RESTRICTED DISCRIMINATION BETWEEN LOCAL ECONOMY AND GLOBAL ECONOMY IN AGRAMMATIC APHASIA

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The problem : binding principles in aphasia

1. The economy constraints of the grammar is somehow restricted in the performance of agrammatic aphasic subjects (Vasi_-Avrutin - Ruigendijk 2006). Grodzinsky *et al*.'s results suggest that their agrammatic aphasics showed limitations in tasks co ncerning the binding of personal pronouns **(=*limited Principle B*)** as opposed to the binding of reflexive pronouns **(*non-impaired Principle A*).**

2. We conducted sentence -picture matching tests by Hungarian speaking Broca's aphasics. The results showed that ***Principle A* was limited (*not Principle B*)** in some complex syntactic structures.

We suggest a characterisation of the limited binding principle s in agrammatic aphasia data in terms of **global economy** and **local economy . On the basis of the local economy** , decision concerning the applicability of an operation depends on what pieces of information are available **within the sentence representation at ha nd**, irrespective of other sentence representations (cf. ***Principle A*). Global eco nomy constraints** require **comparison of several sentence representations** in order for a decision to be made concerning the applicability of some operation (cf. ***Principle B*).**

The sentence -picture matching tests

3. Five syntactic structures of diverse complexity were selected. The pronouns occurring in the sentences were either **reflexive or personal pronouns. For each pair of sentences, two pictures were drawn, suggesting the meanings of the respective sentences** . The test material included 200 sentences and 200 pi ctures. The subjects saw a picture and heard a sentence and was asked **to decide if what they heard corresponded to what they saw.** Each sentence was heard twice once paired up with one of the r elevant pictures, and once with the "wrong" picture. The sentences were presented randomly. The two subjects were agrammatic Broca's aphasics.

4. Results .

STRUCTURES	*PICTURE MATCHING*	
JUDGEMENTS:	**Correct**	**Incorrect**
Type I: The pronoun is a direct object of a Verb		
Reflexive pronoun	40 (100%)	––
Personal pronoun	32 (80%)	8 (20%)
Type II: The pronoun in the possessor position of a possessive construction		
Reflexive pronoun	36 (90%)	4 (10%)
Personal pronoun	36 (90%)	4 (10%)
Type III: The pronoun is a constituent of a possessed NP in possessive construction		
Reflexive pronoun	8 (20%)	**32 (80%)**
Personal pronoun	28 (70%)	12 (30%)
Type IV: The pronoun is a constituent of an infinitival construction		
Reflexive pronoun	32 (80%)	8 (20%)
Personal pronoun	28 (70%)	12 (30%)
Type V: The pronoun is a constituent of an infinitival construction has its "own" lexical subject		
Reflexive pronoun	12 (30%)	**28 (70%)**
Personal pronoun	24 (60%)	16 (40%)

5. Discussion

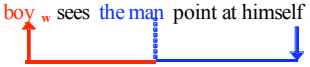
In the case of the **simplest, type I structures** , the subject s made **correct discriminations between reflexive and personal pronouns.** As the structural complexity of the sentences grew, the number of correct decisions with respect to personal pr onouns decreased somewhat. Incorrect decisions were made in the context of the non -matching picture . ***Principle A* .:** An interesting result is what we got in the case of types **III** and **V**, for reflexive pronouns. The subject s wrongly took the sentence initial N P to be the antecedent of the reflexive pronoun in 32 and 28 cases, respectively, as opposed to the actual, local antecedent that immediately preceded the reflexive pronoun. Structures **III** and **V** are syntactically complex. The structural complexity of sente nces elicits alternative structural analyses and their assessment. The result is that the subject s wrongly assumed bindings for reflexive pronouns that would have been grammatical **non-local** bindings for personal pronouns.

Examples for restric ted economy

Incorrect decisions (showed by red lines) for reflexives in the context of the non-matching picture (type **III** and **V**):

*A férfi$_m$ örül a fiú önmagáról$_m$ készített fényképének.
'The man$_m$ is glad about the boy's photograph of himself$_m$.'

*A kisfiú$_w$ látja a férfit mutogatni önmagára$_w$.
'The little boy$_w$ sees the man point at himself$_w$.'



As witnessed by the simpler structures (type **I** and **II**), the subjects did possess the ability to distinguish binding relations of reflexive from those of personal pronouns . With more complex structures type **III** and **V** they did **not** react to increasing complexity by trying to resort to some structur e that was simpler or shorter. On the contrary: in their **incorrect decisions** they used a more costly mechanism , incorrectly. The distinction between local economy and global economy was **not** properly accessible for them . Instead of restricting their attention to local structural relations and ignoring other, non -local structural representations, they tried to do the opposite: they attempted to make a decision on the applicability of some struct ural operation by comparing alternative structural relations to one another. **But the correct decisions simply needed analysing local structural relations in a local domain. This option was avoided.** We suggest that such distribution of performance can be attributed to the **subject's limited abi lity to tell local and global economy from each other.**

References

Avrutin, Sergey 2006. Weak Syntax. In Y. Grodzinsky and K. Amunts (eds.), *Broca's Region* , Oxford Press, New York, pp. 49 -62.

Grodzinsky, Yosef – Kenneth Wexler – Yu-Chin Chien – Susan Marakovitz - Julie Solomon 1993. The breakdown of binding relations, *Brain and Language* 45, 369 – 422.

Reuland, Eric and S. Avrutin 2005 . Binding and beyond: Issues in backward anaphora. In: A. Branco et al (eds.) *Anaphora Processing,* John Benjamins Publishing, 139 -162.

Vasi_, Nada - Avrutin, Sergey - Ruigendijk, Esther 2006. Interpretation of pronouns in VP -ellipsis constructions in Dutch Broca's and Wernicke's aphasia. *Brain and Language*, 96, 191-206.