-na: a disjunction AND conjunction marker?

- A-na B: disjunction

Example

Angie-na Brad-ka cikum Nagoya-ey issta.
'Angie or Brad is in Nagoya now.'

- A-na B-na: conjunction

Example

Angie-na Brad-na cikum Nagoya-ey issta.
'Angie and Brad are in Nagoya now.'
Compatibility with an explicit case marker

- Ordinary conjunctions can be followed by a case marker.

Example

Angie-*wa* Brad-*ka* cikum Nagoya-*ey* issta.
Angie-WA Brad-NOM now Nagoya-in exist
‘Angie and Brad are in Nagoya now.’

- *nana*-conjunctions cannot be followed by a case marker.

Example

Angie-*na* Brad-*na-(*)ka* cikum Nagoya-*ey* issta.
Angie-NA Brad-NA-(Nom) now Nagoya-in exist
‘Angie and Brad are in Nagoya now.’

Givenness

- The conjuncts in *nana*-conjunction are a set of compatible things given in the previous discourse.

Example

A: na-nun Angie-*hako* Brad-*lul* coahay.
I-TOP Angie-and Brad-ACC like
‘I like Angie and Brad.’

B: Angie-*na* Brad-*na* cikum Nagoya-*ey* isse.
Angie-NA Brad-NA now Nagoya-in exist
‘Angie and Brad are in Nagoya now.’

Exhaustivity

Example

Andrew-*na* Brad-*na* Chris-*na* uica-*ey* ancaissta.
Andrew-NA Brad-NA Chris-NA chair-in sit
‘Andrew, Brad and Chris are sitting in a chair.’
Exhaustivity

In *nana*-conjunction, every given alternative should be exhaustively listed.

Example

"#Andrew-na Brad-na uica-ey ancaissta.
Andrew-NA Brad-NA chair-in sit
'(intended meaning: Both Andrew and Brad are sitting in a chair.)"

Distributivity

- *nana*-conjunction: only a *distributive* reading is possible

Example

"Andrew-na Brad-na Chris-na nonmwun-ul hana nayssta.
Andrew-NA Brad-NA Chris-NA paper-ACC one submit
'Andrew, Brad, and Chris (each) have submitted a paper.'"
Alternative Conditionals

- Alternative Conditional (AC): another repeated -na construction
  - p-na q-na r ‘Whether p or q, r’

Example

John-i palphyo-ha-na Bill-i palphyoha-na
Mary-nun yelsimhi tululkesita.
Mary-TOP attentively listen
‘Whether John or Bill gives a presentation, Mary will be listening attentively.’

- In this sentence -na is a clausal ending rather than a nominal ending,
  and the two clauses marked by -na make a conditional-like adjunct clause together.

Conjunctive Meaning of Alternative Conditionals

- p-na q-na r ‘Whether p or q, r’ entails both ‘If p, r’ and ‘If q, r’

Example

John-i palphyo-ha-na Bill-i palphyoha-na
Mary-nun yelsimhi tululkesita.
Mary-TOP attentively listen
‘Whether John or Bill gives a presentation, Mary will be listening attentively.’

→ ‘If John gives a presentation, Mary will be listening attentively.’

→ ‘If Bill gives a presentation, Mary will be listening attentively.’

- Both p and q provide sufficient condition for the occurrence of the event denoted by the main clause.

The Semantic Representation of Alternative Conditionals

- The semantic representation of alternative conditionals

Example

\[ [p_1-na \ p_2-na \ \cdots \ p_n-na \ q] = ((p_1 \to q) \land (p_2 \to q) \land \cdots \land (p_n \to q)) \]
**nana-conjunction = Alternative Conditional with pro-drop**

- Proposal: *nana*-conjunction is actually an alternative conditional with *pro*-drop.

**Example**

Annie-na Becky-na yeypputa.
Annie-NA Becky-NA pretty
‘Both Annie and Becky are pretty.’

**Example**

[ e_i Annie-na e_i Becky-na ] [ e_i yeypputa ] .

- The nominals that appear before -na are actually predicates.
- The subjects of the nominal predicates and the co-indexed argument in the main clause is omitted.

**Properties of nana-conjunction: revisited**

- Alternative conditionals show Givenness and Exhaustivity
  - all conditions are given
  - all given conditions should be listed

**Example**

John-i palphyo-ha-na Bill-i palphyoha-na
Mary-nun yelsimhi tululkesita.
Mary-Top attentively listen
‘Whether John or Bill gives a presentation, Mary will be listening attentively.’

**nana-conjunction = Alternative Conditional with pro-drop**

- semantic representation of *nana*-conjunction

Formula

\[ \forall [(being_A(x) \rightarrow pretty(x)) \text{ and } (being_B(x) \rightarrow pretty(x))] \]

- I assume that the nominals that appear before -na are actually one-place predicates, s.t. they take an individual argument and return true iff the individual is equivalent to the denotation of the nominal.
- We could assume an implicit copula verb between the nominal and -na (cf. Chung 1996).
- -na has an allomorph -ina, and the copula verb in Korean is *i*.
- The co-indexed null elements in the adjunct and main clauses introduce free variables in the semantic representation
- The alternative conditional marker -na makes a conditional
- A conditional introduces an unselective universal operator if no explicit quantification is provided in the context (Heim 1982)
- The universal operator binds the free variables

**Properties of nana-conjunction: revisited**

- Incompatibility with case markers
  - *na*-conjunctive nominals are not followed by case markers because they are actually adjunct clauses.
- Distributivity
  - by SDA (simplification of disjunctive antecedent)

**Example**

\[ \forall [(Andrew(x) \text{ or } Brad(x) \text{ or } Chris(x)) \rightarrow submit_paper(x)] \]
\[ \equiv \forall [(Andrew(x) \rightarrow submit_paper(x)) \text{ and } (Brad(x) \rightarrow submit_paper(x)) \text{ and } (Chris(x) \rightarrow submit_paper(x))] \]

- This property also could be related to the reason why *nana*-conjunction marker has the same form with a disjunction marker.
Interim Summary II

- The properties of nana-conjunction can be neatly explained by the alternative conditional approach.
  - Givenness and Exhaustivity are original properties of alternative conditionals.
  - Distributivity is explained by SDA.
  - Incompatibility with case markers is due to the clausal structure.

wh-na: distributive universal

- The alternative conditional approach to nana-conjunction can be extended to explain another puzzling expression, wh-na.
  - wh-na: distributive universal

Example

nwukwu-na aisu khulim-ul cohahanta.
who-NA ice cream-Acc like
'Everyone likes ice cream.'

The meaning of -na in previous works
- question marker (Chung 1996)
- concessive marker (Lee 2003, Yoon 2004)
- disjunctive marker (Haspelmath 1995, Choi 2007)

wh-na and nana-conjunction

- wh-words: sets of individuals (Hamblin 1973)

Example

nwukwu-na aisu khulim-ul cohahanta.
who-NA ice cream-Acc like
'Everyone likes ice cream.'

Annie-na Becky-na ··· Zelda-na aisu khulim-ul cohahanta.
Annie-NA Becky-NA ··· Zelda-NA ice cream-Acc like

The universal reading of wh-na comes from exhaustivity of alternative conditionals.
The semantic representation of -$na$ revisited

- Now I assume that -$na$ takes a set of condition propositions as argument, and it appears in the semantic representation only once, as in -$wh-na$.
- The apparent multiple occurrence of -$na$ could be spreading/concord effect.
- The semantic representation of alternative conditionals (revised)

Example

\[ \{p_1, p_2, \cdots, p_n\} -$na$ q = \forall p_i[(p_i \in p) \supset (p_i \rightarrow q)] \]
where \( p \) is a set of propositions \( \{p_1, p_2, \cdots, p_n\} \)

The semantic representation of -$na$ in alternative conditionals

Example

\[ [-na] = \lambda p \lambda q \forall p_i[(p_i \in p) \supset (p_i \rightarrow q)] \]
where \( p \) is a set of propositions \( \{p_1, p_2, \cdots, p_n\} \)

Compatibility with case markers of -$wh-na$

- -$wh-na$ followed by a case marker is marginal, but doesn’t seem impossible
- a Google search

<table>
<thead>
<tr>
<th>Case Marker</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>nwukwu-na-ka (nominative)</td>
<td>181,000</td>
</tr>
<tr>
<td>nwukwu-na-lul (accusative)</td>
<td>10,500</td>
</tr>
<tr>
<td>nwukwu-na ‘everyone’</td>
<td>11,500,000</td>
</tr>
</tbody>
</table>

cf. -$nana$-conjunction is incompatible with a case marker

<table>
<thead>
<tr>
<th>Case Marker</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ne-na na-na-ka (nominative)</td>
<td>1</td>
</tr>
<tr>
<td>ne-na na-na-lul (accusative)</td>
<td>0</td>
</tr>
<tr>
<td>ne-na na-na ‘Both you and me’</td>
<td>40,300</td>
</tr>
</tbody>
</table>

- -$wh-na$ is in the process of grammaticalization (cf. Haspelmath 1995, Yoon 2004)? Possibly.

Conclusion

- -$nana$-conjunction and -$wh-na$ both are originated from alternative conditionals.
- The alternative conditional approach gives a unified and neat explanation for the syntactic and semantic properties of both structures.
References I


References II

