From *Etwa, Nicht* and *Nandao* to a possible uniform account of neutral, biased and rhetorical questions

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RuLing VII Presentation
Etwa, Nicht and Nandao

- In German, *etwa* literally means “approximately”, and *nicht* means “not”. They are adverbs.
- In Mandarin, *nandao* is a rhetorical question adverb, as I discussed in a previous work.
- Interestingly, these three morphemes share the syntactic distributions.
They cannot appear in declarative sentences

- Der Junge hat (*etwa/*nicht) den Kuchen gemocht.
  the boy has *etwa* *nicht* the cake liked
  “The boy liked the cake.” (G&C 2010: 4)

- Lisi (*nandao) hui lai.
  Lisi *nandao* will come
  “Lisi will come.”
They are incompatible with WH-Qs

- Wer hat (*etwa/*nicht) den Kuchen gemocht?
  who has *etwa* *nicht* the cake liked
  “Who liked the cake?” (ibid.: 5)

- Zangsan weishenme (*nandao) qu xuexiao?
  Zangsan why *nandao* go school
  “Why does Zangsan go to school?”
They are compatible with polar questions (Y/N-Qs)

- Hat der Junge etwa/nicht den Kuchen gemocht?
  has the boy *etwa nicht* the cake liked
  *etwa*: “Did the boy like the cake by any chance?”
  *nicht*: “Is it not the case that the boy like the cake?”
  (ibid.: 4)

- Zhe nandao jiushi shichang jingji (me)?
  this *nandao* be market economy Q
  “Is this market economy?” (=This isn’t market economy.)
In Y/N-Qs, they have similar distributions

- Hat (etwa/nicht) Max (etwa/nicht) die Prüfung mit 50% has *etwa nicht* Max *etwa nicht* the exam with 50%
der Punkte bestanden?the-gen points passed
   *etwa*: “Did Max pass the exam with 50% of the points by any chance?”
   *nicht*: “Is it not the case that Max passed the exam with 50% of the points?”

- (Nandao) Zhangsan (nandao) bu xihuan Lisi me?
  *nandao* Zhangsan *nandao* not like Lisi Q
  “Doesn’t Zhangsan like Lisi?” (=Zhangsan likes Lisi.)
G&S (2010) summerizes that *etwa/nicht* surface in the higher part of the discourse, i.e. precede the object or event subject (5-6). If they occur within VP, e.g. between object and verb, they will become their truth-conditional homophones, i.e. “approximately”/”not”.

In Mandarin, *nandao* has no truth-conditional homophones, hence ungrammaticality will be incurred.

Zhangsan bu (*nandao) xihuan (*nandao) Lisi me?
Zhangsan not *nandao* like *nandao* Lisi Q
“Doesn’t Zhangsan love Lisi?”
Semantically different

- As I argued in my previous work, *nandao* will always turn a Y/N-Q into a rhetorical one.
- But *etwa/nicht* are different, they cannot make the Y/N-Qs into rhetorical questions.
- G&S (2010) argues that the discourse marker *nicht* can only be used if there is some positive evidence for the proposition being asked, while *etwa*, on the other hand, can only be used if there is some negative evidence for the proposition being asked.
My previous work on nandao

In my previous work on nandao, nandao is analysed as a WH-word which takes a question of a single proposition and turns it into a set with the proposition of the opposite polarity.

\[
[[\text{nandao}]] = \lambda Q_{\langle s, \langle t, t \rangle \rangle} \lambda h_{\langle s, t \rangle} \exists r (r = 0 \land h = \lambda w' (Q(w')(r)))
\]
Analysis A: Extending the previous analysis to *etwa/nicht*

- In this part of analysis, unlike G&S which treats *etwa/nicht* as IP adjuncts, I propose that they behave like *nandao* and occupy SpecCP positions.

- If we regard positive/negative evidence as the Speaker’s believes prior to asking the questions, then we can summarize the use of *etwa/nicht* as follows:

  - *Nicht* can only be used if the speaker’s belief of the likelihood of the proposition being asked (e.g. $p$) to be true is above 50% chance. *Etwa* can only be used if the speaker’s belief of the likelihood of $p$ to be true is below 50% chance.
Han (2002)’s pragmatics of Informativeness

- If a speaker believes that it is very likely that $p$ holds in $c$, the most informative proposition in $c$ is $\neg p$... When a speaker is formulating a question to find out whether $p$ or $\neg p$, s/he formulates the question in the form of the proposition that would be the most informative if it turned out to be true. (215)

- The degree of belief and the degree of informativeness are complement to each other:

- Let $B$ be the degree of belief and $I$ the degree of informativeness: $B=100\%-I$. 
The use of *etwa/nicht* in German

<table>
<thead>
<tr>
<th>Speaker’s belief</th>
<th>Syntactic form</th>
<th>Informativeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>$B &gt; 50%$</td>
<td>$Bp$</td>
<td>$\neg p$?</td>
</tr>
<tr>
<td>$B &lt; 50%$</td>
<td>$Bp$</td>
<td>$etwa\ p$?</td>
</tr>
</tbody>
</table>
Semantics of \textit{etwa/nicht}

- Following my previous work, I will also regard \textit{etwa} and \textit{nicht} as WH-words in this analysis and occupy the SpecCP.

\[ [[\textit{etwa}]] = \lambda Q_{s,\langle t,t\rangle} \exists B \lambda h_{s,t} (\exists r_t (r=1 \land h = B (\lambda w' (Q(w')(r))))
\]

\[ \text{or } (\exists r'_t (r'=0 \land h = (1-B (\lambda w' (Q(w')(r')))))) \] \( (B<50\%) \)

\[ [[\textit{nicht}]] = \lambda Q_{s,\langle t,t\rangle} \exists B \lambda h_{s,t} (\exists r_t (r=1 \land h = B (\lambda w' (Q(w')(r))))
\]

\[ \text{or } (\exists r'_t (r'=0 \land h = (1-B (\lambda w' (Q(w')(r')))))) \] \( (B>50\%) \)
Syntax of \textit{etwa}/\textit{nicht}

\[
\begin{array}{c}
\text{CP} \\
\{Bp, (1-B)\neg p\} \\
\text{etwa/nicht} \quad C' \\
\text{C}^0 \\
[ + \text{wh}] \quad \text{IP} \\
\lambda q \lambda p[p = q] \\
[[\text{IP}]] = p'(w)
\end{array}
\]
A compositional analysis

- C': $\lambda q \lambda p[p=q]p'(w) = \lambda p[p=p'(w)]$
- CP: $\lambda Q \exists B \lambda h(\exists r(r=1 \land h = B(\lambda w'(Q(w')(r))))$
  or $(\exists r'(r'=0 \land h = (1-B)(\lambda w'(Q(w')(r')))))\lambda w \lambda p[p=p'(w)]$
  $= \exists B \lambda h(\exists r(r=1 \land h = B(\lambda w'(r=p'(w')))))$
  or $(\exists r'(r'=0 \land h = (1-B)(\lambda w'(r=p'(w')))))$
  $= \exists B \lambda h(h = B(\lambda w'(p'(w')=1)))$ or $h = (1-B)(\lambda w'(p'(w')=0)))$
  $= \exists B\{B(\lambda w'(p'(w')=1)), (1-B)(\lambda w'(p'(w')=0))\}$
  or $\{Bp', (1-B)\neg p'\}$ (B<50% for etwa; B>50% for nicht)
$B$ as a degree operator of type $<t, t>$

$p(B) = \exists w' \in W(p(w')) = 1 \land |\cup w'|/|W| = B$ (Note: $W$ is the domain of possible worlds, i.e. all possible worlds; $\cup$ is to make a superset including all possible $w'$)
Analysis B: *Etwa/nicht* as quantifier of $B$ operator into Y/N-operator (e.g. *whether*)

- This analysis assumes that *etwa/nicht* is not located in SpecCP, but some higher node, e.g. in some ForceP, which I will call BP (=Belief Phrase). I will follow Hamblin (1973) and Guerzoni (2003) to assume a Y/N-operator for Y/N-Qs, which I call *whether* in this presentation.

- In order for BP to quantifier into *whether*, I will modify the semantics of *whether*:

$$[[\textit{whether}]] = \lambda Q_{s,t}(\exists r_t(r=1 \land h=B(\lambda w'(Q(w')(r)))) \lor (\exists r_t'(r'=0 \land h=(1-B)(\lambda w'(Q(w')(r'))))))$$
New semantics for etwa/nicht

- $[[\text{etwa}]] = \lambda R \exists B(RB) (B < 50\%)$
- $[[\text{nicht}]] = \lambda R \exists B(RB) (B > 50\%)$
New syntax for *etwa/nicht*

```
BP
{Bp, (1-B)~p}

etwa/nicht  CP

whether  C'

C^0  IP

\[ \lambda q \lambda p[p = q] \]

[[IP]] = p'(w)
```
A compositional analysis

- \( C' : \lambda q \lambda p[q=p] p'(w) = \lambda p[p=p'(w)] \)
- \( CP : \lambda Q \lambda B \lambda h (\exists r = 1 \land h = B(\lambda w'(Q(w')(r'))))) \) or \((\exists r'(r' = 0 \land h = (1-B)(\lambda w'(Q(w')(r'))))))\) \( \lambda w \lambda p[p=p'(w)] \) 
  \[ = \lambda B \lambda h (\exists r = 1 \land h = B(\lambda w'(r=p'(w'))))) \]
  or \((\exists r'(r' = 0 \land h = (1-B)(\lambda w'(r=p'(w'))))))) \]
  \[ = \lambda B \lambda h (h = B(\lambda w'(p'(w')=1)))) \) or \( h = (1-B)(\lambda w'(p'(w')=0)))) \]
  \[ = \lambda B \{B(\lambda w'(p'(w')=1)), (1-B)(\lambda w'(p'(w')=0))\} \]
- \( BP : \lambda R \exists B(RB) \lambda B \{B(\lambda w'(p'(w')=1)), (1-B)(\lambda w'(p'(w')=0))\} \)
  \[ = \exists B(\lambda B \{B(\lambda w'(p'(w')=1)), (1-B)(\lambda w'(p'(w')=0))\} B) \]
  \[ = \exists B \{B(\lambda w'(p'(w')=1)), (1-B)(\lambda w'(p'(w')=0))\} \]
  or \{Bp', (1-B)\neg p'} \) (\( B<50\% \) for \( \text{etwa} \); \( B>50\% \) for \( \text{nicht} \))
Extending to *nandao*-Qs and neutral questions

- For *nandao*, its $B$ value is 0%.
- $[[nandao]]=\lambda \exists B(RB) \ (B=0\%)$
- $[[nandao-RQ]]=\{0\% p, \ 100\% \neg p\}$
- I will assume a null $B$ operator for unbiased Y/N-Qs.
- $[[Neutral]]=\lambda \exists B(RB) \ (B=50\%)$
- $[Neutral \ Y/N-Q]]=\{50\% p, \ 50\% \neg p\}$.
- For other biased Y/N-Qs, although they don’t have overt morphemes like *etwa/nicht*, I assume with Caponigro (2011) that some phonological process (e.g. stress) is a realization of $B$ operator.
A possible extension to WH-RQs and biased WH-Qs

- The treatment to WH-RQs is similar to Rohde (2006) that the $B$ operator will lean towards the single member in the answerhood: either be an entity, or a plural entities, or a null member.
- The shift of $B$ operator value could be reflected in the following biased WH-Qs.
- Who will possibly care about you?
References

Thank you!

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