Quantification in East Cree and Linguistic Relativity

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Recent cross-linguistic work on the syntax of quantification (Baker 1995, 1996; Faltz 1995; Speas & Yazzie 1996; Jelinek 1995) has focused on the lack of certain quantifiers in the indigenous languages of the Americas (Mohawk, Navajo, Salish). The quantifiers that were not found were the equivalent of the English quantifiers every N and no N.

The lack of such quantifiers in some languages has been attributed to several causes: the rich inflectional morphology, the non-argumental positions of NPs, or an array of factors including the properties of number agreement. Furthermore, Reinholz & Russell (1995) showed that Swampy Cree, although a pronominal argument language, seems to have this kind of quantifiers. In this lecture, I will bring new data to this debate about the universality of quantifiers like every from East Cree, focussing on some quantifiers that do exist, especially ones that seem to be absent in languages like English. By inverting the perspective a bit, that is by looking at what other languages have and English lacks, I hope that new avenues will be opened in the understanding of the peculiar properties of quantifiers cross-linguistically.

Although I only study one variety of Cree, East Cree, I believe what I am saying applies to other varieties. Once one system is well described, comparative study can take place.

I will start by drawing the landscape of East Cree quantifiers. Their forms are varied: lexical quantifiers, reduplicated numerals, reduplicated verbs, inflected quantifiers, suffixes. Distributive quantifiers exhibit a complex pattern, where reduplicated numerals alternate with a lexical quantifier reserved for relative clauses. I will then briefly turn to the structure of East Cree clauses. Finally, I establish the properties of those quantifiers which can be said not to exist in English.
OVERVIEW OF EAST CREE QUANTIFIERS

Cree quantifiers consist of lexical quantifiers, reduplicated numerals and reduplicated verbs, exemplified in (1)-(3). Reduplicated numerals are used to express strict distributivity that is somewhat the equivalent of *each* and *every* in English. Reduplicated verbs express frequency or intensity and often correspond to cases where there would be adverbial quantifiers in English.

(1) **Lexical quantifiers:**

*Misiwe* iskweuch waapameuch niishu naapeuh.

all woman-PL see.TA-3PL>3OBV two men-OBV

'All women see three men.'

(2) **Reduplicated numerals:**

a. Peyakw waapiminh chii muweuch anchii awaashach.

one apple-OBV PAST eat.TA-3PL>3OBV those child-PL

'The children ate one apple.'

b. Paapheyakw waapiminh chii muweuch anchii awaashach.

RED-one apple-OBV PAST eat.TA-3PL>3OBV those child-PL.

'The children ate one apple each.'

(3) **Reduplicated verbs:**

a. Pakasimuu.

swim.AI-3

'She/he swims.'

b. Pa-pakaasimuu.

RED-swim.AI-3

'She/he always swims.'

'She/he swims all the time.'

Lexical quantifiers, when used as noun modifiers, do not take any overt agreement markers, such as number, gender or obviation. So there is no overt sign that they might act like determiners – unlike, for example, demonstratives, which show gender and obviative agreement.

Different forms are used for quantifying over the individual or temporal domain. Within these respective domains, a parallel distinction between mass-count and duration-frequency also differentiates the forms.

(4) **Mass-count distinction in the individual domain:**

a. *Mistah* aa chitayaawaaw shuuyaan? (mass noun)

*a lot of?* 2-have.TA-2>3 money

'Do you have a lot of money?'

b. *Mihchetw* iskweuch waapameuch niishu naapeuh. (count noun)

many woman-PL see.TA-3PL>3OBV two men-OBV

'Many women see two men.'

c. *Apishiish* shuukaau / *apishiish* shuuyaan. (mass noun)

'some sugar' / 'some money'

d. *Pasch* awaashach waapameuch chisheyinuu. (count noun)

some children see.TA-3>3OBV grandparent-OBV

'Some children see the grandparents.'

(5) **Duration-frequency distinction in the temporal domain:**

a. Niniichihikuch niwiichimaauch iskan niipin. (duration)

1-parent-PL 1-live.with.TA-1>3PL all summer

'I live with my parents all summer.'

b. *Eshikum* neu piisim niichiutamauch niichihikuch. (frequency)

every four month 1-visit.TA-1>3PL 1-parent-PL

'I visit my parents every four months.'

To create forms for the temporal/event domain, a temporal suffix *-waaau* can be added to a lexical quantifier, as in (6), or a reduplicated numeral, as in (7):

(6) *Mihchetwaaau* nimiichisun.

many-times 1-eat.AI-1

'I eat often.'
Naanewaa u chii miichisuuch.
RED-four-times PAST cat.AI-3PL
'They ate four times each.'

Some quantifiers can also take verbal inflection to express existential sentences. They become intransitive verbs, as shown in (8). However, this possibility seems to be both morphologically and semantically limited to numerals, (8a), and the lexical quantifier miichetw ‘many’, (8b). Strong quantifiers like misiwe ‘all’ cannot become verbs, though in its singular mass noun usage, meaning ‘whole’, misiwe can become a verb. Compare (8c) and (8d):

(8) Verbal inflection on quantifiers:
   a. Chii niishuuch.
      PAST two.AI-3PL
      'There were two of them.'
   b. Chii miichetuuch kaa maausuto.
      PAST many.AI-3PL C berry-pick.AI-3PL
      'There were many who picked berries.'
   c. *misiweyuuch.
      *'there are all'
   d. Misiweyuuu.
      whole.AI-3
      'It is (a) whole [beaver].'

But it is not the weak/strong distinction proposed by Milsark (1974) for English that determines whether or not a quantifier can become an existential verb in Cree. The antonyms of miichetw ‘many’, paasch ‘some’, ‘few’ and apishish ‘a few’, although also “weak,” cannot take verbal inflection. Even mistahi, reserved for mass terms, cannot, as shown in (9a). Instead these "weak" quantifiers enter regular existential constructions, as in (9b).

(9) a. *paaschuuch, *apishiishuuch, *mistahluuch
   b. Muk apishish chii taach manchuushach anta miinishihch.
      only few PAST be-there.AI-3PL worms there berry-LOC
      'There were (only a) few worms in the berry.'

There are no negative quantifiers, such as no one or nothing. Sentential negation is used, as shown in (10). Negation is widely used also to get the antonym of a quantifier, for example on the existential verb miichetuuch, whose corresponding verbal antonym does not exist (compare (9a) with (10c):

(10) a. Namui waach peyakw awaashach nipaauch.
    not even one baby-PL sleep.AI-3PL
    'Not even one of the babies are sleeping.'
   b. Namui nipaauch anchi awaashach.
      not sleep.AI-3PL those baby-PL
      'Those babies are not sleeping.'
   c. Namui uhchi miichetuuch aawaashach kaa maausuto.
      not PAST-NEG many.AI-3PL child-PL C berry-pick-PL
      'There were few children who picked berries.'

Some quantificational suffixes can be found on nouns to create an intransitive verb: for example, -shkaau indicates an important spatial distribution, as in (11):

(11) Quantificational suffixes:
    Miinishkaau.
    a-lot-of-blueberries.11-0
    'There are a lot of blueberries.'

This possibility seems limited however to animals and trees that are spatially distributed. For people or other such animate nouns as that for 'apple', quantificational roots like weyutisi- in (12) are used:

(12) a. Weyutisi jaakw aawaash.
    PAST many.AI-3PL a-eat-loc
    'They ate many apples.'
(12) **Quantificational roots:**

a. *Weyutisilinaanuu.*  
   `a-lot-of.AI-indef`  
   ‘There are a lot of people.’

b. *Weyutisiyuuch waapaminach.*  
   `a-lot-of.AI-3PL apples`  
   ‘There is an abundance of apples.’

Reduplicated numerals can also be used as verb compounds, to create quantified verbs, as in (13). Note the ambiguity between an individual or a temporal reading in (13b).

(13) **Reduplicated numerals as verb compounds:**

a. *Miichisuuu.*  
   `eat.AI-3 one-eat.AI-3`  
   ‘She/he is eating.’  
   ‘She/he is eating alone.’

b. *Miichisuuch.*  
   `eat.AI-3PL one-eat.AI-3PL RED-one-eat.AI-3PL`  
   ‘They are eating.’  
   ‘They are eating alone.’  
   ‘They are eating one by one / one at a time.’

Sometimes, another root is used for the derived verb, as shown in (14).

(14) a. *Nipaauch.*  
   `sleep.AI-3PL`  
   ‘They sleep.’

b. *Naaneuchkwaamuuch.*  
   `RED-four-sleep.AI-3PL`  
   ‘They are sleeping in groups of four.’

c. *Paahpeyakuchikwaamuuch.*  
   `RED-one-sleep.AI-3PL`  
   ‘They are sleeping one by one.’

These verbal roots are not restricted to quantifiers as shown in (15).

(15) *Maamuuchikwaamuuch.*  
   `together-sleep.AI-3PL`  
   ‘They are sleeping together.’

A rather interesting fact about Cree quantifiers is that for strict distributive interpretations, the job is divided between a number of different quantifiers: the lexical quantifier *misiwé* ‘all’, when used with a singular count noun, can mean *every*. This is illustrated in (16a). When there is a relative clause restricting the domain of the quantifier, a lexical quantifier, *tahtw*, is used (17). Otherwise, reduplication is used (18).

(16) a. *Misiwe awen chika tahkunam tehtapuniyuu.*  
   `every person 3-FUT carry.TI-3>0OBV chair-OBV/SG`  
   ‘Every person will carry a chair.’

b. *Misiwe awenach chika tahkunamuch tehtapuniyuu.*  
   `all person-PL 3-FUT carry.TI-3PL>0OBV chair-OBV/SG`  
   ‘All the persons will carry a chair.’

(17) a. *Tahtw awen che waapamat, chika tahkunam tehtapuniyuu.*  
   `each person FUT(C) see.TA-2>3, 3-FUT carry.TI-3>0OBV chair-OBV/SG`  
   ‘Each person you will see will carry a chair.’

b. *Tahtw awenach che waapamoto, chika tahkunamuch tehtapuniyuu.*  
   `each person-PL FUT(C) see.TA-2>3PL, 3-FUT carry.TI-3PL>0OBV chair-OBV/SG`  
   ‘Each (of the) persons you will see will carry a chair.’

(18) a. *Paahpeyakw awen chika tahkunam tehtapuniyuu.*  
   `RED-one person 3-FUT carry.TI-3>0OBV chair-OBV/SG`  
   ‘Each person will carry a chair.’

b. *Paahpeyakw awenach tehtapuniyuu chika tahkunamuch.*  
   `RED-one person-PL a chair-OBV/SG 3-FUT carry.TI-3PL>0OBV`  
   ‘Each (of the) persons will carry chair.’
Note that (16a), (17a) and (18a) exhibit the characteristic property of the so-called “true quantifiers,” the ones that were said to be missing from Cree-type languages: they are associated with a singular noun and singular agreement on the verb.

Some of these uses exhibit patterns of complementary distribution: for example, the lexical quantifier tahtw must be restricted by a relative clause and is not allowed within a simple clause. Reduplication, on the other hand, is limited to simple clauses; compare (17) and (18) above with (19) and (20) below.

(19) a. *\text{tahtw} \ \text{awen} \ \text{chika} \ \text{tahkunam} \ \text{tehtapuuniyuu} \\
\text{every person} \ 3\text{-FUT carry.} \ 3\text{-}00BV \ \text{chair-OBV/SG} \\
\text{‘each person will carry a chair’}

b. *\text{tahtw} \ \text{awenach} \ \text{chika} \ \text{tahkunamuch} \ \text{peyakw} \ \text{tehtapuuniyuu} \\
\text{every person-PL} \ 3\text{-FUT carry.} \ 3\text{-}00BV \ \text{one chair-OBV/SG}

(20) a. *\text{\textipa{p}aahpeyakw} \ \text{awen} \ \text{che} \ \text{waapamat}, \ \text{chika} \ \text{tahkunam} \ \text{tehtapuuniyuu} \\
\text{RED-one person} \ \text{FUT(C)} \ \text{see.TA-2>3}, \ 3\text{-FUT carry.} \ 3\text{-}00BV \ \text{chair-OBV/SG}

b. *\text{\textipa{p}aahpeyakw} \ \text{awenach} \ \text{che} \ \text{waapamato}, \ \text{chika} \ \text{tahkunamuch} \ \text{tehtapuuniyuu} \\
\text{RED-one person-PL} \ \text{FUT(C)} \ \text{see.TA-2>3}, 3\text{-FUT carry.} \ 3\text{-}00BV \ \text{chair-OBV/SG}

The corresponding temporal quantifiers are divided along the same lines: b-clausal (two events) for tahtwaaw, and within the clause (one event) for the reduplicated numeral. Compare (21) and (22) with (23) and (24), respectively.

(21) \text{Nika uchemaau an awaash tahtwaaw} \ waapamake. \\
\text{1-FUT kiss.TA-1>3 this child, each-time see.TA} \\
\text{(C SUBJUNCTIVE)} \ -1>3 \\
\text{‘Every time I will see this child, I will kiss her/him.’}

(22) Naanewaau chii miichisuuch. \\
\text{RED-four-times PAST eat.AI-3PL} \\
\text{‘They ate four times each.’}

(23) *\text{nika uchemaau an awaash naanewaau waapamake} \\
\text{1-FUT kiss.TA-1>3 this child, RED-four-times see.TA} \\
\text{(C SUBJUNCTIVE)} \ -1>3

(24) *\text{tahtwaaw} chii miichisuuch \\
\text{every-time PAST eat.AI-3PL}

A typology for Cree universal distributive quantifiers is summarized in (25). Compare with English (26), which has only two distributive quantifiers:

(25) \text{Cree universal distributive quantifiers:} \\
\text{for individuals:} \ misiwe \ \text{RED-numeral} \ \text{tahtw} \\
\text{for times:} \ \text{eshikum} \ \text{RED-numeral-waau} \ \text{tahtw-waau}

(26) \text{English universal distributive quantifiers:} \\
\text{for individuals:} \ \text{every} \ \text{each} \\
\text{for times:} \ \text{every} \ \text{each}

Arguably, English can be said to create some forms of the time/event quantifiers with the noun phrases: every time, each time. However, what seems striking is the fact that Cree has a special quantifier for relative clauses, tahtw, that cannot be used for simple clauses. On the other hand, reduplication, as a quantifier, does not seem to easily extend over certain clausal boundaries. Why is it so? What is it about the structure of Cree sentences that they require special forms of distributive quantifiers across and within clauses boundaries?

\text{THE STRUCTURE OF Cree CLAUSES}

\text{Pronominal arguments and verb-sentences}

It has long been observed that Cree verbal morphology is so rich that the verb looks like a whole sentence by itself. All overt NPs appear outside the verbal sentence. Jelinek 1984 and others have called this type of language a “pronominal argument language,” which means that the arguments of the verb are pronouns and appear as inflectional elements on the verb. Full NPs are
adjuncts and are coindexed with the pronominal arguments. A syntactic representation of a Cree transitive sentence would look like (27), with the NPs appearing either to the right or to the left of the upper S.

(27) A pronominal argument language:

The specifier and complement of VP are occupied by empty categories (traces of the pronominal morphemes which have incorporated into the verb (Jelinek 1984) or pro licensed by Case-absorbing morphology on the verb (Baker 1991, 1996)) and the full NPs are generated outside the verb-sentence.

Structure and morphology of East Cree relative clauses

Cree relative clauses are formed with a verb inflected in the conjunct (C in glosses). Unlike English relative clauses, they do not have a relative pronoun. There is no morphological difference between a relative clause and any other kind of conjunct clause.⁸

In testing the word order of relative clauses of several types in East Cree we find that the head must be fronted to the left periphery of the relative clause. Embedding the head into the relative clause is not possible. Below are some examples of possible word order in East Cree, with the head in bold and the relative verb-sentence in square brackets. For clarity, I will use intermediary glosses which show word order.

(28) Possible word order in East Cree:

a. Nichii asamaayuuh anyuuh awaasha John [kaa peshuwaat].
   1-PAST feed.TA-1>3OBV those children-OBV John C
   bring.TA-3>3-OBV
   (lit., ‘I fed them, those children, John, he brought them here’)
   ‘I fed the children that John brought here.’

   (lit., ‘I fed them, those children, he brought them here, John’)

c. Anyuuh awaasha John kaa peshuwaat nichii asamaayuuh.
   (lit., ‘those children, John, he brought them here, I fed them’)

   (lit., ‘those children, he brought them here, John, I fed them’)

I conclude from this data that the structure of a transitive relative clause is as represented in (29). The head is noted in bold, $S_{RC}$ stands for Sentence, Relative Clause; $S_{MC}$ for Sentence, Main Clause.⁹

(29)
Now that we have an idea of what Cree clause structure is like, we can go back to study those quantifiers that do not exist in English. I will start with reduplication and illustrate how it works with an example.

**(DISTRIBUTIVE) QUANTIFIERS THAT DO NOT EXIST IN ENGLISH**

**Reduplication**

Distributivity can be thought of as a one-to-one pairing of two conceptual entities. For example, if you say that *The children ate one apple each*, it means that there was a different apple for every child and that in that situation, each child was paired with a different apple. Or if you imagine that *Each of the children took a bite of the same apple*, then you have only one apple, but you are pairing the individuals, the children, with an event, biting. You can say that each child was paired with a biting event.

(30) a. Children  Apples

```
 x → a
 x → a
 x → a
 x → a
```

b. Children  Biting Events

```
 x → b
 x → b
 x → b
 x → b
```

As illustrated in (30), reduplication of the number one (*pâhpêyakw*) will have two different interpretations, depending on whether the reduplicated numeral modifies the object NP as in (30a), or the subject NP as in (30b). If you have another number, like the number four in (31) and (32), you end up with subsets, as illustrated in (33).

(31) *Intransitive verb: the numeral modifies the subject NP:*

a. Neu awaashach chii miichisuch.  
   four child-PL PAST eat.AI-3PL  
   'Four children ate.'

b. Naaneu awaashach chii miichisuch.  
   RED-four child-PL PAST eat.AI-3PL  
   'The children ate, four by four.'

(32) *Transitive verb: the numeral modifies the subject NP:*

a. Neu awaashach waapiminh chii muwech.  
   four child-PL apple-OBV PAST eat.TA-3PL>3OBV  
   'Four children ate apples.'

b. Naaneu awaashach waapiminh chii muwech.  
   RED-four child-PL apple-OBV PAST eat.TA-3PL>3OBV  
   'The children, four by four, ate apples.'

*Transitive verb: the numeral modifies the object NP:*

c. Neu waapiminh chii muweuch anchii awaashach.  
   four apple-OBV PAST eat.TA-3PL>3OBV those child-PL  
   'The children ate four apples.'

d. Naaneu waapiminh chii muweuch anchii awaashach.  
   RED-four apple-OBV PAST eat.TA-3PL>3OBV those child-PL  
   'The children ate four apples each.'
(33) a. Children Apples

b. Children Eating Events

Figure (33a) illustrates the interpretation of example (32d), where the reduplicated numeral modifies the object NP. Figure (33b) gives the interpretation of examples (31b) and (32b), where the reduplicated numeral modifies the subject NP. Cree can be said to have an obligatory distributive quantifier or operator that is the morphological process of numeral reduplication. The numeral modifies an NP denoting either the domain or the co-domain of the distributive function. The reduplicated morpheme acts as a distributive operator over the whole sentence.11

**Tahtw+ NP + relative clause**

*Tahtw selects a relative clause and no other clause.* Since there is no morphological difference between a relative clause and another type of conjunct clause in Cree, one could expect to find *tahtw* with other clauses in the conjunct. Example (34) shows that if the conjunct is an interrogative, the sentence with *tahtw* in (34a) is ungrammatical and reduplication must be used, as in (34b).

(34) **Question clause:**

a. *nichii kaweechimau *tahtw* awen chestuthkekwe
   1-PAST ask.TA-1>3 every person (C)-leave.AI-COND-3

b. Nichii kaweechimau paahpeyakw awen chestuthkekwe.
   1-PAST ask.TA-1>3 RED-one person (C)-leave.AI-COND-3
   ‘I asked each person whether she/he was leaving.’

If the subordinate clause is a complement clause, as in (35c-d), reduplication must be used. *Tahtw* is disallowed. Compare with (35a-b), the contrasting relative clause, where reduplication is disallowed:

(35) **Relative clause:**

   each these boys C play.AI-3PL 2-FUT watch.TA-2>3PL
   ‘You will look at every one of these boys who are playing.’

b. *paahpeyakw* anchii naapesach kaa metaweto
   chika kanawaapamauch
   RED-one these boys C play.AI-3PL 2-FUT watch.TA-2>3PL

**Complement clause:**

c. *nichen kanawaapamauch *tahtw* naapesach e metaweto
   1-PAST watch.TA-1>3PL each boy-PL C play.AI-3PL
   ‘I watched each of those boys play.’

d. Nichii kanawaapamauch paahpeyakw anchii naapesach e metaweto.
   1-PAST watch.TA-1>3PL RED-one those boy-PL C play.AI-3PL
   ‘I watched each of those boys play.’
We conclude from this data that the lower boundary on *tahtw is such that a minimum of two clauses is required and that one of these clauses must be a relative clause. In other words, this quantifier must apply to an NP which is restricted by a relative clause.\(^{12}\)

As far as the upper boundary goes, there does not seem to be any. *Tahtw seems to be able to take as many relative clauses as a human can process. Below is an example with three relative clauses:

(36)  **Tahtw** [e tasiyihkw] [kaa chiishi miichisu yihkw] peyakw tehtapuniyuu chika tahkunam.  
*every C there are of.*AI-12 C finish eat.AI-12 one chair-OBV  
2-FUT carry.TI-12>0OBV  
(lit., ‘how many of us there are, who are finished eating, one chair,  
we will carry’)  
‘Each of us, who are here, who has finished eating, will carry one chair.’

The Cree equivalents to English adjectives are relative clauses. Indeed, *tahtw* is found with the equivalent of adjectives, conferring on the clause a restrictive interpretation, as in (37). For a non-restrictive interpretation of the relative clause, the universal quantifier, *misiwe*, has to be used, as in (38):

(37)  **Restrictive interpretation:**  
**Tahtw** anchi miinushach kaa wiipsito kata ichetishihwaakanuwach.  
*every those cat-PL C be black.AI-3PL FUT chase away.TA.PASSIVE-3PL  
‘Every black cat will be chased away.’

(38)  **Descriptive interpretation:**  
**Misiwe** anchi miinushach kaa wiipsito kata ichetishihwaakanuwach.  
*all those cat-PL C be black.AI-3PL FUT chase away.TA.PASSIVE-3PL  
‘All cats, who are black, will be chased away.’

Again, note that if the relative clause equivalent to the English adjective is dropped, the sentence with *tahtw* is ungrammatical and *misiwe* is used, as shown in (39):

(39)  a.  *tahtw* anchi miinushach kata iichetishihwaakanuwach  
*every those cat-PL FUT chase away.TA.PASSIVE-3PL*  

b.  **Misiwe** anchi miinushach kata iichetishihwaakanuwach.  
*every cat-PL FUT chase away.TA.PASSIVE-3PL  
‘All cats will be chased away.’

Relative clauses in Cree also often correspond to nominals in English. There also, *tahtw* is found:

(40)  **Tahtw** awenach kaa pimipayhtaato nichii nanaaskumauch.  
*every person-PL C drive.AI-3PL 1-PAST RED-thank.TA-1>3PL  
‘I thanked every driver.’

We conclude that the distributive quantifier *tahtw* is exclusively used when it is restricted by a relative clause. The structure required by this quantifier corresponds to a standard tripartite quantification structure (see Partee 1995 for background) whose restrictor must contain a relative clause:

(41)  **Quantifier**  
*tahtw*  
**Restrictor**  
[NP+ relative clause]  
**Matrix**  
[main clause]

Do only distributive quantifiers have special forms for relative clauses? Another question to ask is whether other quantifiers are sensitive to the structure outlined in (41) where the restrictor of the quantifier is of the form: [NP+Relative clause]. It seems not. Examples below show that other quantifiers such as *mihchetw* ‘many’ or *misiwe* ‘all’ can take relative clauses without problems.\(^{13}\)

(42)  **Mihchetw** aniyuu iskwewa Tanian [kaa waapaamaat] chiini nipiyuuh.  
*many those women-OBV Tania-PROX [C see.TA-3>3OBV] PAST  
die.AI-3OBV  
‘Many of the women that Tania saw died.’
Negation scope facts: tahtw needs to have widest scope. The following facts show that the quantifier tahtw must have widest scope over the negation. If the negation ekaa has scope over the distributive quantifier, tahtw is not possible and another quantifier, the universal distributive eshikum, is required. Compare (45a) and (45b):

(44) a. [Ekaa eshikum chiishikaau [che miichisukwe]], kata aahkusuu.
    NEG(C) every day fut(C) eat.AI-(C, FUT)-3 FUT get sick.AI-3
    'If she does not eat every day, she will get sick.'

b. Tahtw chiishikaau [ekaa [che miichisukwe]], kata aahkusuu.
    every day NEG(C) fut(C) eat.AI-(C, FUT)-3 FUT get sick.AI-3
    'She will get sick every day she does not eat.'

In (44a), eshikum, like negation, only has scope over the relative clause. The distributivity is internal to the relative clause: every day-not eating. In (44b), tahtw has scope over the entire main clause, including the relative clause. The distributivity is over the two clauses, the relative clause and the main clause: every day-not eating and every day-getting sick.

Tahtw as a relative root. When found in verbs, tahtw is traditionally described and listed as a relative root meaning ‘so many’ (see for example Bloomfield 1958:37, 130). A relative root is a constituent of a verbal stem, which normally requires an antecedent elsewhere in the sentence. Indeed, in East Cree, tahtw is often found as such (for many examples, see the Cree lexicon of MacKenzie et al. 1987: 227-229).

(45) Neua tahtwapechisuuch.
    four so-many-stringlike-be.AI-3PL
    ‘There are four string-like things.’

It could be that the relative root is the original use of tahtw and that the requirement to have an antecedent was retained in its use as a sentential quantifier. In its quantifier use, tahtw then requires a whole sentence in the conjunct as “antecedent”. As further noticed by H.C. Wolfart (p.c.), in a number of Plains Cree texts, tahtw is translated as a correlative, “as many as”.

(46) ękosı máka, tahto ōma kē-kitotāt ēkon ōhi, mistahi
    nika-nahéyihten, ka-nahanihtakot, ka-nitohtakot, tāniss ē-wi-isi-kikway ē-isí-wihtamawát.
    ‘And thus, as many as he will speak to, I will be greatly content that they should pay heed to him and listen to him, to what he is going to tell them.’ (Kā-Nipitēhtew 1998:52-53)

These facts would be consistent with the hypothesis that the sentential quantifier tahtw is derived from a relative root.

Could a diachronic source of tahtw be responsible for its selectional properties? Haspelmath (1995), studying the diachronic sources of all and every in many languages, found that there are quite a few languages where every is derived from the wh-determiner which. Indeed, in East Cree, tahtw is also found in a wh-word: taan tahtw or taan tahtwau.15

(47) a. Taan tahtw awen che miichisut?
    how many person C FUT eat.AI-3
    ‘How many people will eat?’

b. Taan tahtwau che wihtamaat?”
    how many-times C FUT tell.TA-2<1
    ‘How many times will I tell you?’
Note that interrogative *taan tawtw* is always used with a verb in the conjunct order in the above examples, as when used as a quantifier. Since all content questions in Cree are always in the conjunct order, while most quantified sentences need not be, we may conclude that it is the wh-interrogative use of *tahtw* which is the source of the distributive quantifier. The selectional properties of *tahtw* would then have been retained from its wh-word nature. On the other hand, in the wh-interrogative use, *tahtw* is always used with *taan* while it appears alone as a distributive quantifier. This is contrary to what Hapsemath found. All the other languages he cites seem to derive the quantifier by adding some special particle to the wh-word, as shown in (48), which is from Hapsemath 1995:370. In East Cree, as shown in (49), we see the reverse:

| (48) | Chinese | shéi ye | ‘everyone’ | ye ‘also’ |
|      |        | shéi    | ‘who’      |          |
|      | Korean | nwukwu-na | ‘everyone’ |          |
|      |        | nwukwu  | ‘who’      | na ‘or’  |
|      | Rumanian | fiecare | ‘everyone’ |            |
|      |        | care     | ‘who, which’| fie’be (3sg subjunctive) |
|      | Latin  | quisque  | ‘everyone’ |            |
|      |        | quis     | ‘who, which’| -que ‘and, also’ |
| (49) | Cree   | tahtw    | ‘every’    |            |
|      |        | taan tahtw | ‘how many’ |           |

In Cree, at least synchronically, a particle, *taan*, is added to the quantifier to make it a wh-question word. Since I have no diachronic data, this may turn into a chicken or egg discussion, and I will leave the matter unresolved as to which came first. At this point we may just conclude that there is a synchronic identity in the selectional properties of *tahtw* as a quantifier and as a wh-interrogative: they both select a verb in the conjunct.

Now, since *tahtw* is also a wh-interrogative, why can’t it be used in interrogative complement clauses? Example (34) is repeated below:

(34)  a. *nichii kakwechimaa tuhtw awen chestuhtekwe*  
      1-PAST ask.TA-1>3 every person (C)-leave.AI-COND-3

b. Nichii kakwechimaa paahpeyakw awen chestuhtekwe.  
      1-PAST ask.TA-1>3 RED-one person (C)-leave.AI-COND-3  
      ‘I asked each person wether she was leaving.’

The properties of the *tahtw* construction can be summarized as follows:

- *tahtw* selects a sentence in the conjunct which must be interpreted as a noun modifier (relative clause);
- *tahtw* is the only quantifier of its kind in East Cree;
- *tahtw* must always have widest scope over the sentential negation;
- there is no plausible diachronic explanation that would predict the behaviour of *tahtw* at this point.

My conclusion is that the conceptual nature of “distributivity” must interact with the structural properties of the language to create such a state of affairs.

**Tahtw, distributivity and pronominal argument languages.** I take the contrast in (34) above to be crucial to understanding the behavior of *tahtw*. Recall the description of distributivity as a relation or function that pairs elements from a domain to a co-domain. In a simple clause, the domain of the distributive relation is denoted by the restrictor of the quantifier *child*, and the co-domain by the rest of the sentence.

(50)  a. I will feed each child

      b. [a feeding event by me] per [child]  
          [λx ( I feed x)] ≥ [λx ( child (x))]
What happens, then, when there is a relative clause? Why does the distributive relation exemplified in (51) require a special structure in Cree?

   every child-OBV C bring.TA-3>3-OBV John 1-PAST feed.TA-1>3OBV 
   (lit., 'every child/children, he brought her/him/them here, John, I fed him/her/them')
   'I fed each/every child that John brought (here).'

b. [a feeding event by me] PER [child that John brought] 
   [\lambda x ( I feed x)] \supset [\lambda x ( child (x) & John brought x)]

We see in (51) that our variable x is embedded in (verb-)sentences on both sides of the distributive relation; one is in the domain and one is in the co-domain denoters of the distributive function. With a complement clause, as in (52), on the other hand, the variables x embedded in verb-sentences are all on the same side of the distributive relation, in the co-domain. This is illustrated in (53).

(52) a. Nichii kakwechimaau paahpeyakw awen chestuhtekwe. 
   1-PAST ask.TA-1>3 RED-one person (C)-leave.AI-COND-3 
   'I asked each person whether she was leaving.'

b. [an asking event by me about person leaving] PER [person] 
   [\lambda x ( I asked x whether x was leaving)] \supset [\lambda x ( person (x))]

(53) Children Feeding Event

\[ \begin{array}{c}
\text{Children} \\
\text{Feeding Event}
\end{array} \]

\[ \begin{array}{c}
\text{x} \\
\text{f} \\
\end{array} \]

\[ \begin{array}{c}
\text{x} \\
\text{f} \\
\end{array} \]

\[ \begin{array}{c}
\text{x} \\
\end{array} \]

\[ \text{that John brought.} \]

Recall that only (51), but not (52), requires the special distributive quantifier tahtw in Cree. In other words, tahtw is required when the variable quantified is embedded in sentences which denote both the domain and the co-domain of the distributive relation. This leads to the following generalization:

When both the domain and the co-domain of a distributive relation are denoted by (verb-) sentences in Cree, a special quantifier tahtw is needed.

HOW MUCH LINGUISTIC RELATIVITY?
We have seen that the Cree language has many morphological means to form quantifiers. Often, different forms are used for quantifying over the domain of individuals than for quantifying over the temporal domain. Repeated below is a typological sketch illustrating the similarities and the differences between Cree and English:

Cree universal distributive quantifiers:
   for individuals: misiwe RED-numeral tahtw
   for times: eshikum RED-numeral-waau tahtw-waau

English universal distributive quantifiers:
   for individuals: every each
   for times: every each

We saw that Cree has forms that are not found in English-type languages. The reduplication of numerals acts as a distributive operator within the sentence. A lexical quantifier, tahtw, is reserved for NPs restricted by a verb-sentence (relative clause). The pattern of data we have described here, if it is linked to the formal properties of the language, would predict that:

- other Pronominal Argument languages would also use reduplication for distributivity within sentences;
- other Pronominal Argument languages would also have special distributive quantifiers for the temporal domain;
- other Pronominal Argument languages would also express distributivity across clausal boundaries via some kind of correlative
constructions (i.e., require special distributive quantifiers for NPs restricted by relative clauses);

- English-type languages lack this type of quantifiers because they do not have pronominal arguments;

- since the major area of divergence between the languages was found with distributive quantifiers, to what extent is the conceptual nature of distributivity also responsible for the special properties of quantifiers like every in English?

NOTES

I wish to express my gratitude to Ms. Louise Blacksmith, from Mistissini, Québec, for teaching me almost everything I know about East Cree. Without her patience and her wonderful awareness of the southern dialect of East James Bay Cree, this research would never have been done. This paper has benefitted from comments from several linguists at different stages. Let me thank especially Leonard Faltz, Marguerite MacKenzie, Rob Stainton, three anonymous reviewers, and the audiences at the 30th Algonquian Conference and at the University of Manitoba in Winnipeg. All remaining errors are mine. This work was partially funded by SSRHCC grant no. 410-1998-0350.

1. This work was initially done in order to test Barwise & Cooper’s NP-Quantifier Universal according to which “every natural language has syntactic constituents (called ‘noun-phrases’) whose semantic function is to express generalized quantifiers over the domain of discourse” (Barwise & Cooper 1981:177).


3. The same was found to be true of Algonquin, an Ojibwe dialect (Junker 1994).

4. Cf. Vaillancourt 1978:29, where this sentence appears as mistee aah stiyaawaaw shoowiyaan.

5. Misiwe does not take the suffix -waau. Special forms, the lexical quantifiers eshikum and iskan, are used for time/event quantification (see examples in (5)).

6. Milsark (1974, 1977) classifies English determiners as weak or strong according to their capacity to occur after the copula in there-sentences. His criterion yields two classes of determiners:

   weak: There is/are a/ ... / one/ two... / some/ many/ several/ few/ no bear(s) in the bush.
7. However, (18a) is only possible with the pronoun awen ‘person’. When another noun is used as in (i) below, the plural (b) is the only possible form. Thanks to David Pentland for helping me clarify this point.

(i) a. *paahpeyakw awaash tehtapuniyuu chika tahkunam
   RED-one child chair-OBV/SG 3-FUT carry.TI-3>0OBV
   ‘each child will carry a chair’

b. Paahpeyakw awashach tehtapuniyuu chika tahkunamuch.
   RED-one child-PL chair-OBV/SG 3-FUT carry.TI-3PL>0OBV
   ‘Each (of the) children will carry a chair.’

8. But see James 1991 for a discussion. Traditionally, main clauses have been characterized by the presence of independent verbs, but conjunct verbs have been also found in main clauses. Starks 1994 statistically established that conjunct verbs are more often used in main clauses than independent verbs. Work by Cyr 1991, Dahlstrom 1991, James 1986, Rhodes 1979 suggests that conjunct verbs present information as foregrounded or express continuative aspect on matrix clauses. Cyr 1992 claims that the conjunct in Algonquian languages is parallel to the role of obviation: while the latter is used to mark the importance of a participant, the former ranks the importance of events in a story.

Recent work by Campana 1996 and Brittain 1997 has proposed representing the conjunct order in the Minimalist Program (Chomsky 1995) by (overt) movement to the complementizer position, CP. Independent verbs would only move to the Inflection position, IP. While the recasting of traditional observations into the MP is shown to be possible by these analyses, they require many MP-internal assumptions. For example, Brittain has to assume that Tense and Agreement Feature are specified as weak for the Conjunct and strong for the Independent. These analyses do not achieve more explanatory nor descriptive power than traditional descriptions for the discussion here.

9. Faltz 2000 questions the idea of making the NP in a pronominal argument language the head of a relative clause. He suggests that the real head of the relative clause must be the pronominal registration on the verb, not the noun. His proposal, while appealing, does not give a better analysis of my data, so I will follow the more traditional approach.


11. When the distributive relation is between the objects of a ditransitive verb, reduplication can appear on both numerals or the verb itself can be reduplicated.

(i) a. Miyeu naaniishw masinahiikanh paahpeyakw awaasha.
   give.TA-3>3OBV RED-2 book-PL/OBV RED-1 children-OBV

b. Maamiyu niishw masinahiikanh paahpeyakw awaasha.
   RED-give.TA-3>3OBV 2 book-PL/OBV RED-1 children-OBV
   ‘She/he gives two books to each child.’

The verb reduplication in this case may be used to specify that there are several (giving-) events, while the reduplication of the numeral of the first object specifies that there are subsets of two books. Note that Cree disambiguates where English would not (same gloss, in English, for the two examples). Distributivity in (a) is between a set of children and a set of giving events of two books, while in (b) it is between a set of children and a set of subsets containing two books (b).

(ii) a. Children Giving Events

   x \rightarrow e

   x \rightarrow e

   x \rightarrow e
b. Children Books

Such verb reduplication is also found when other quantifiers enter a distributive relation. In (iii) below, distributivity is between a set of many children and a set of giving events of two books (a) or a set of many children and a set of subsets containing two books (b).

(iii) a. Maamiyu niishw masinahiikan mihchetw awaasha.
    RED-give.TA-3>3OBV 2 book-PL/OBV many children-OBV

b. Miyeu naaniishw masinahiikan mihchetw awaasha.
    give.TA-3>3OBV RED-2 book-PL/OBV many children-OBV
    'She/he gives two books to many children.'

12. When the quantifier tahtw is used, all relative clause word orders are possible but the quantifier tahtw must form a constituent with the head NP and the relative clause. The structure with tahtw is likely as follows:

(i) ...(MC) [tahtw NP, NP, Relative Clause] MC...
(ii) ...(MC) [tahtw NP, Relative Clause, NP... ] MC...

13. Misiwe is actually in complementary distribution with tahtw when the relative clause is restrictive, as observed for (37) and (38). Note that in (43) there is no implication that the fact that Tania saw the women had anything to do with their death (there is no correlation), whereas in the sentences below, the interpretation is that only those women who managed to spot three men won the prize.

(i) *misiwe iskweu kaa waapamaat nishtw aapeuh chii kaaniyuu
    all/every woman C-see.TA 3>3OBV men-OBV PAST win.AI-3
    'every woman who saw three men won the prize'

(ii) Tahtw iskweu kaa waapamaat nishtw aapeuh chii kaaniyuu.
    every woman C-see.TA 3>3OBV men-OBV PAST win.AI-3
    'Every woman who saw three men won the prize.'

14. Thanks to Ives Goddard who pointed this out to me. Wolfart (1973:66) gives the following example for Plains Cree: the verb (i)tahtopiponēw
    'she/he is so many winters old', where a precise number of winters
    would be required in the rest of the sentence.

15. Relative root in verbal existential construction is also possible:

(i) Taan e tahtihkwaak tehtapun?
    how C many.ii-0 chair
    'How many chairs are there?'

28
The following abbreviations are used in this paper:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tr>
<td>TI</td>
<td>transitive (verb) inanimate (object)</td>
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<td>animate (subject) intransitive (verb)</td>
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REFERENCES


