Grammatical requirements versus minimal change in Japanese reanalysis

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Many theories of reanalysis assume some kind of Minimal Change Strategy (MCS) according to which the human parser reanalyses by changing the mental representation as little as possible (Inoue (1991), Frazier (1994)).

This poster argues that the parser makes a change in the tree structure if and only if it allows for more grammatical constraints to be satisfied (MaxG for Maximal Grammaticality). The MCS is captured by the necessary condition: if a change doesn’t increase grammaticality, then don’t do it. However, MaxG predicts that the MCS can be overridden as the parser tries to satisfy an optional constraint and therefore changes the representation more than the strictly necessary.

The following Japanese sentences were used as stimuli in a self-paced reading experiment.

(1a) Shokuin-wa kakarichou-ni ocha-o omnanohito-ga dashita-to shiraseta.

“The employee told (the manager) that the woman served tea (to the manager).”

(1b) Shokuin-wa omnanohito-ga kakarichou-ni ocha-o dashita-to shiraseta.

“The employee told that the woman served tea to the manager.”

Native Japanese speakers read “served” in (1a) more slowly than in (1b). (p < 0.05 by subjects and items.) This slow-down confirms the hypothesis that, prior to “served”, subjects assume that the nominative NP “woman” is the beginning of the embedded clause. Therefore, in (1a), “manager” and “tea” are interpreted as being part of the main clause; reanalysis occurs at “served” so that “tea” becomes part of the embedded clause. Reanalysis doesn’t occur in (1b) because “tea” comes after “woman” and therefore it’s interpreted as being part of the embedded clause from the start.

However, it’s not clear in this experiment whether, during reanalysis in (1a), “manager” remains in the main clause or is attached to “served”. MaxG predicts the latter. Whereas MCS predicts the former because the dative NP is an optional argument (Kamide 1997); and the displacement of “tea” alone is sufficient to correct the structure.

In an off-line experiment, subjects judged whether “manager” attached to “served” or “told” in sentences like (1a) above and (1c) below.

(1c) Shokuin-wa kakarichou-ni omnanohito-ga ocha-o dashita-to shiraseta.

“The employee told (the manager) that the woman served tea (to the manager).”

In (1c), reanalysis doesn’t occur because “tea” is already inside the embedded clause.

As predicted by MaxG, attachment to “served” is stronger in (1a) than (1c). (p < 0.01 by subjects and items.) Therefore, reanalysis in (1a) not only attaches “tea” but also “manager” to “served” as the parser tries to maximally satisfy the subcategorization frame of the verb rather than sticking to the minimal change.
References

