpretation of embedded *kii k'ay'xpa* 'this week'.

- (23) Talmaks-pa pro_{subj} hi-pe-hi-n-e pro_{obj}
 Talmaks-LOC *pro* 3SUBJ-S.PL-say-P-REM.PAST

[pro_{subj} weet'u kíne ∅-wisiinu' kii k'ay'x-pa]
 [*pro* not here [SUBJ]-be.PROSP.PL this week-LOC]

colloquial: They said at Talmaks they won't be up there this week

literal: They_i said at Talmaks_j (in the past_k) we_i won't be here_j this week_k.

Second, consider (24), an example of case D: neither person nor locative indexicals shift. Given that this sentence describes the utterance of a false report, consultants found it an odd and amusing thing to say.

- (24) pro_{subj} hi-nees-∅-n-e pro_{obj}
pro 3SUBJ-O.PL-say-P-REM.PAST *pro*

[pro_{subj} weet'u kíne ∅-wees kii kaa]
 [*pro* not here [SUBJ]-be.PRES right now]

He told them that I'm not here right now.

This brings us to the intermediate cases, B and C. An example of case B will present person shift without locative shift. One interpretation of (15) has this property, and an additional example is presented below.

- (25) Context: my friend is calling me on his cellphone and describing his location. He is trying to make it to Lapwai, but he is lost.

*pro*_{subj} hi-hi-ce- \emptyset [*pro*_{subj} k \acute{i} ne \emptyset -paay-ca- \emptyset]
pro 3SUBJ-say-IMPERF-PRES [*pro* here I SUBJ -arrive-IMPERF-PRES]

met'u weet'u *pro*_{subj} hi-paay-ca- \emptyset k \acute{i} ne
 but not *pro* 3SUBJ-arrive-IMPERF-PRES here

colloquial: He says he is arriving here, but he is not arriving here.

literal: He_i says I_i am arriving here_k, but he_i is not arriving here_k.

This makes for a sharp contrast with case C, locative shift without person shift. Such examples are not well-formed. Consider as a base case an embedded clause containing a non-shifted person indexical and an adverbial referring to the location associated with the matrix attitude eventuality.

- (26) Context: Harold is in Clarkston. I and my consultant are in Lapwai.

pay's Harold hi-neki-se- \emptyset [*pro*_{subj} \emptyset -wees
 maybe Harold 3SUBJ-think-IMPERF-PRES [*pro* I SUBJ-be.PRES
 Clarkston-pa]
 Clarkston-LOC]
 Maybe Harold thinks that I am in Clarkson.

Given that the embedded clause contains non-shifty 1st person, it is not possible to add in locative indexical *k \acute{i} ne* on a shifty reading *salva veritate*:

- (27) # pay's Harold hi-neki-se- \emptyset [*pro*_{subj} \emptyset -wees
 maybe Harold 3SUBJ-think-IMPERF-PRES [*pro* I SUBJ-be.PRES
 k \acute{i} ne Clarkston-pa]
 here Clarkston-LOC]
 Intended: Maybe Harold thinks_i that I am here_i in Clarkson_i.
 Consultant: "You could only say this if you were in Clarkston."

The crucial data point can also be arrived at the other way. Take as a base case an embedded clause containing a locative QLI and a non-indexical referring to the overall speaker. This is the case when I utter (28), given that *Taamsas* ('rose') is a nickname for me:

- (28) 'in-lawtiwaa-nm Boston-pa hi-nees- \emptyset -n-e *pro*_{obj}
 my-friend-ERG Boston-LOC 3SUBJ-O.PL-say-IMPERF-REM.PAST *pro*
 [weet'u k \acute{i} ne (Taamsas) hii-wes kii kaa]
 [not here (Taamsas) 3SUBJ-be.PRES right now]

My friend in Boston_i told them that Taamsas is not here_i right now.

Since the embedded clause contains a shifty locative, it is not possible to replace the name *Taamsas* with a non-shifty 1st person *salva veritate*:

- (29) 'in-lawtiwaa-nm Boston-pa hi-nees- \emptyset -n-e *pro*_{obj}
 my-friend-ERG Boston-LOC 3SUBJ-O.PL-say-IMPERF-REM.PAST *pro*

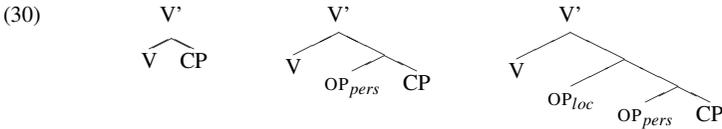
[*pro*_{subj} weet'u kíne \emptyset -wees kii kaa]
 [*pro* not here]SUBJ-be.PRES right now]

colloquial: My friend in Boston told them that he is not there right now.

literal: My friend_j in Boston_i told them that I_j / *I_k am not here_i right now.

Such examples show that person shift and locative shift stand in an asymmetrical relationship. Locative shift entails person shift, but person shift does not entail locative shift.

This pattern is straightforwardly handled via the syntax of the operators involved. In order to distinguish person shift from locative shift, we postulate two operators, *OP_{pers}* and *OP_{loc}*, which can in principle co-occur within a clause. The person-locative asymmetry can be seen as an effect of syntactic selection. *OP_{loc}* requires that its sister be headed by *OP_{pers}*, but (as is typical in syntactic selection) the converse does not hold. Attitude reports may thus have only the following three syntactic forms in Nez Perce. A version with *OP_{loc}* only would incur ungrammaticality on syntactic grounds.



We now turn to the semantics of the shifty operators *OP_{pers}* and *OP_{loc}*.

6. Meanings for context-shifters

The core technical challenge in providing a semantics for shifty operators has to do with the information that is used to overwrite contextual parameters. On a context-shifting view of an example like (31), QLI *kíne* ‘here’ refers to Talmaks because it is evaluated with respect to a context whose location parameter has been overwritten with the location of the event of Mary and John speaking.

- (31) Talmaks-pa Meeli kaa Caan hi-pe-hi-n-e
 Talmaks-LOC Mary and John 3SUBJ-S.PL-say-P-REM.PAST

[*pro*_{subj} weet'u kíne \emptyset -wisiinu']
 [*pro* not here]SUBJ-be.PROSP.PL]

[Mary and John]_i said at Talmaks_j that we_i won't be here_j

How is the information encoded by a matrix locative adverbial made available to an operator in the embedded clause? A&N propose what is in essence a special storage mechanism. Details of the reported speech event – its speaker, addressee, location, etc. – are tracked in

an articulated index of interpretation. The semantics of shifty operators involves using this information to overwrite parameters of the context.

I propose an alternative which builds from independently motivated pieces of the compositional semantics of attitudes. The semantics of an attitude report involves two components: universal quantification over worlds consistent with the attitude, and existential quantification over events or states of different types— speech events for *say*, knowledge states for *know*, thinking states for *think*, etc. Let us suppose, following Kratzer (2006) and Anand and Hacquard (2008), that these two components correspond to two separate pieces of attitude report syntax. The piece that varies from verb to verb – the eventuality description – is introduced by the verb itself. The verbs *say* and *think* (and their Nez Perce equivalents, as represented below) are interpreted as simple eventuality descriptions. (Note that e is a variable over events or states.)

$$(32) \llbracket hi \rrbracket^{C:g} = \lambda e.saying(e)$$

$$(33) \llbracket neki \rrbracket^{C:g} = \lambda e.thinking(e)$$

What is special about attitude verbs is that they describe eventualities with associated propositional content. The content of a saying event is the set of worlds compatible with what is said; the content of a thinking state is the set of worlds compatible with what is thought. Complementizers, which appear in the syntax beneath all attitude verbs, introduce universal modal quantification over worlds compatible with the attitude eventuality's content. The following proposal for complementizer meaning comes from Anand and Hacquard 2008.

$$(34) \llbracket C^0 \rrbracket^{C:g} = \lambda p \lambda e. \forall w' \in \cap CON(e) [p(w')]$$

The attractiveness of this approach for the treatment of indexical shifting lies in the way it makes information about the matrix attitude eventuality available at the CP level. Attitude CPs are predicates of eventualities, which will be described by the verb and related to individuals, times, locations, etc, by material in the matrix clause. Shifty operators may access this information by means of the eventuality variable already present at the CP level. It becomes much more directly possible to state the generalization that shifters overwrite contextual parameters with *parameters of the attitude eventuality*.

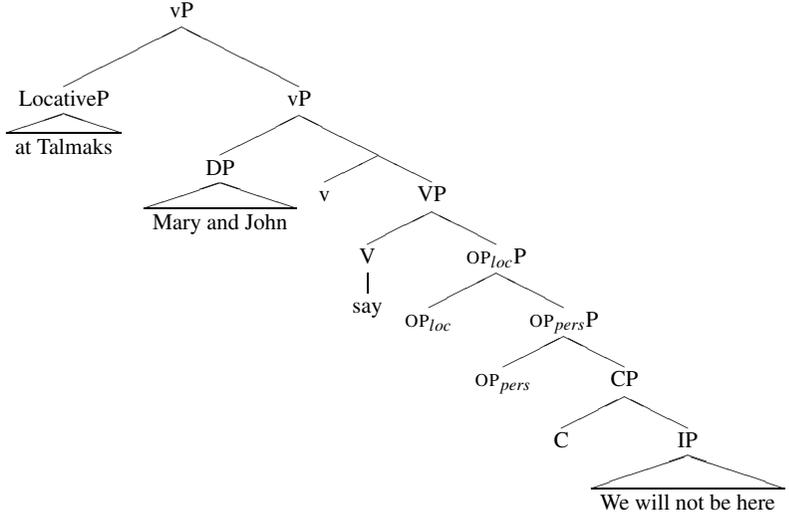
Let *EXT* be a function from an event to its agent or a state to its holder; let *GOAL* be a function from an event to its goal/addressee; let *LOC* be a function from an eventuality to its location. The contribution of our operators OP_{pers} and OP_{loc} can be stated as follows:

$$(35) \text{ Where } \alpha \text{ is a branching node with daughters } OP_{pers} \text{ and } \beta \text{ such that } \beta \text{ is a predicate of eventualities } e, \llbracket \alpha \rrbracket^{C:g} = \llbracket \beta \rrbracket^{C[EXT(e) \rightarrow Speaker, GOAL(e) \rightarrow Addressee],g}$$

$$(36) \text{ Where } \alpha \text{ is a branching node with daughters } OP_{loc} \text{ and } \beta \text{ such that } \beta \text{ is a predicate of eventualities } e, \llbracket \alpha \rrbracket^{C:g} = \llbracket \beta \rrbracket^{C[LOC(e) \rightarrow Loc],g}$$

We see these two operators in action in an example like (31), which will receive partial syntactic parse (37) and be interpretable compositionally as shown below (abstracting away from the precise interpretation of tense and plurality).

(37)



- i. $[[CP]^{C:g} = \lambda e. \forall w' \in \cap CON(e) [\neg will.be.at([here]^{C:g})([we]^{C:g})(w')]$
- ii. $[[OP_{pers}P]^{C:g} = [[CP]^{C[EXT(e) \rightarrow Speaker.GOAL(e) \rightarrow Addressee],g}$
 $= \lambda e. \forall w' \in \cap CON(e) [\neg will.be.at([here]^{C[EXT(e) \rightarrow Sp.GOAL(e) \rightarrow Addr],g})([we]^{C[EXT(e) \rightarrow Sp.GOAL(e) \rightarrow Addr],g})(w')]$
- iii. $[[OP_{loc}P]^{C:g} = [[OP_{pers}P]^{C[LOC(e) \rightarrow Loc],g}$
 $= \lambda e. \forall w' \in \cap CON(e) [\neg will.be.at([here]^{C[EXT(e) \rightarrow Sp.GOAL(e) \rightarrow Addr.LOC(e) \rightarrow Loc],g}$
 $([we]^{C[EXT(e) \rightarrow Sp.GOAL(e) \rightarrow Addr.LOC(e) \rightarrow Loc],g})(w')]$
 $= \lambda e. \forall w' \in \cap CON(e) [\neg will.be.at(LOC(e))(EXT(e))(w')]$
- iv. $[[VP]^{C:g} = \lambda e. saying(e) \ \& \ \forall w' \in \cap CON(e) [\neg will.be.at(LOC(e))(EXT(e))(w')]$
- v. $[[vP]^{C:g} = \lambda e. EXT(e) = M + J \ \& \ LOC(e) = Talmaks \ \& \ saying(e)$
 $\ \& \ \forall w' \in \cap CON(e) [\neg will.be.at(LOC(e))(EXT(e))(w')]$
 $= \lambda e. EXT(e) = M + J \ \& \ LOC(e) = Talmaks \ \& \ saying(e)$
 $\ \& \ \forall w' \in \cap CON(e) [\neg will.be.at(Talmaks)(M + J)(w')]$

This computation ultimately produces a property of events e such that the external argument of e is Mary and John; the location of e is Talmaks; e is a saying event; and in all worlds compatible with what is said in e , Mary and John will not be at Talmaks.

A final observation about this system concerns the status of OP_{pers} . In the example above, the use of OP_{pers} brings shifting of the addressee parameter along with shifting of the speaker parameter. For this particular sentence, this extra shifting is perhaps innocuous. The GOAL function presumably yields some value or another for the event in

question of Mary and John speaking. But it is far from clear that this is always the case. Speaking events may (and perhaps prototypically do) have goals/addressees, but thinking states do not. Should there be shifting of the addressee parameter in the complement of *neki* ‘think’?³

Example (13) provides evidence that indeed there should. Note that if only the speaker parameter shifted under verbs of thought, this sentence should be acceptable with an ordinary, unshifted 2nd person indexical and a shifted 1st person QLI. The impossibility of that reading provides support for the postulation of a unified OP_{pers} operator. The GOAL function is undefined for Lori’s thinking state, and so OP_{pers} , when it is present, overwrites the addressee parameter relevant for the interpretation of the embedded clause with an undefined value. Thus a 2nd person pronoun is predicted to be impossible in a shifty thought report, explaining the judgment on (13).

There is some preliminary evidence, however, that this Nez Perce finding may be in part language-particular. A&N and also Quer 2005 point out evidence that shifting of 1st person is under some circumstances independent of shifting of 2nd person. If QLIs in all languages are to be handled on the context-shifting approach, this means that independent operators OP_{sp} (shifting the speaker parameter) and OP_{addr} (shifting the addressee parameter) must be possible elements of natural language lexica. These two items are bundled together into a single grammatical piece in the lexicon of Nez Perce.

7. What connection to attitudes *de se*?

We now have a semantics for shifty operators which does not require us to posit the articulated index of interpretation required on the original A&N proposal. This removes what is ostensibly a prediction of the A&N account: shifted indexicals are interpreted *de se*. Attitude verbs, they posit, quantify over indices, which are complex tuples of world, time, speaker, location, and so on. (In general, on their view, indices and contexts are identically formally structured.) They propose in particular that attitude verbs quantify over indices *i* such that Speaker(*i*) and Addressee(*i*) are *de se* referents – individuals that the speaker identifies as her counterparts, and counterparts of her addressee, respectively. Contextual parameters are overwritten with elements of the index, and thus only with elements from this set of *de se* referents. If similar constraints hold of all parameters of the index, one expects that shifty indexicals will in general impose *de se* requirements. Following this expectation, Anand (2006) approaches shifty attitudes as a special case of attitudes *de se*.

In this final section I will show that Nez Perce conforms to this prediction only partially. Person indexicals must be interpreted *de se / de te*. Locative indexicals, however, impose no similar constraint.

Consider 1st person QLIs first. These can only be used in attitudes *de se*: the 1st person QLI may only refer to individuals that the attitude holder identifies as his or her counterparts. In the following context, the woman’s attitude is not *de se*, and the 1st person QLI is rejected by the consultant. She corrects the sentence to a form that does not contain an indexical subject.

³Thanks to SULA audience members for discussion of this question.

- (38) Context: A lady gets very sick and then recovers. Her recovery is so miraculous that they mention it on TV. They show the lady in a very ill condition; she looks awful. She sees this TV report later and she doesn't even recognize herself, she was so sickly at that time.

'aayat hi-neki-se- \emptyset [*pro*_{subj} \emptyset -k'oomay-n-a]
 woman 3SUBJ-think-IMPERF-PRES [*pro* \emptyset 1SUBJ]-be.sick-P-REM.PAST]
 The woman_i thinks I_i was sick.
 Consultant: "No, if she doesn't recognize that's her?"
 'aayat hi-neki-se- \emptyset [*pro*_{subj} hi-k'oomay-ca- \emptyset]"
 woman 3SUBJ-think-IMPERF-PRES [*pro* \emptyset 3SUBJ]-be.sick-IMPERF-PRES]
 [The woman_i thinks she_i is sick.]

On this point there seems to be no cross-linguistic variation. I am not aware of any language in which 1st person QLIs may be used without imposing a *de se* requirement.

The Nez Perce facts are similar for 2nd person QLIs. These are interpreted *de te* – they may only refer to individuals that the attitude holder identifies as counterparts of the addressee. The sentence below requires that the husband recognized the wife in the picture.

- (39) Context: A woman has had her portrait painted.

haama-pim pee-x-ey'-se- \emptyset cepee'letp'et
 husband-ERG 3/3-see- μ -IMPERF-PRES picture
 (Her) husband sees her picture,
 kaa *pro*_{subj} pee- \emptyset -ce- \emptyset *pro*_{obj}
 and *pro* 3/3-say-IMPERF-PRES *pro*
 [ta'c 'ee hekipe \emptyset -wees]
 [good you in.appearance 2SUBJ-be.PRES]
 and he tells her_i that you_j look good. [literal]
 Consultant: "He recognized her in the picture."

In this respect there is apparently some degree of language variation. Sudo (2010) reports that similar facts do not hold of 2nd person QLIs in Uyghur.

Finally we come to the locative indexical *kíne* 'here', which is strikingly different from person indexicals as concerns interpretation *de se*. Speakers have no qualms about the use of shifted *kíne* to refer to counterparts of the location of the attitude event even if the speaker does not appropriately self-locate. Consider the following scenario and sentence:

- (40) Context: A man is visiting a city building and he sees a photograph of Bill Clinton shaking hands with someone. He doesn't know that the picture was taken right where he was standing, some years ago.

haama hi-neki-se- \emptyset [Clinton hi-weeke kíne]
 man 3SUBJ-think-IMPERF-PRES [Clinton 3SUBJ-be.PAST here]
 The man thinks_j Clinton was here_j.
 Consultant: "That would be wherever the man was and wherever he saw the picture."

In this sentence *kíne* is shifted – it refers to the location of the thinking state, i.e. the city building – but it does not require that the man have a thought of the general form ‘Clinton was here’. His attitude seems rather to be of the general form ‘Clinton was *there*’. Indeed no amount of reminding speakers where the characters are and what they do and do not know seems to affect judgments like these. It appears that locative indexicals simply do not impose *de se* requirements.

I leave this set of facts relating to *de se* requirements and their absence as an open puzzle, both for the context shifting approach I have put forward and for its potential competitors. The Nez Perce facts highlight that any approach to context shifting must allow some shifty indexicals to impose *de se* requirements while others do not.

8. Conclusions and prospects

Nez Perce embedded indexicals may be quotation-like – QLIs – even when they do not sit in the scope of a clausal quotation. In this paper I’ve argued that the elements in question are indeed indexical; that they are subject to clause-level restrictions (shift together constraints) which are different from those that hold of binding; and that they can be handled as ordinary indexicals under context-shifting operators in the periphery of the clause. I have outlined an event-semantic treatment of indexical shifting which makes it possible to dispense with the articulated index of interpretation of Anand and Nevins (2004). And I’ve begun to explore the puzzles Nez Perce indexicals raise regarding the connection between indexical shifting and attitudes *de se*.

The patterns that we have seen along the way enrich the data set on QLIs in natural language in two potentially significant ways, both centered on locative indexicals. First, we have seen an asymmetry between person and locative indexicals: person indexicals may shift without locatives shifting, but locative shift entails person shift. Second, we have seen that locative and person indexicals are different in the imposition of *de se* requirements. As locative indexicals are relatively under-investigated in languages with QLIs, it largely remains to be seen whether these Nez Perce facts are language-particular, or part of broader generalizations on the semantics and the syntax of indexical shifters.

References

- Anand, Pranav. 2006. *De de se*. Doctoral Dissertation, MIT.
- Anand, Pranav, and Valentine Hacquard. 2008. Epistemics with attitude. In *SALT XVIII*, ed. T. Friedman and S. Ito, 37–54. Cornell University.
- Anand, Pranav, and Andrew Nevins. 2004. Shifty operators in changing contexts. In *Proceedings of SALT XIV*, ed. Robert B. Young, 20–37. Cornell University, Ithaca, NY: CLC Publications.
- Deal, Amy Rose. 2010a. Ergative case and the transitive subject: a view from Nez Perce. *Natural Language and Linguistic Theory* 28:73–120.
- Deal, Amy Rose. 2010b. Topics in the Nez Perce verb. Doctoral Dissertation, University of Massachusetts Amherst.

- Kaplan, David. 1989. Demonstratives: An essay on the semantics, logic, metaphysics, and epistemology of demonstratives and other indexicals. In *Themes from Kaplan*, ed. Joseph Almog, John Perry, and Howard Wettstein, 481–564. Oxford: Oxford University Press.
- Kratzer, Angelika. 2006. Decomposing attitude verbs. Talk given at The Hebrew University of Jerusalem, July 2006.
- Maier, Emar. 2007. Quotation marks as monsters, or the other way around? In *Proceedings of the 16th Amsterdam colloquium*, ed. Maria Aloni and Floris Roelofsen, 145–150.
- Munro, Robert, Rainer Ludwig, Uli Sauerland, and David Fleck. 2012. Matses reported speech: perspective persistence and evidential narratives. *IJAL* 78:41–75.
- Ninan, Dilip. 2010. De se attitudes: ascription and communication. *Philosophy Compass* 5:551–567.
- Quer, Josep. 2005. Context shift and indexical variables in Sign Language. In *Proceedings of SALT XV*, ed. Effi Georgala and Jonathan Howell, 152–168. CLC Publications.
- Rice, Keren D. 1986. Some remarks on direct and indirect speech in Slave (Northern Atapaskan). In *Direct and indirect speech*, ed. F. Coulmas, 47–76. Mouton de Gruyter.
- Schlenker, Philippe. 1999. Propositional attitudes and indexicality: a cross-categorical approach. Doctoral Dissertation, MIT.
- Speas, Margaret. 2000. Person and point of view in Navajo. In *Papers in honor of Ken Hale*, ed. E. Jelinek A. Carnie and M. Willie, volume 1 of *MIT Working Papers on Endangered and Less Familiar Languages*. MITWPL.
- Stechow, Arnim von. 2003. Feature deletion under semantic binding: tense, person and mood under verbal quantifiers. In *Proceedings of NELS 33*, ed. Makoto Kadowaki and Shigeto Kawahara, 379–404. Amherst: GLSA.
- Sudo, Yasutada. 2010. Person indexicals in Uyghur indexical shifting. In *Proceedings of Berkeley Linguistics Society 36*.
- Zucchi, Alessandro. 2004. Monsters in the visual mode? Ms.

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