Contextual predictions and syntactic analysis: the case of ambiguity resolution

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Abstract
We test the hypothesis that syntactic analysis is based on contextual predictions and is guided by discourse salience of the referents. The head of the complex noun phrase tends to be more prominent in discourse as native speakers expect the continuation of the story to refer to N1 more often than to N2. It corresponds to the data on adjunct attachment interpretation.
Key words: contextual prediction, syntactic analyses, referent activation

Introduction
The problem of syntactic ambiguity resolution is widely discussed in psycholinguistics being a testing ground for different parsing models (Traxler 2014). The question is what guides the choice of the interpretation when grammar allows several possible variants.

Adjunct attachment ambiguity (*I met the servant of the countess that was on the balcony*) is particularly widely discussed cross-linguistically as different preferences in different languages contradict the idea of universality and are inconsistent with the Late Closure Principle (Cuetos & Mitchell 1988, Grillo & Costa 2014). Previous studies (Sekerina 2003 Yudina et al. 2007), show high attachment preference for Russian.

We test the hypothesis that syntactic analysis is guided by discourse salience of the referents and is based on contextual predictions (Rohde et al. 2011). We presuppose that the listener/the reader expects further information about a more salient (activated) referent (Chafe 1994). The referent which is mentioned in a story-continuation task more often is more discourse salient and thus is more likely to attract the adjunct.

Method

Materials and design
12 experimental stimuli were constructed for fill-in-the-blank task. Each stimulus consisted of two sentences, the first sentence contained a complex noun phrase and the second sentence was the continuation of the first one and could refer either to N1 or N2 equally plausible (as in (1)). N1 and N2 had the same number, gender and animacy. The subject

of the second sentence was omitted and substituted by a gap which the participants were asked to fill by any appropriate word.

The questionnaire also included 62 fillers which contained no ambiguity.

(1) На улице я встретил служанку графини. Много лет ____________ жила в доме неподалеку.

'I met the servant of the countess in the street. For many years ____________ lived nearby'

Participants and procedure

40 native speakers of Russian naïve to the aim of the study were asked to fill in the questionnaire on voluntary basis.

Results

The gap was filled with one the following variants: N1 or its periphrasis, N2 or its periphrasis, a noun which could refer both to N1 and N2, 3rd person pronoun or any other word (see Table 1).

Table 1. Types of answers.

Type	Number of answers
N1 (служанка 'the servant')	33 (6.9%)
Periphrasis of N1 (горничная 'the maid')	70 (14.7%)
N2 (*графиня* 'the countess')	58 (12.2%)
Periphrasis of N2 (эта благородная дама 'the noble lady')	17 (3.6%)
Noun (эта женщина 'the woman')	32 (6.7%)
3rd person pronoun (она 'she')	233 (48.9%)
other	33 (6.9%)

As we see, most of the continuations are ambiguous as they contain 3rd person pronoun which can refer to N1 or N2 (or another noun that can refer to N1 or N2), ambiguous continuations actually prevail: $\chi^2=6.89$, $p=0.009$.

If we consider unambiguous continuations only, N1 is mentioned in 57.9 % cases (103 answers) whereas N2 is mentioned in 42.1% cases (75 answers), this difference is statistically significant: $\chi^2=7.89$, $p=0.006$.

Discussion

From our data we can draw two main conclusions:

Conclusion 1:

Pronominalization takes place in 50% of cases despite the potential referential conflict in the sentence which can be explained by the use of egocentric strategy (Kibrik 2011) and leads to ambiguity. Thus, native speakers tend not to avoid ambiguity despite the risk of potential communicative failure.

Conclusion 2:

N1, being the head of the complex noun phrase, tends to be more prominent in discourse. The continuation of the story is expected to refer to N1 1.3 times more often than to N2. It corresponds to the data on adjunct attachment interpretation and explains them: adjuncts, being the continuations of the sentence, tend to be attached to head of the complex noun phrase which is more expected to be modified, so syntactic analysis of potentially ambiguous sentences is affected by contextual predictions.

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