Korean Double Case-Marking and Topic/Focus Effects: The Syntax-Processing Interface

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http://www.kcl.ac.uk/research/groups/ds/projects.html

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Double-Marking: Content Growth by projecting node twice

- Korean Double Case-marking and Topic/Focus issues

- The problem of Incrementality for Case-marking construal

- Dynamic Syntax: Incremental growth of Semantic Representation as syntax

  – The logic of Tree growth:

    nodes uniquely identified by configuration within tree
  – Using epsilon terms to express term-growth for DP-content

- Putting structural and content growth together

  solves the Case-Duplication puzzles

  – Topic/focus effects as consequence of incremental dynamics

- Coda: How to get cross-linguistic variation

Multiple Nominative-marking: *topic* or *focus*?

(1) *Cheli-ka   tari-ka kil-ta*
Cheli$_{NOM}$ leg$_{NOM}$ long-DECL
'Cheli's leg is long'

(2) *Cheli-ka   simcang-i paktong-i sokto-ka   pparuta*
Cheli$_{NOM}$ heart$_{NOM}$ beat$_{NOM}$ speed$_{NOM}$ fast
'The speed of Cheli's heart beat is fast' (unlike Japanese)

(3) *Cheli-ka apeci-ka   hakkyo-ey   onul   o-si-ess-ta*
C-NOM   father-NOM school-LOC today come-HON-PAST-DECL
(a)??? 'Speaking of Cheli, his father came to school today'
Topic reading
(b) 'It is Cheli whose father came to school today'
Exhaustive focus reading

(4) *Pihayngki-ka   747-i   ceyil khu-ta*
airplane-NOM 747-NOM most big-DECL
(a) 'As for airplanes, it is the 747 that is big' Topic reading
(b) ??? 'It is airplanes that 747 is big' Exhaustive focus reading

- No 1-1 correspondence syntactic position or morphology and topic/focus

Double Topic Construction

(5) *Cheli-nun ton-un mahn-ta.*
C-TOP money-TOP abundant-DECL
    (a) 'As for Cheli, he has a lot of money' (but, no time).
    (b) ??? 'As for money, Cheli has a lot'.

NP1: background
NP2: contrastive

(6) ??*John-un orunson-un cakun-sonkarak-un* kwupessta
John$_{TOP}$ right-hand$_{TOP}$ little-finger$_{TOP}$ bent
John's right-hand little-finger is bent (unlike Japanese)

- No semantic explanation why 'background' must precede 'contrastive' topic

- No explanation of cross-linguistic differences:

  – Korean drop in acceptability for more than two topic-marked NPs, Japanese multiple

  – Japanese drop in acceptability for more than two *ga*-marked NPs Korean multiple

Rightward Composition: Yoon forthcoming

(7) *Cheli-ka   tongsoyng-i tari-ka kil-ta*
Cheli_{NOM} brother_{NOM} leg_{NOM} long
'Cheli's brother's leg is long'

{Major Subject} precedes {Grammatical Subject Verb} [Yoon]

Right-to-left structure building
a. $\{NP_{3NOM}V\}$ forms a sentential predicate for NP_{2NOM}
$\{NP_{1NOM}\{NP_{2NOM}\{\underline{NP_{3NOM}V}\}\}\}$

b. $\{NP_{2NOM}\{NP_{3NOM}V\}\}$ forms a sentential predicate for NP_{1NOM}
$\{NP_{1NOM}\{\underline{NP_{2NOM}\{NP_{3NOM}V}\}\}\}$.

• Presumed bottom-up compositionality, i.e. from right to left.

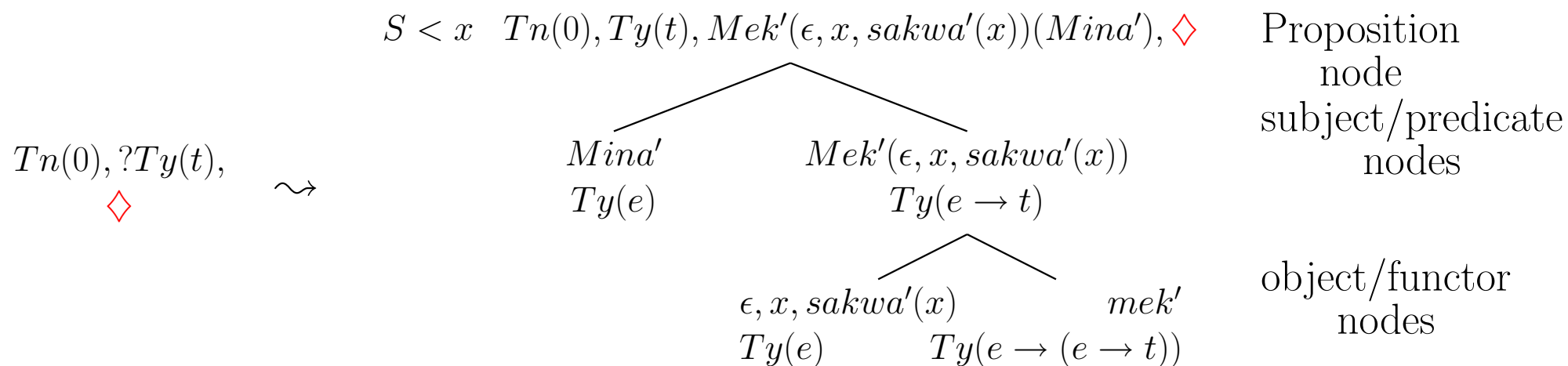• No basis for explaining incremental dynamics of interpretation update

Problems for Yoon forthcoming

- Wrong predictions

  – Rightmost NP ALONE may not play the role of a core subject for the core predicate (8)

  – Rightmost NP DOESN'T play the role of a core subject at all in some cases for the core predicate. (10)

(8) *Mwe-ka   nasse?   Kwumeng-i sekay-ka   na-ss-ta.*
    What$_{NOM}$ appeared?   hole$_{NOM}$ three$_{NOM}$ appear-PAST-DECL

    'What happened? Three holes appeared'.

(9) **Mwe-ka   nasse?   sekay-ka   na-ss-ta.*
    What$_{NOM}$ appeared?   three$_{NOM}$ appear-PAST-DECL

    'What happened? ??Three appeared'.

(10) *Mwe-ka   cha? Son-pal-i   Jina-ka   cha-ta.*
     Which   cold? hand.feet$_{NOM}$ Jina$_{NOM}$ cold-DECL

     Which are cold? Jina's hands and feet are cold.

     Not an answer to "Who is cold?"

Topic/focus effects through information growth dynamics

- Left-Right Building representations of content as tree growth process
  Syntax = building semantic representations (arguments on left branch):

  (1) Mina-ka sakwa-lul mekessta ('Mina ate an apple.')

$$Tn(0), ?Ty(t), \quad \rightsquigarrow$$
$$\Diamond$$

$S < x \quad Tn(0), Ty(t), Mek'(\epsilon, x, sakwa'(x))(Mina'), \textcolor{red}{\Diamond}$

Proposition node
subject/predicate nodes

$$Mina' \qquad\qquad Mek'(\epsilon, x, sakwa'(x))$$
$$Ty(e) \qquad\qquad\qquad Ty(e \to t)$$

$$\epsilon, x, sakwa'(x) \qquad\qquad mek'$$
$$Ty(e) \qquad Ty(e \to (e \to t))$$

object/functor nodes

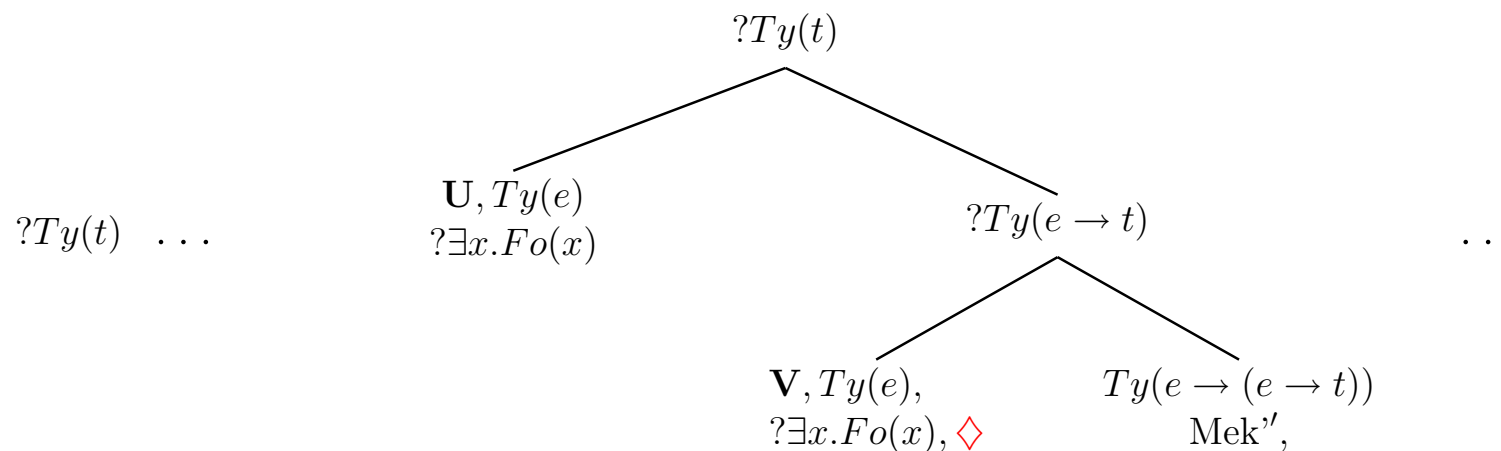| $Mina$	$\mapsto$	$Mina'$	abbr.	$\iota.x, Mina'(x)$
$Mekessta$	$\mapsto$	Mek'	abbr.	$\lambda x \lambda y Mek'(x)(y)$
$Sakwa$	$\mapsto$	$(\epsilon.x, Sakwa'(x))$	$Ty(e)$	

Scope defined by collecting scope constraints, eg $S < x$ and subsequent evaluation

The Syntactic Process: The Lexicon

Actions (lexical and general) induce partial **semantic** structures progressively enriched through the parse sequence.

Korean verbs induce propositional templates with argument nodes decorated by **metavariables** that need to be replaced by contentful formulae (pro-drop).

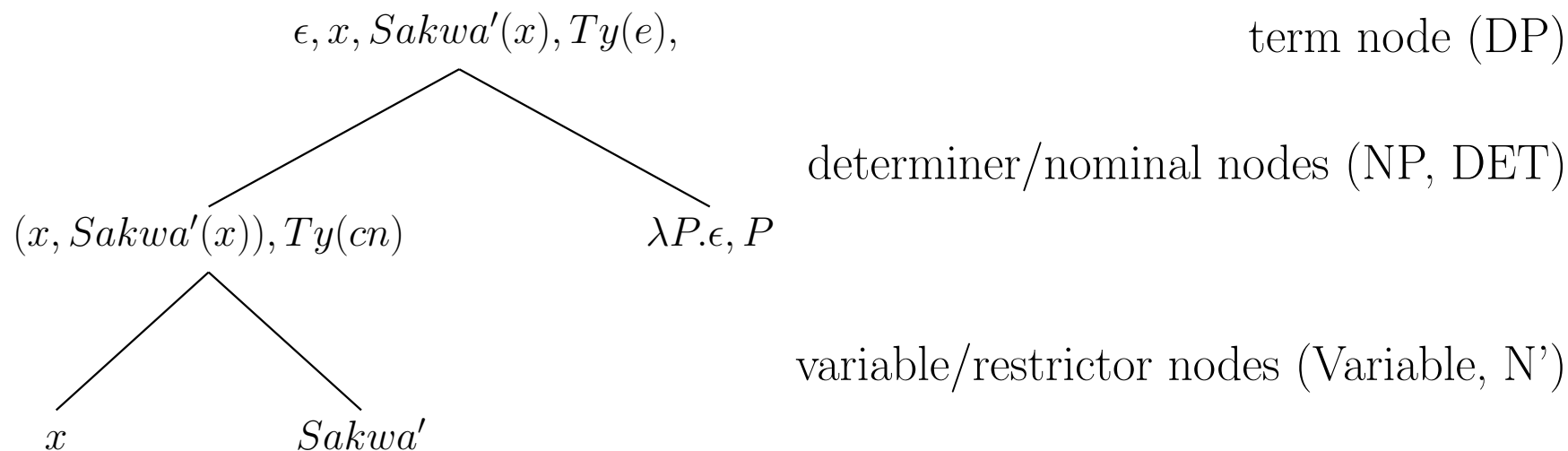Parsing stem in *mekessta* involves building structure

$$?Ty(t)$$

$?Ty(t) \quad \dots$

$\mathbf{U}, Ty(e)$
$?\exists x.Fo(x)$

$?Ty(e \rightarrow t)$

$\dots$

$\mathbf{V}, Ty(e),$
$?\exists x.Fo(x), \diamondsuit$

$Ty(e \rightarrow (e \rightarrow t))$
Mek'',

$?\exists x.Fo(x)$: requirement to find contentful formula

Argument nodes identifiable either from context or construction process

Tense and declarative marker drive content compilation

Term-construction in the lexicon

- Building internal term structure from nouns (*sakwa* - 'apple')

$$\epsilon, x, Sakwa'(x), Ty(e),$$
          term node (DP)

          determiner/nominal nodes (NP, DET)

$$(x, Sakwa'(x)), Ty(cn) \qquad \lambda P.\epsilon, P$$

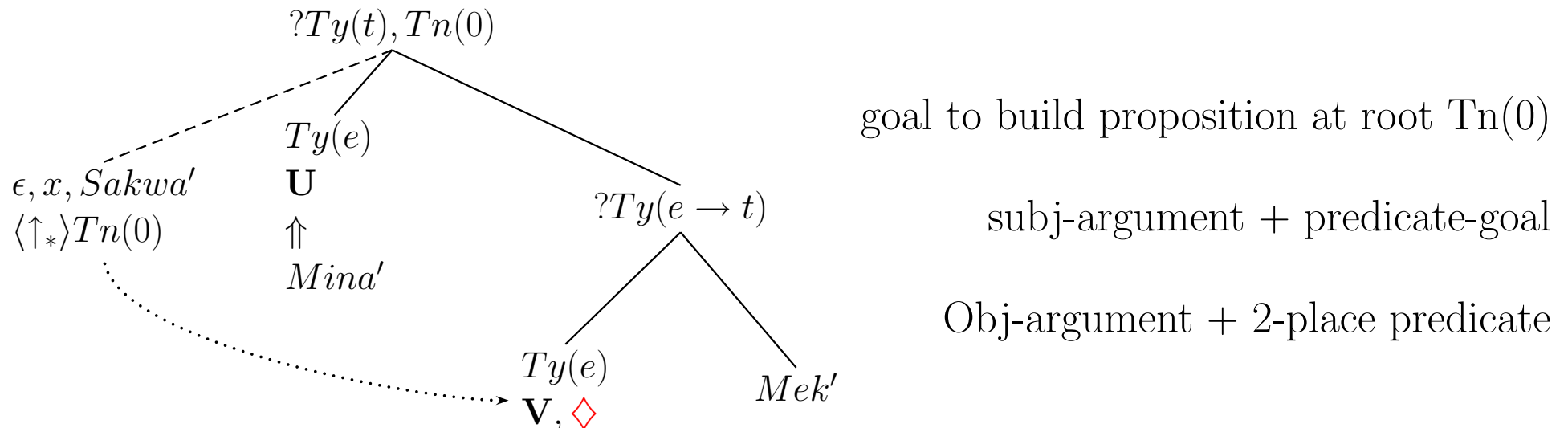   variable/restrictor nodes (Variable, N')

$$x \qquad Sakwa'$$

- Noun projects quantifying binder; case marker drives content compilation
  Scope constraints collected incrementally and defined over final tree.

Underspecification-plus-enrichment in Syntax

"Movement", pro-drop, and pronoun construal expressed in the same terms: building partial representations of content and updating them

Inducing structure from *Sakwa mekessta* ('she(=Mina) ate an apple') initial NP decorating an unfixed node,
mekessta a propositional structure, with "pro-like" place-holders

$?Ty(t), Tn(0)$

$\epsilon, x, Sakwa'$
$\langle\uparrow_*\rangle Tn(0)$

$Ty(e)$
U
$\Uparrow$
$Mina'$

$?Ty(e \to t)$

$Ty(e)$
V, $\Diamond$

Mek'

goal to build proposition at root Tn(0)

subj-argument + predicate-goal

Obj-argument + 2-place predicate

Subject place-holder updated from context
Initially constructed unfixed node updated by
unifying with object argument provided by verb

Any node only characterised as $\langle\uparrow_*\rangle Tn(a) =$
'Node is currently unfixed but dominated by Tn(a)'

Three Ways to Update a Structure

Structural Underspecification and its Update (parallelling anaphora)

$Tn(a), ?Ty(t)$ propositional node

* Adjunction

(i)   for non-local update
      (long-distance dependency)

$\langle\uparrow_*\rangle Tn(a),$
$?Ty(e), \diamondsuit$ argument node

(ii) Local * Adjunction

   - for local scrambling plus update

$Tn(a), ...?Ty(t)$ propositional node

Only 1 unfixed node (of a type)
from any given node

$\langle\uparrow_1^*\rangle Tn(a)$

   functor spine

as nodes with same modality
necessarily collapse
(are the same node).

$\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(a),$
$?Ty(e), \diamondsuit$ argument node

(iii) Generalised Adjunction

   - unrestricted adjunction, no island restriction
   (Korean subordination, and relatives)

Updates driven by case specifications

- Case as output filters that may enrich structure before reaching the verb

  Case as output filter

Nominative	$?\langle\uparrow_0\rangle Ty(t)$	Node immediately above to be proposition
Accusative	$?\langle\uparrow_0\rangle Ty(e \to t)$	Node immediately above to be predicate
Dative case	$?\langle\uparrow_0\rangle\langle\uparrow_1\rangle Ty(e \to t))$	Node to be second daughter within predicate

  Case used constructively

-nun(TOP)	decorates an independent structure plus matrix subject
-ka (NOM) :	enriches unfixed node fixing subject in propositional structure
-lul(ACC)	enriches unfixed node fixing object in predicate structure
-$hanthey$(DAT) :	enriches unfixed node fixing indirect object

Short-scrambling: O S V structure: Step 1

Parsing (2):

(2) Sakwa-lul Mina-ka mekessta
    'Mina ate an apple'

$Tn(0), ?Ty(t), \diamondsuit$

Short-scrambling without movement: Step 2

Parsing (2) *Sakwa-lul Mina-ka mekessta*

$Tn(0), ...?Ty(t), \color{red}\diamondsuit$

$\langle\uparrow_1^*\rangle Tn(0)$

$\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0), Ty(e)$
$\epsilon, x, Sakwa'(x)$

parsing *sakwa*

Short-scrambling without movement: Step 3

Parsing (2) *Sakwa-lul Mina-ka mekessta*

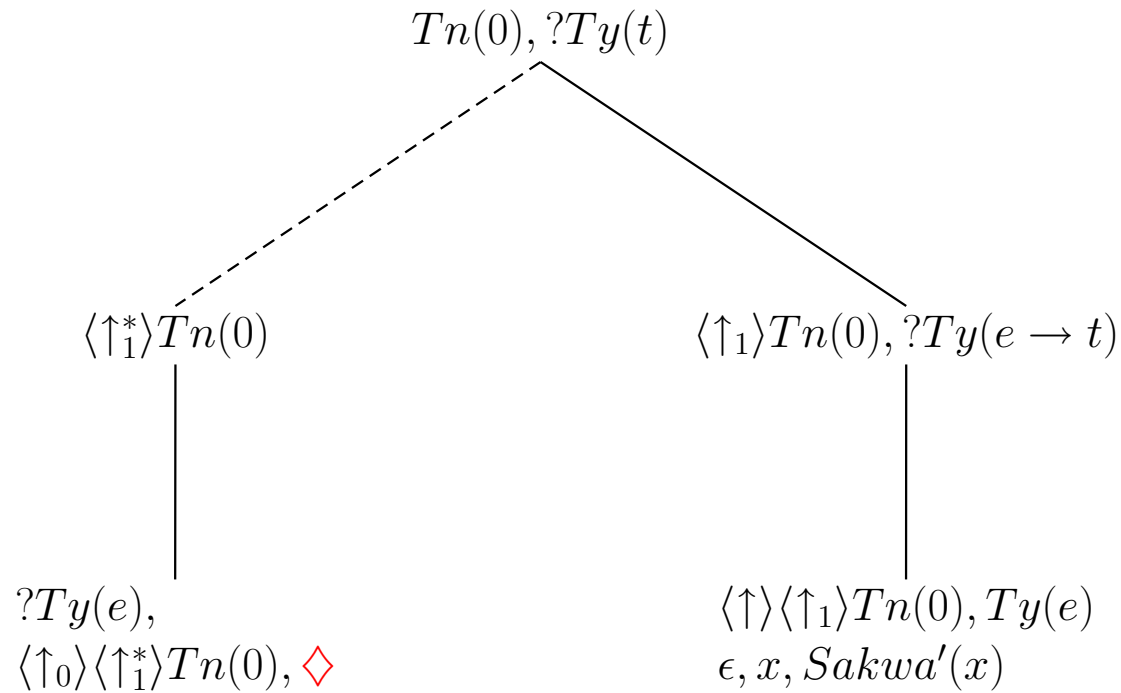$Tn(0), ...?Ty(t), \color{red}{\diamondsuit}$

$?Ty(e \rightarrow t)$

$\epsilon, x, Sakwa'(x)$
$?\langle \uparrow_0 \rangle Ty(e \rightarrow t)$

Immediate implementation of object case-filter: parsing *sakwa-lul* closes off object term and fixes argument node

Short-scrambling without movement: Step 4

Parsing (2) *Sakwa-lul Mina-ka mekessta*

$$Tn(0), ?Ty(t)$$

$$\langle\uparrow_1^*\rangle Tn(0)$$

$$\langle\uparrow_1\rangle Tn(0), ?Ty(e \to t)$$

$$?Ty(e),$$
$$\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0), \diamondsuit$$
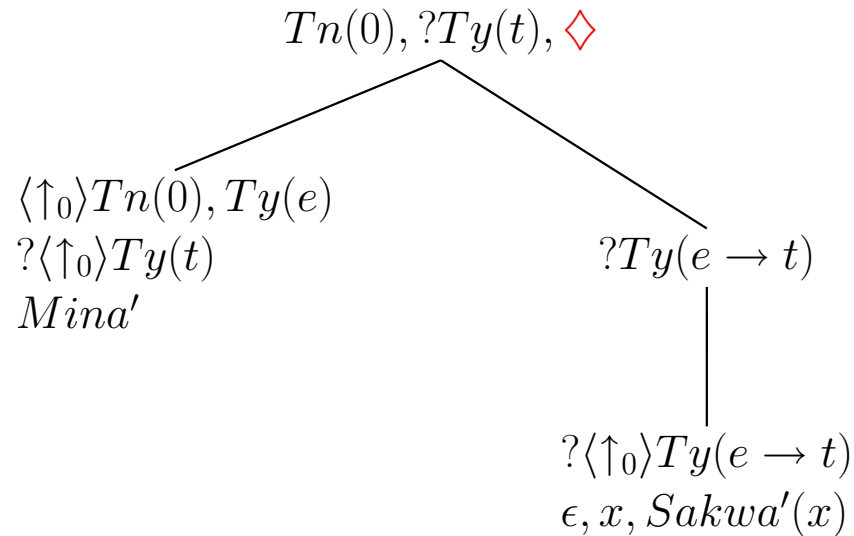
$$\langle\uparrow\rangle\langle\uparrow_1\rangle Tn(0), Ty(e)$$
$$\epsilon, x, Sakwa'(x)$$

Building a locally
unfixed node

Short-scrambling without movement: Step 5

Parsing (2) *Sakwa-lul Mina-ka mekessta*

$$Tn(0), ?Ty(t), \Diamond$$

$\langle\uparrow_0\rangle Tn(0), Ty(e)$
$?\langle\uparrow_0\rangle Ty(t)$
$Mina'$

$?Ty(e \rightarrow t)$

$?\langle\uparrow_0\rangle Ty(e \rightarrow t)$
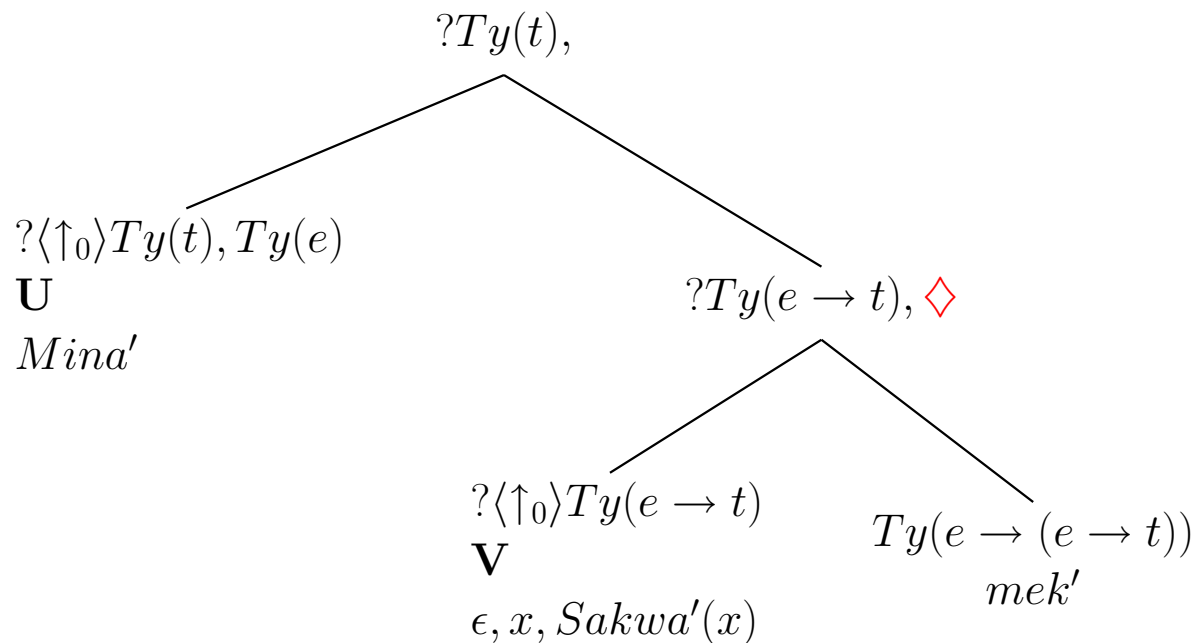$\epsilon, x, Sakwa'(x)$

Parsing *Mina-ka* decorates and fixes subject node

Result of parsing *sakwa-lul Mina-ka* is a partial tree
with a cluster of argument nodes

Short-scrambling without movement: Step 6

Parsing (2) *Sakwa-lul Mina-ka mekessta*

$?Ty(t),$

$?\langle\uparrow_0\rangle Ty(t), Ty(e)$
U
$Mina'$

$?Ty(e \to t), \diamondsuit$

$?\langle\uparrow_0\rangle Ty(e \to t)$
V
$\epsilon, x, Sakwa'(x)$
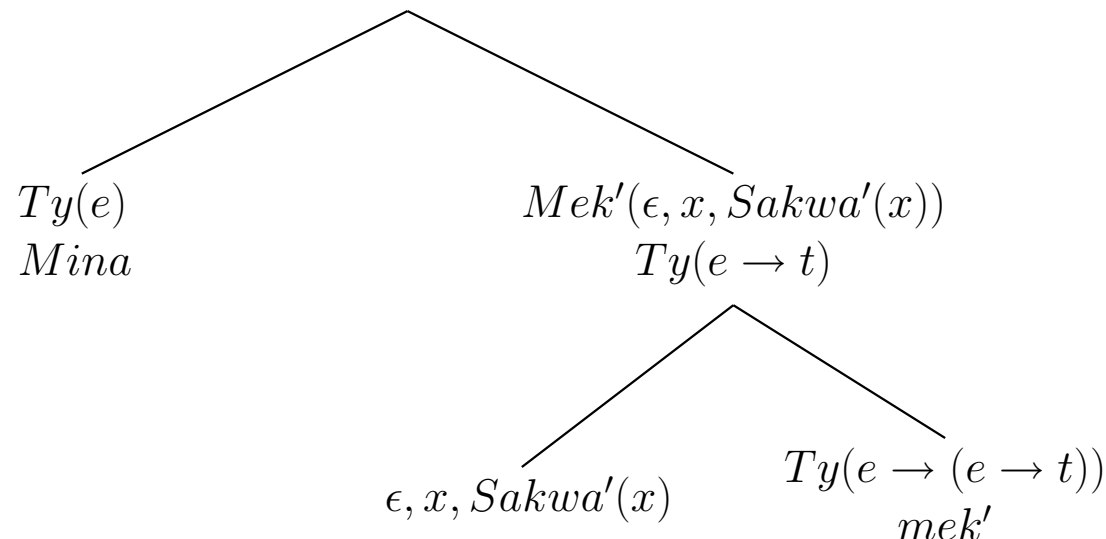
$Ty(e \to (e \to t))$
mek'

parsing *mek*

Each argument node built by

(i) parsing DP

(ii) node built from parsing the verb

collapse (are one and the same node)

Short-scrambling without movement: Step 7

Parsing (2) *Sakwa-lul Mina-ka mekessta*

$$Ty(t), PAST(Mek'(\epsilon, x, Sakwa'(x))(Mina'), \Diamond$$

$Ty(e)$
$Mina$

$Mek'(\epsilon, x, Sakwa'(x))$
$Ty(e \to t)$

$\epsilon, x, Sakwa'(x)$

$Ty(e \to (e \to t))$
mek'

Deriving compositionality on resulting tree -
presence of final tense suffix forces progressive decoration of
non-terminal nodes

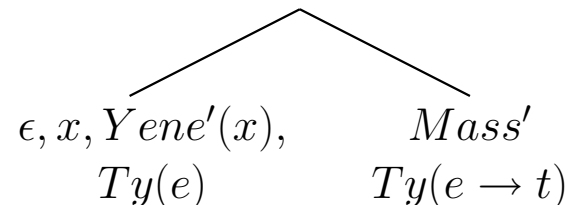# Constructing "names" from quantifier phrases: two steps

- Building the arbitrary-name equivalent of a predicate-logic quantifier

$$\frac{\exists x \phi(x)}{\phi(\epsilon, x, \phi(x))} \qquad \frac{\text{predicate logic formula}}{\text{epsilon calculus equivalent}}$$

Yene-ka massissta $\quad \exists x . Salmon'(x) \wedge Delicious'(x)$ 'A salmon was delicious'

1. Incremental Construction of Logical Forms with a scope statement

$$S < x, Mass'(\epsilon, x, Yene'(x))$$

$$\epsilon, x, Yene'(x), \qquad Mass'$$
$$Ty(e) \qquad Ty(e \rightarrow t)$$

$S < x$ – 'x is dependent on S', S an event variable
Indefinites: dependency choice on some other constructed term

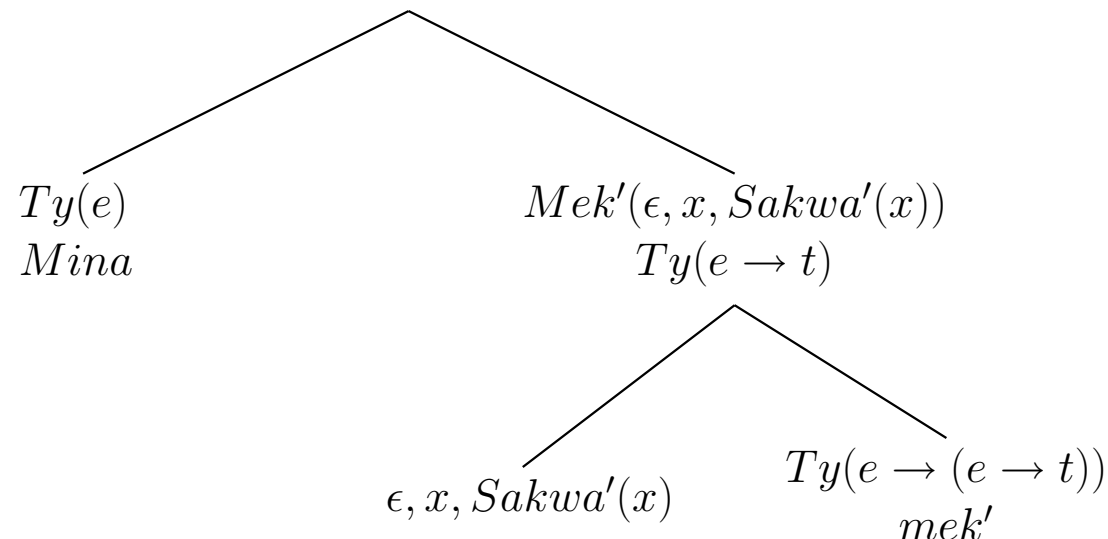2. Evaluation of scope statement + logical form yields:

$$S : Yene'(\mathbf{a}) \wedge Mass'(\mathbf{a}) \qquad \mathbf{a} = (\epsilon, x, Yene'(x) \wedge Mass'(x))$$

- Result: Epsilon terms grow as information accumulates

  (epsilon terms are 'witness terms' for containing proposition)

Short-scrambling without movement: Step 8

Evaluating (2) *Sakwa-lul Mina-ka mekessta*

$$S < x, \ Ty(t), PAST(Mek'(\epsilon, x, Sakwa'(x))(Mina'), \Diamond$$

$Ty(e)$
$Mina$

$Mek'(\epsilon, x, Sakwa'(x))$
$Ty(e \to t)$

$\epsilon, x, Sakwa'(x)$

$Ty(e \to (e \to t))$
mek'

Evaluation of scope statement plus logical form:

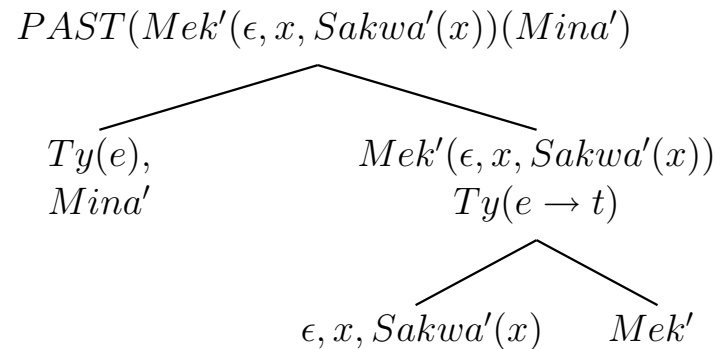$S : Sakwa'(\mathbf{a}) \wedge Mek'(\mathbf{a})(Mina')$

$\mathbf{a} = (\epsilon, x, Sakwa'(x) \ \wedge \ Mek'(x)(Mina'))$

Context-dependence and update

Context-dependence: ellipsis/pronouns project underspecified place-holders that require to be substituted by some contentful expression taken from the discourse context – META-VARIABLES $(\mathbf{U}, \mathbf{V})$

(3) Sakwa-lul Mina-ka   mekessta. Massissta
apple_{ACC} Mina_{NOM} eat_{PAST} delicious_{PAST}
Mina ate an apple. It was delicious

CONTEXT: TREE UNDER CONSTRUCTION

$$PAST(Mek'(\epsilon, x, Sakwa'(x)))(Mina')$$

$Ty(e),$ $Mek'(\epsilon, x, Sakwa'(x))$
$Mina'$ $Ty(e \to t)$

                                   $\epsilon, x, Sakwa'(x)$ Mek'

?$Ty(t)$

$Ty(e),$
$\mathbf{U}$ $Ty(e \to t)$
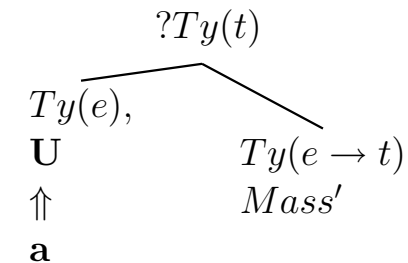$\Uparrow$ $Mass'$
$\mathbf{a}$

Evaluated as:
$S : Sakwa'(\mathbf{a}) \wedge Mek'(\mathbf{a})(Mina')$

$\mathbf{a} = (\epsilon, x, Sakwa'(x) \ \wedge \ Mek'(x)(Mina'))$

• Overall: Growing epsilon terms reflect accumulation of information.

Context-construction and update within syntax

- Independent 'linked' tress constructed as pairs, sharing a term

  Applied to relative clauses, (evaluation as coordination), and hanging topics:

  (4) McWhirter, who was the doctor, was late
  (5) As for McWhirter, he was late.

  Linked trees as independent structures required to share a term.

- Link relations can be built from arbitrary nodes, relative to shared term requirement: appositive constructed as type e term linked to type e term yielding compound epsilon term

  (6) McWhirter, the doctor, was late.

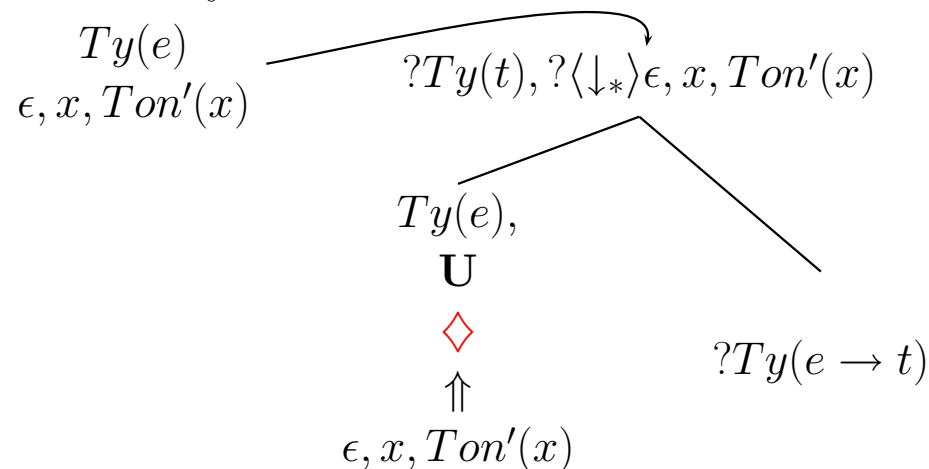 Evaluated as: $\epsilon, x, McWhirter(x) \land Doctor(x)$

- Hanging Topic and apposition in combination: iterated linked trees

  (7) As for McWhirter, who was the doctor, he was late.
  (8) As for McWhirter, the doctor, he was late.

Linked Structures and topic constructions

(9) Ton-un   mahnta
    Money$_{TOP}$ abundant
    'Money is abundant' i.e. I've a lot of money'

$Ty(e)$
$\epsilon, x, Ton'(x)$ $?Ty(t), ?\langle\downarrow_*\rangle\epsilon, x, Ton'(x)$

$Ty(e),$
U
$\diamondsuit$ $?Ty(e \to t)$
$\Uparrow$
$\epsilon, x, Ton'(x)$

Topic morphology encodes a type e term linked to type t structures: the main structure requires a COPY of formula from the first tree.
We also expect linked structures to be constructible between terms of the same type.

Linked structure term provides context for what follows (background)
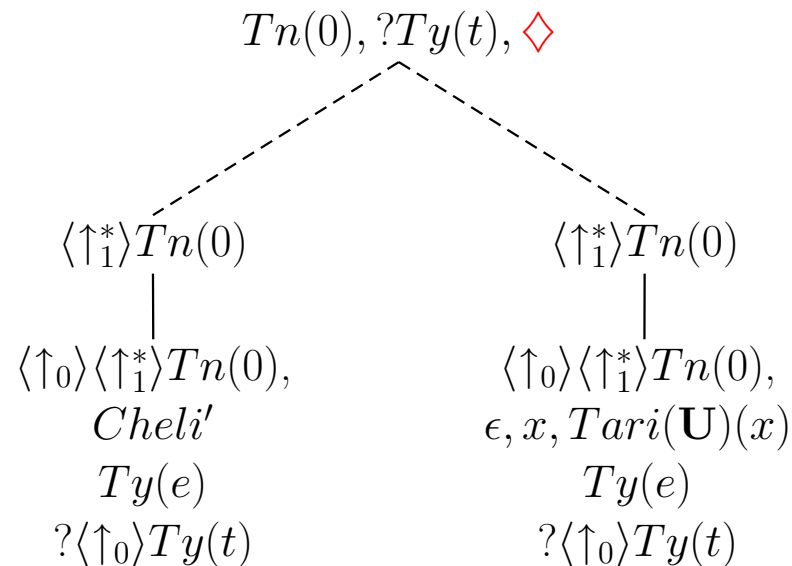
Construction of context may imply shift from what precedes (contrastive)

Addressing Multiple-Case Marking using:

(i) Building the same node twice:
   Tree-growth constraint ensures that nodes can be built twice as long as the second an extension of the first

(ii) Epsilon terms are extendible
   across both individual and linked trees

(iii) Locally unfixed nodes within type e domain

(i) Multiple Nominative: (a) building node twice

- The problem of parsing *Cheli-ka tari-ka* 'Cheli's leg'

$$Tn(0), ?Ty(t), \diamondsuit$$

$$\langle\uparrow_1^*\rangle Tn(0) \qquad\qquad \langle\uparrow_1^*\rangle Tn(0)$$

$$
\begin{array}{cc}
\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0), & \langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0), \\
Cheli' & \epsilon, x, Tari(\mathbf{U})(x) \\
Ty(e) & Ty(e) \\
?\langle\uparrow_0\rangle Ty(t) & ?\langle\uparrow_0\rangle Ty(t)
\end{array}
$$

- The apparent paradox is resolved by

    construing *tari* as a two-place relation (option for all nominals), using *Cheli* as an argument to created epsilon term

- Result: $\epsilon, x, Tari(Cheli)(x)$

  'Cheli's leg'

- Option available because position within tree not yet fixed

Overview of epsilon-term construction

<div align="center">

step(i)

$Tn(0), ... ?Ty(t), \diamond$

$\langle \uparrow_1^* \rangle Tn(0)$

$\langle \uparrow \rangle \langle \uparrow_1^* \rangle Tn(0), Ty(e)$
$\epsilon, x, Cheli'(x)$
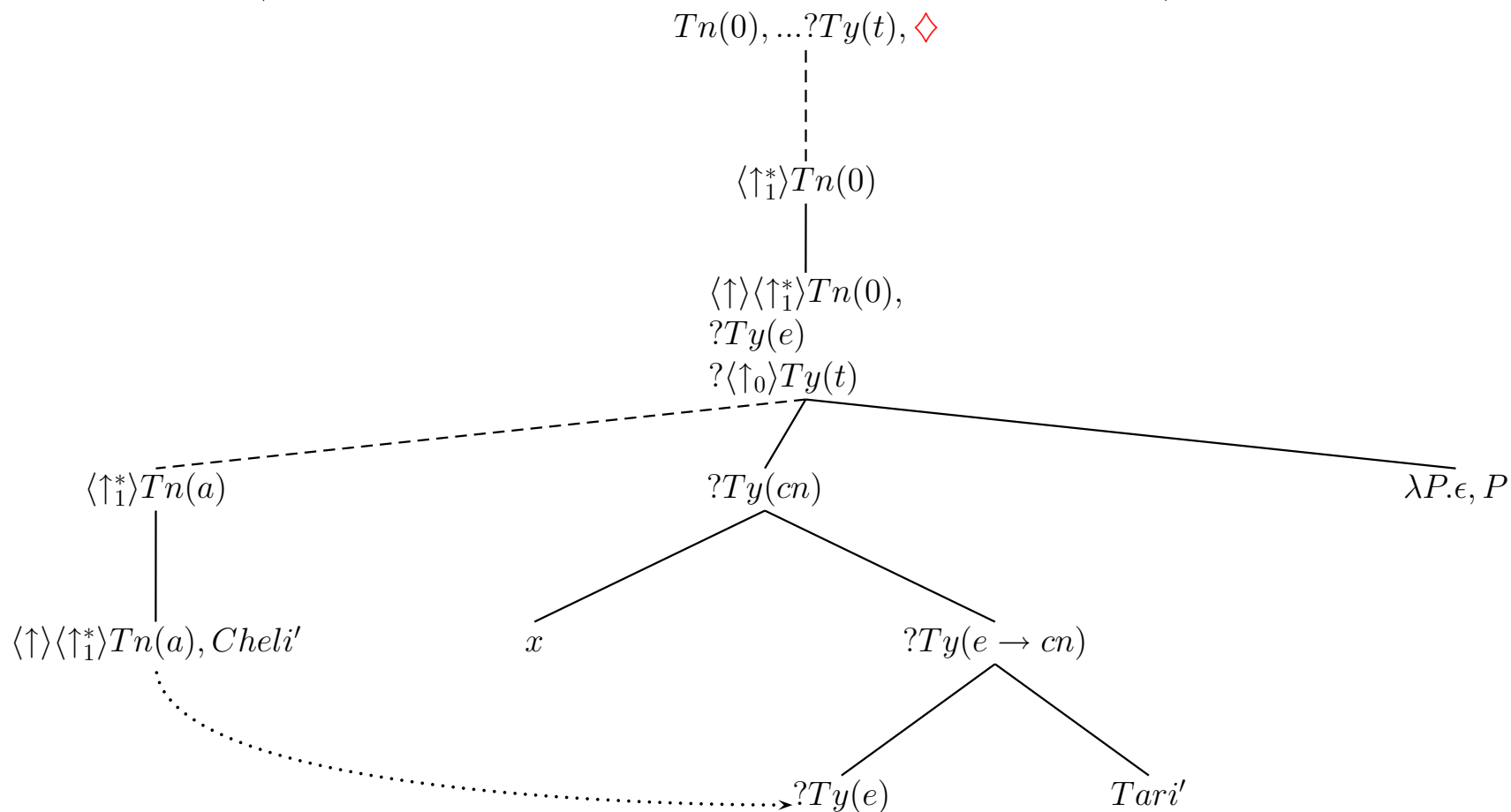$?\langle \uparrow_0 \rangle Ty(t)$
parsing *Cheli-ka*
case as output filter

</div>

<div align="center">

step (ii)

$Tn(0), ... ?Ty(t), \diamond$

$\langle \uparrow_1^* \rangle Tn(0)$

$\langle \uparrow \rangle \langle \uparrow_1^* \rangle Tn(0), Ty(e)$
$\epsilon, x, Tari'(Cheli')(x)'(x)$
$?\langle \uparrow_0 \rangle Ty(t)$
parsing *tari-ka*
to extend initial term

</div>

<div align="center">

step (iii)

$Tn(0), ?Ty(t), \diamond$

$\langle \uparrow_0 \rangle Tn(0),$
$\epsilon, x, Tari'(Cheli')(x)$
$Ty(e)$
$?\langle \uparrow_0 \rangle Ty(t)$
fixing node
using case constructively

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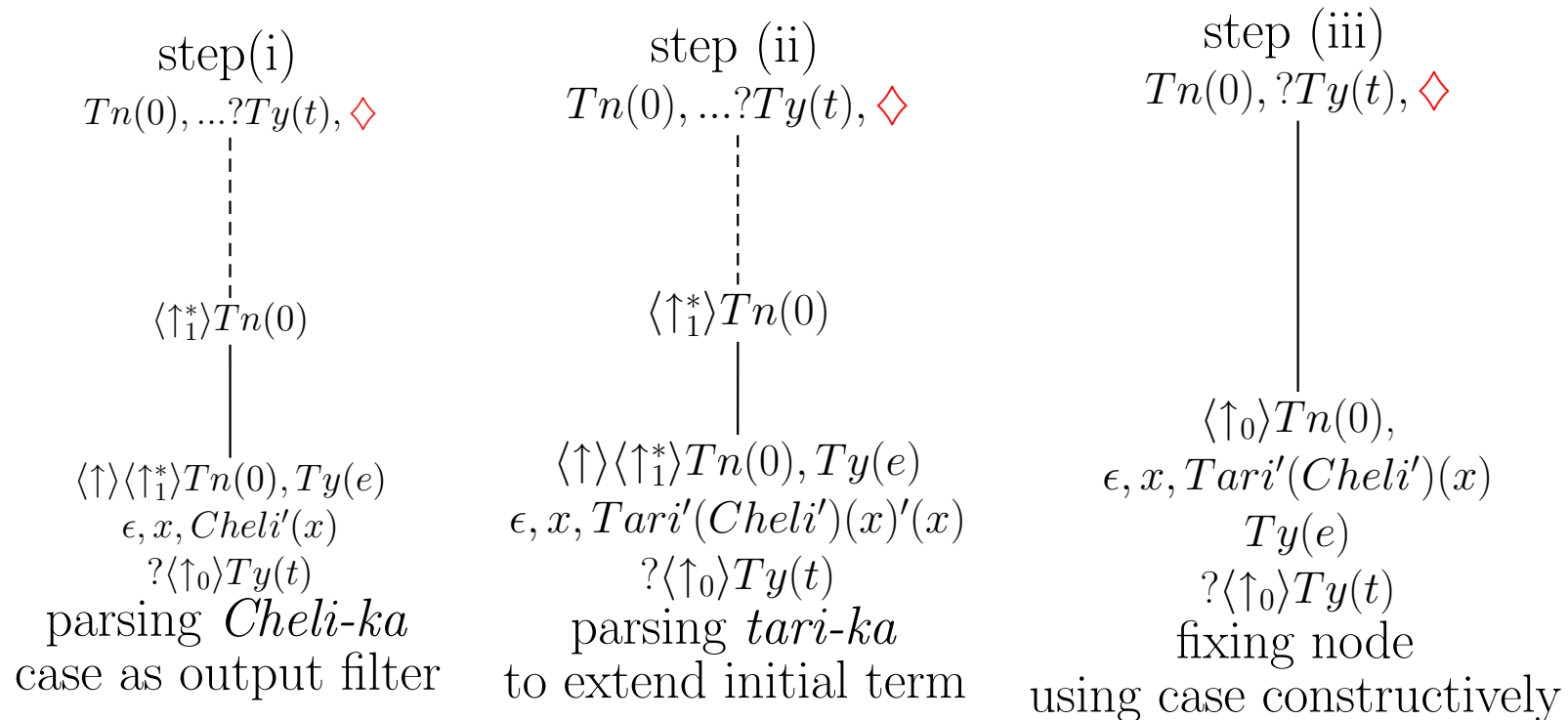
- Process at step (ii) can be applied recursively, hence
  multiple case-marking possible always subject to same interpretation,
  each sub-term constructed becomes part of subsequent term

- Potential for contrast with what precedes step (i)
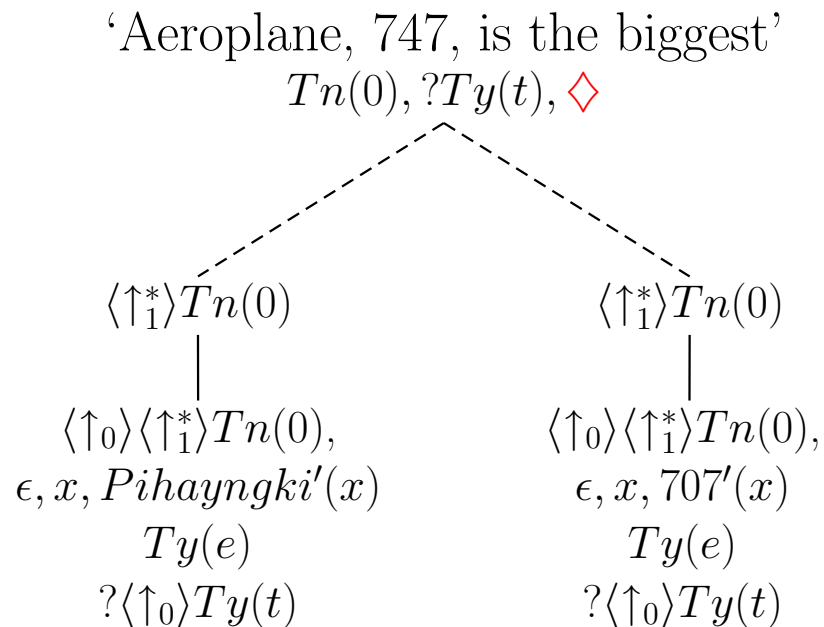
- Step (i) as context for step (ii)

Multiple Nominative (b)

- Parsing *Cheli-ka tari-ka* ('Cheli's leg')
  Using first term (unfixed) to become argument within
  second term (unfixed: constrained to be updated as subject)

$Tn(0), ... ?Ty(t), \diamond$

$\langle \uparrow_1^* \rangle Tn(0)$

$\langle \uparrow \rangle \langle \uparrow_1^* \rangle Tn(0),$
$?Ty(e)$
$?\langle \uparrow_0 \rangle Ty(t)$

$\langle \uparrow_1^* \rangle Tn(a)$
$?Ty(cn)$
$\lambda P.\epsilon, P$

$\langle \uparrow \rangle \langle \uparrow_1^* \rangle Tn(a), Cheli'$
x
$?Ty(e \rightarrow cn)$

$?Ty(e)$
$Tari'$

Double Case Marking: general indication of compound term

- Apposition form of construal *Pihayngki-ka 747-i ceyil khuta*

  'Aeroplane, 747, is the biggest'

  $$Tn(0), ?Ty(t), \color{red}{\Diamond}$$

  $\langle\uparrow_1^*\rangle Tn(0)$ $\langle\uparrow_1^*\rangle Tn(0)$

  $\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0),$ $\langle\uparrow_0\rangle\langle\uparrow_1^*\rangle Tn(0),$
  $\epsilon, x, Pihayngki'(x)$ $\epsilon, x, 707'(x)$
  $Ty(e)$ $Ty(e)$
  $?\langle\uparrow_0\rangle Ty(t)$ $?\langle\uparrow_0\rangle Ty(t)$

- Predicted available appositive construal

  $$(\epsilon, x, Pihayngki'(x) \wedge 747'(x))$$

 Possible translation? : 'As for airplanes, it is the 747 that is the biggest'

  Preferred translation : 'The airplane which is a 747 is the biggest'

- As analysis predicts, ANY way of putting the two terms together to form a compound is possible; second term ALWAYS an update of the first
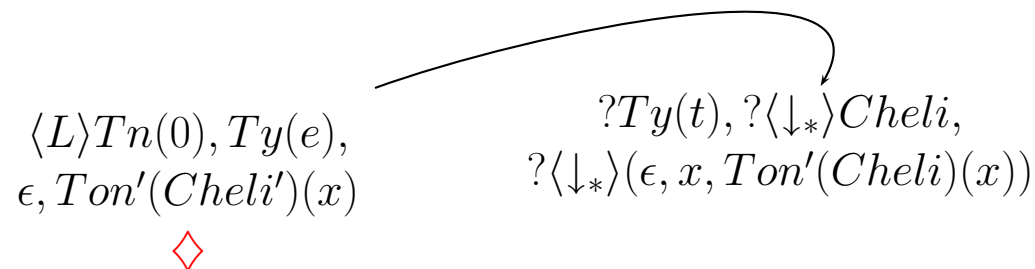
(ii): Growing epsilon terms at a linked structure node

step (a): parsing *Cheli-nun ton-un* in *Cheli-nun ton-un mahnte*
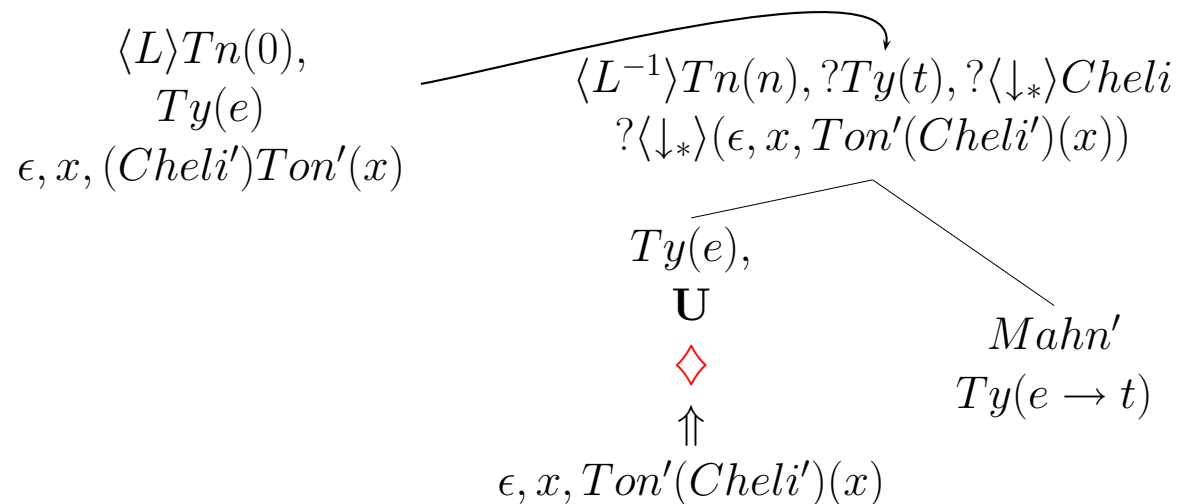
'$Cheli_{TOP}$ $money_{TOP}$ abundant':

$\langle L \rangle Tn(0), Ty(e),$
     $Cheli'$ $?Ty(t), ?\langle \downarrow_* \rangle Cheli$
   $\epsilon, Ton'(\mathbf{U})(x)$
       $\Diamond$
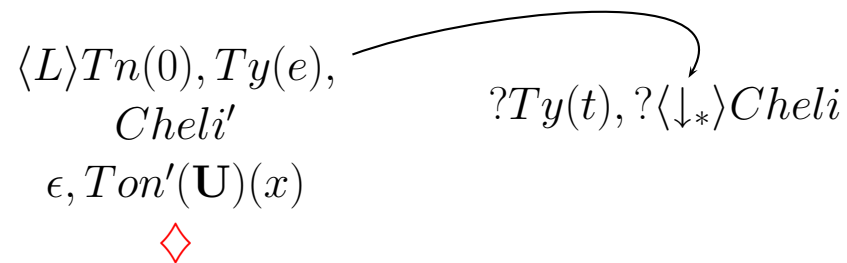
step (b): double building of LINK transition resolved by incorporating
first term into second

$\langle L \rangle Tn(0), Ty(e),$ $?Ty(t), ?\langle \downarrow_* \rangle Cheli,$
$\epsilon, Ton'(Cheli')(x)$ $?\langle \downarrow_* \rangle(\epsilon, x, Ton'(Cheli)(x))$
      $\Diamond$

First term provides point of departure for construction of second term,
hence background term precedes contrastive/new-update term

Resulting composite topic

The new composite term is used to construct subsequent tree
Cheli-nun ton-nun mahnta 'Cheli's money is abundant'

$$\langle L \rangle Tn(0),$$
$$Ty(e)$$
$$\epsilon, x, (Cheli')Ton'(x)$$

$$\langle L^{-1} \rangle Tn(n), ?Ty(t), ?\langle \downarrow_* \rangle Cheli$$
$$?\langle \downarrow_* \rangle (\epsilon, x, Ton'(Cheli')(x))$$

$$Ty(e),$$
$$\mathbf{U}$$
$$\diamondsuit$$
$$\Uparrow$$
$$\epsilon, x, Ton'(Cheli')(x)$$

$$Mahn'$$
$$Ty(e \to t)$$

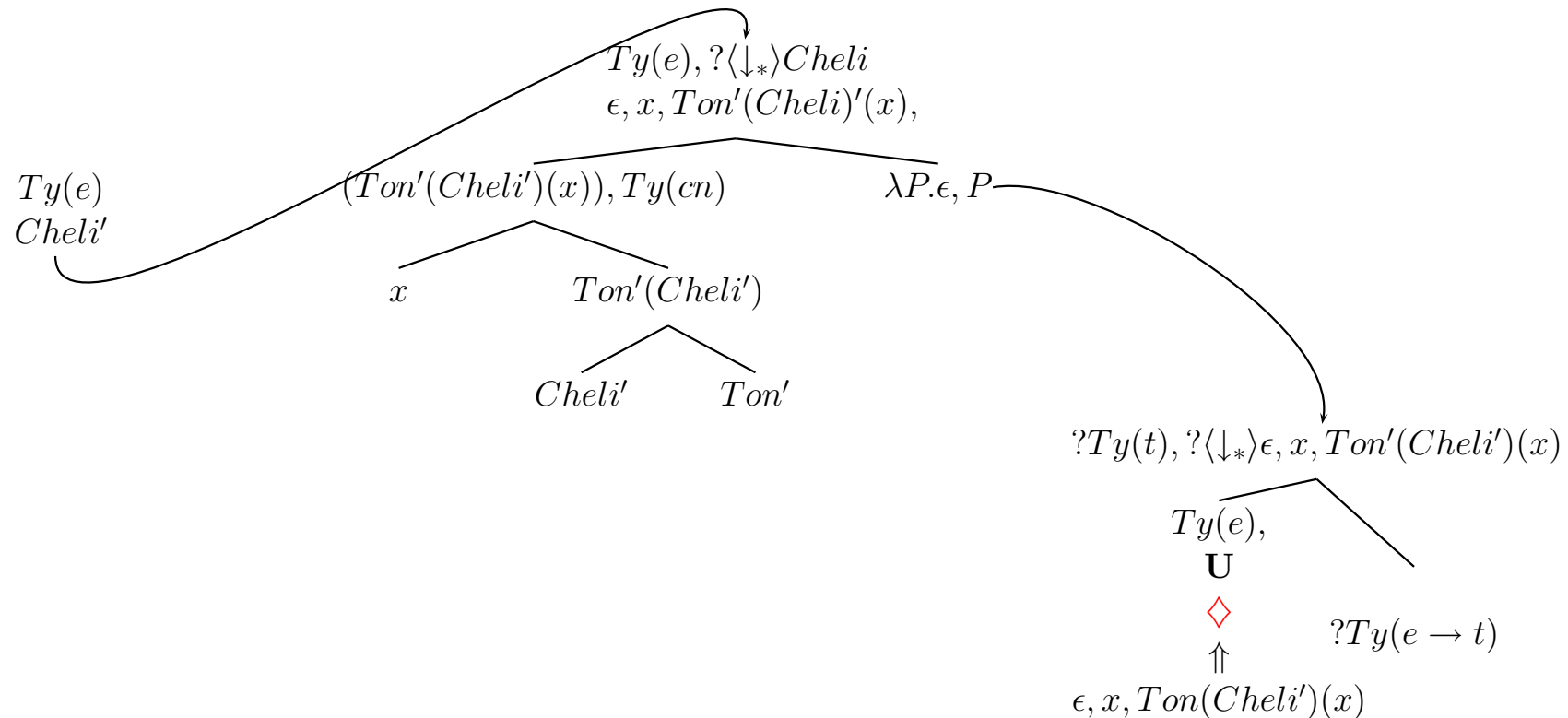The main structure requires a COPY of formula from the first tree.

The constructed term $\epsilon, x, Ton(Cheli)(x)$ will be used to fulfil BOTH requirements in the subsequent proposition
here the subject of the predicate given by *mahnta*

As first constructed linked structure term, the concept $Cheli'$ will be taken as background, relative to which what follows is an update

Whether $Cheli'$ is taken as contrastive depends on whether
it is a departure from previous context.

(b) Multiple topic structures: iterated link trees

- *Cheli-nun   ton-un   mahnta*
  Cheli$_{TOP}$ money$_{TOP}$ abundant
  Cheli's money is abundant (Cheli has a lot of money)

$$Ty(e), ?\langle\downarrow_*\rangle Cheli$$
$$\epsilon, x, Ton'(Cheli)'(x),$$

$Ty(e)$
$Cheli'$

$(Ton'(Cheli')(x)), Ty(cn)$

$\lambda P.\epsilon, P$

x $Ton'(Cheli')$

$Cheli'$ Ton'

$?Ty(t), ?\langle\downarrow_*\rangle\epsilon, x, Ton'(Cheli')(x)$

$Ty(e),$
U
$\diamondsuit$
$\Uparrow$
$\epsilon, x, Ton(Cheli')(x)$

$?Ty(e \to t)$

Building of initial structure as $\epsilon, x, Cheli'(x)$ (background)
which is linked to next tree creating $\epsilon, x, Ton'(Cheli')(x)$ (update)
for predicate provided in the next tree by *mahnta*

Topic/Focus Effects as General Update Dynamics

Double Nominative Variation in construal

The second term provides update to the first, leading to composite term:

(12) *Nayngmyen-i*   *eti-ka*   *mass-iss-ci?*
cold-noodle$_{NOM}$ where$_{NOM}$ taste-exist-Q

Nayngmyen-i   *i-cip-i*   *mass-iss-ta*
cold-noodle$_{NOM}$ this-restaurant$_{NOM}$ taste-exist-DECL

Q: "Where can I taste a delicious cold.noodle?"
A: "the cold noodles of this restaurant are delicious"'

(13) *Tari-ka nwu-ka*   *kil-ci? Tari-ka cheli-ka*   *kil-ta*
leg$_{NOM}$ who$_{NOM}$ long-Q   leg$_{NOM}$ *cheli*$_{NOM}$ long-DECL
''Who has long legs?" "Cheli's legs are long"

(14) *Pihayngki-ka*   *747-i*   *ceyil khu-ta*
airplane-NOM   747-NOM   most   big-DECL
'The aeroplane that is a 747 is the biggest'

Concept of background to next step is definitional of concept of growth.
Whether it is contrastive or not depends on immediate context
(alignment with previous patterns) or general knowledge,
not on morphology, or on structure

Summary

- Double case-marking and double topic-marking both characterised in terms of building partial term and extending at a single node

- Analysis combines

  (i) underspecified tree relation,

  (ii) partially specified term plus update

  (iii) case as filter on output

  (iv) concept of linked trees, sharing a term

- With concept of progressive update, no need for discrete structures for

  (i) background topic

  (ii) contrastive topic

  (iii) topic reading for subject

  (iv) (exhaustive) focus reading for subject

  (cf Vermeulen 2007)

- All contrasts seen in terms of point of departure relative to context plus update.

- Grammar with inbuilt dynamics of parse/production process uniquely makes such an account available

Cross-language variation Nominative marking

- Korean multiple nominatives very natural

  Cheli-ka   simcang-i   paktong-i   siji-ja   pparuta
  Cheli$_{NOM}$ heart$_{NOM}$ beat$_{NOM}$ speed$_{NOM}$ fast
      'The speed of Cheli's heart beat is fast'

- Japanese two nominative case marked NPs in sequence natural.
  Marked acceptability decrease with more.

  (10) *?? John-ga migite-ga   koyubi-ga   magatte-iru*
      John$_{NOM}$ right-hand$_{NOM}$ little-finger$_{NOM}$ bent
    The little finger of John's right hand is bent

- Cross-language variation suggests not merely processing difficulties

- Japanese *-ga* encodes fixing of subject-relation immediately.

  – Hence no iterative building of unfixed subject node.
  – Building a subterm within second NOM-marked term is the ONLY
  available strategy

Cross-variation - Topic-structure building

- Korean only two topic NPs natural . Non-iterative
  Korean does not have free use of linked structure building of type e terms,
  but only in developing a relation between a type e term and type t??

  (11) ??*John-un   orunson-un   cakun-sonkarak-un   Kwupessta*
        John$_{TOP}$ right-hand$_{TOP}$ little-finger$_{TOP}$ bent
        'John's right-hand little finger is bent'

- Variation achieved by language-particular constraints narrowing down
  available options

Overall Conclusion

- Syntax as articulating fine structure of HOW semantic structure incrementally built up

- achieves the building of a grammar system directly reflecting architecture of parse-system

- provides a new window on a structural concept of information growth
  - topic = background to update,
  - focus = effect of update

- No multiplication of functional projections

- Sensitivity to linear-order effects, while allowing systematic exceptions

- What is novel for a grammar is GRADUAL DEVELOPMENT together of (i) nodes in a tree, (ii) tree relations (iii) formulas that decorate them

- The central concept is that of structural update

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