Anaphoric Dependencies in Real Time:
Processing of Russian Numerical Constructions

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1   Introduction

1.1   Encoding of anaphoric dependencies

Natural language provides multiple ways to encode coconstrual relations
(1) a. *Mike* hurt *himself*.   antecedent-anaphor relation
    b. *What* will college cost ~~what~~?   filler-gap dependency
    c. *Sandy* tried *PRO* to water ski.   control
    d. *No waitress* should ignore *her* customers. variable binding
    e. *A man* walked in. *He* smiled.   coreference

(2) a. What$_i$ did you buy t$_i$?   *English*
    b. Op$_i$ Lisi mai-le shenme$_i$?   *Chinese*
            Lisi bought what
        'What did Lisi buy?'

Coconstruals can be formed in different modules of the grammar: syntax, semantics, or discourse
(3) a. syntax: movement, co-argument reflexives
    b. semantics: variable binding
    c. discourse: coreference

left dislocation with Russian numerical constructions
(4) a. *movement*
        Sobor-a   v   gorodke   bylo   tri   ~~sobor-a~~
        cathedral-**PAUCAL**   in   town   was   three
    b. *coreference*
        Sobor-ov$_i$ v   gorodke   bylo   tri   *pro$_i$*
        cathedral-**GEN.PL**   in   town   was   three
        'As for cathedrals, there were three in that town.'

1.2   Processing of anaphoric dependencies

hierarchy of economy of encoding (Reuland 2011, building on Reinhart 1983, 2006, Grodzinsky and Reinhart 1993, and others)
(5)   syntax < semantics < discourse

Coconstruals formed in components farther to the left are favored because they are less costly than those towards the right
Processing of coconstruals farther to the left should be easier than those to the right (Reuland 2001, 2011, Koornneef 2008)

(6)   The construction of syntactic coconstruals requires less effort than the construction of discourse coconstruals.

2   Outline of Talk

- Russian numerical expressions and the structure(s) of left dislocation

- A processing study of Russian numerical constructions to test (6)

- Results: increased processing cost for discourse coconstrual compared to syntactic coconstrual

- Conclusions

3   Russian Left Dislocation Constructions

3.1   Left Dislocation

Left Dislocation (LD): a construction in which a phrase appears at the left edge of a clause, dislocated from its expected position and related to some clause-internal anaphoric element

(7) a. *Peanuts*, I don't like __.
    b. *il tuo libro*, Gianni **lo**   ha   letto
        the your book   Gianni 3SG.ACC   have read.PTCP
        'Your book, I have read it.'
    c. *Peanuts*, I don't like **them**.
    d. *Paul*, Pierre vient de se   battre avec **cet idiot**
        Paul Pierre come   C   REFL fight   with this idiot
        'Paul, Peter has just fought with that idiot.'   (Hirschbühler 1997:56)

(8) a. movement analyses: filler-gap coconstrual
    b. base-generation: interpretive/coreference coconstrual

LD is widely discussed for Germanic and Romance languages (Cinque 1977, Thrainsson 1979, papers in Anagnostopoulou et al. 1997, Rizzi 1997, Zubizarreta 1998, Lopez 2009, a.o.) but not Slavic languages

Bailyn (2012:267) distinguishes two functionally similar LD constructions in Russian "that share the property of having a left-edge phrase serving as the sentence's Topic": Left-Edge Topicalization (LET) and Hanging Topic Left dislocation (HTLD)

(9) a. Mark   zanimaetsja jogoj   každyj den′
         Mark.NOM practices   yoga.INSTR every   day
         'Mark does yoga every day.' (Bailyn 2012: 268)

   b. *LET: movement*
       jogoj   Mark   zanimaetsja __ každyj den′
       yoga.INSTR Mark.NOM practices   every   day
       'Yoga Mark does every day.'

   c. *HTLD: base-generation*
       joga,   Mark   zanimaetsja eju   každyj den′
       yoga.NOM Mark.NOM practices   it.INSTR every   day
       'Yoga, Mark does it every day.'

(10)   Main differences between LET and HTLD

	LET	HTLD
Prosodic break	no	yes
Resumptive pronoun	no	yes
Case connectivity	yes	no (always NOM)
Subject to movement constraints	yes	no
Analysis	movement	base-generation

3.2   LD with Russian numerical expressions

Russian nouns agree with a modifying numeral in number
(11) a. lower numerals (1.5, 2-4, 'both'): paucal
     b. higher numerals (≥ 5): genitive plural

The paucal form is usually the same as genitive singular but is distinct for a very small number of nouns (Xiang et al. 2011)

(12) a. *paucal noun with lower numerals*
         V gorodke bylo tri   sobor-a/*ov
         in town   was   **three**.NOM cathedral-**PAUC**/GEN.PL
         'There were three cathedrals in that town.'

   b. *genitive plural noun with higher numerals*
       V gorodke bylo pjat'   sobor-*a/ov
       in town   was   **five**.NOM cathedral-PAUC/**GEN.PL**
       'There were five cathedrals in that town.'

LD of the nominal with a higher numeral (Crockett 1976, Pesetsky 1982, others)
(13) a. *Sobor-a   v gorodke bylo pjat'
         cathedral-**PAUC** in town   was   **five**
         ('As for cathedrals, there were five in that town.')

   b. Sobor-ov   v gorodke bylo pjat'
       cathedral-**GEN.PL** in town   was   **five**
       'As for cathedrals, there were five in that town.'

LD of the nominal with a lower numeral
(14) a. Sobor-a   v gorodke bylo tri
         cathedral-**PAUC** in town   was   **three**

   b. Sobor-ov   v gorodke bylo tri
       cathedral-**GEN.PL** in town   was   **three**
       'As for cathedrals, there were three in that town.'

(15)   A left dislocated nominal that strands a numeral can show number connectivity—the number that would be appropriate were it not left dislocated—or it can appear in the (genitive) plural form.

(16) a. *lower numerals*
         MOVEMENT (LET): The left dislocated nominal has undergone A'-movement when there is number connectivity (paucal)
         BASE-GENERATION (HTLD): The nominal is base-generated when there is no connectivity (genitive plural)

   b. *higher numerals*
       The left dislocation construction is structurally ambiguous between A'-movement and base-generation (HTLD)

LD of the nominal with a lower numeral (=(14))
(17) a. Sobora   v gorodke bylo tri   ~~sobora~~
         cathedral.**PAUC** in town   was   three   cathedral.PAUC

   b. Soborov_i   v gorodke bylo tri   *pro_i*
       cathedral.**GEN.PL** in town   was   three
       'As for cathedrals, there were three in that town.'

lower numerals
(18) a.   LD paucal phrase: synactic coconstrual
   b.   LD genitive plural phrase: discourse coconstrual

4   Syntactic Evidence

evidence
(20) a.   movement diagnostics (section 4.1)
   b.   HTLD characteristics (section 4.2)

4.1   Movement diagnostics

(21) a.   island (in)sensitivity
   b.   Coordinate Structure Constraint and Across-the-Board movement
   c.   number connectivity
   d.   Binding Theory reconstruction
   e.   Weak Crossover
   f.   parasitic gaps

☞   Only the construction with a fronted paucal shows characteristics of movement

4.1.1   island (in)sensitivity

Wh-island Constraint
(22) a.   Maša   sprosila   gde   my   našli   tri   čemodana
       Masha   asked   where we   found   three   suitcase.PAUC
       'Masha asked where we found three suitcases.'
   b.   *čemodana   Maša   sprosila gde   my našli   tri
        suitcase.PAUC Masha   asked   where we   found   three
   c.   čemodanov   Maša   sprosila   gde   my našli   tri
        suitcase.GEN.PL Masha   asked   where we   found   three
       'As for suitcases, Masha asked where we found three.'

Complex NP Constraint
(23) a.   Ty   pomniš' [vremja [kogda u   nee bylo tri   ženixa]]?
       2SG   remember time   when by her   was   three suitor.PAUC
       'Do you remember the time when she had three suitors?'
   b.   *ženixa   ja pomnju vremja kogda u   nee bylo tri
        suitor.PAUC 1SG remember time   when by her was   three
   c.   ženixov   ja pomnju vremja kogda u   nee bylo tri
        suitor.GEN.PL 1SG remember time   when by her was   three
       'Speaking of suitors, I remember the time when she had three.'

4.1.2   Coordinate Structure Constraint (CSC) and Across-the-Board (ATB) movement

(24)   *Coordinate Structure Constraint* (Ross 1967)
      In a coordinate structure, (i) no conjunct may be moved, (ii) nor may any element contained in a conjunct be moved out of the conjunct

(25)   *Across-the-Board movement* (Ross 1967)
      An element may be moved from within a conjunct if it is moved from within all conjuncts

dual conjunct connectivity
(26) a.   Dereva   Maša   kupila tri,   a   posadila dva
       tree.PAUC   Masha   bought three and   planted   two
   b.   Derev'jev   Maša   kupila tri,   a   posadila dva
       tree.GEN.PL Masha   bought three and   planted   two
       'As for trees, Masha bought three but planted two.'

(27) a.   Dereva   [[Maša kupila tri dereva]   a   [posadila dva dereva]]
       tree.PAUC   Masha bought three   and planted   two
   b.   Derev'jev   [[Maša kupila tri pro],   a   [posadila dva pro]]
       tree.GEN.PL Masha bought three   and planted   two
       'As for trees, Masha bought three but planted two.'

single conjunct connectivity
(28) a.   ?/*Dereva   Maša   kupila tri i   potom posadila vsego
       tree.PAUC   Masha   bought three and then   planted   only
       dva   jasenja
       two   ashes
       ('As for trees, Masha bought three but then planted only two ashes.')
   b.   Derev'jev   Maša   kupila tri i   potom posadila vsego
       tree.GEN.PL Masha   bought three and then   planted only
       dva   jasenja
       two   ashes
       'As for trees, Masha bought three, but then planted only two ashes.'

(29) a.   *Dereva   [[Maša kupila tri dereva] i   potom [posadila vsego
       tree.PAUC   Masha planted three   and then   planted only
       dva jasenja]]
       two ashes
   b.   Derev'jev   [[Maša kupila tri pro] i   potom [posadila vsego
       tree.GEN.PL Masha bought three   and then   planted only
       dva   jasenja]]
       two   ashes

(30)   *ATB parallelism* (Franks 1993)
         ATB gaps must normally occupy structurally parallel positions

one empty category in object position, one in subject position
(31) a.   *želanija   ja   [[tol'ko včera   zagadala tri   ~~želanija~~]
           wish.**PAUC** 1SG   only   yesterday   made   three
           a   [segodnja dva ~~želanija~~ uže   ispolnilos']]
           and   today   two   already came_true
     b.   želanij   ja   [[tol'ko včera   zagadala tri   *pro*]
           wish.**GEN.PL** 1SG   only   yesterday   made   three
           a   [segodnja dva *pro* uže   ispolnilos']]
           and   today   two   already came.true
           'As for wishes, I made three only yesterday, and today two already
           came true.'

4.1.3   number connectivity

The fronted paucal NP shows number connectivity: agreement features
     appropriate for its base position
The fronted genitive plural shows no number connectivity

pluralia tantum nouns occur only in the plural
(32) a.   Na   stole   ležali   odni   nožnicy
           on   table   lay   one.**PL** scissor.**PL**
           'A pair of scissors was on the table.'
     b.   *Na   stole   ležali   odna   nožnica
           on   table   lay   one.**SG** scissor.**SG**
           ('A pair of scissors was on the table.')
     c.   *Na   stole   ležalo   tri   nožnicy/nožnic
           on   table   lay   three scissors.**PAUC**/scissors.**GEN.PL**
           ('Three pairs of scissors were on the table.')

(33) a.   *Nožnicy   na   stole   ležalo   tri
           scissors.**PAUC** on   table   lay   three
     b.   ?Nožnic   na   stole   ležalo   tri
           scissors.**GEN.PL** on   table   lay   three
           'As for scissors, there were three on the table.'

4.1.4   Binding Theory (BT) reconstruction

(34)   *Principle C* (Chomsky 1981)
         An R-expression must be free

Russian obeys Principle C
(35) a.   Maša$_i$ nasčitala tri   [raza   kogda ee$_i$ xvalili]
           Masha   counted   three time.PAUC when her.ACC   praised.PL
           'Masha$_i$ found three times when she$_i$ got praised.'
     b.   *Ona$_i$ nasčitala tri   raza   kogda Mašu$_i$ xvalili
           she   counted   three time.PAUC when Masha.ACC   praised.PL
           '*She$_i$ found three times when Masha$_i$ got praised.'

(36) a.   *[Raza   kogda Mašu$_i$ xvalili] ona$_i$ nasčitala tri
            time.**PAUC** when Masha.ACC praised she   counted   three
           'As for times when Masha$_i$ got praised, she$_i$ counted three.'
     b.   [Raz   kogda Mašu$_i$ xvalili] ona$_i$ nasčitala tri
           time.**GEN.PL** when Masha.ACC praised she   counted   three
           'As for times when Masha$_i$ got praised, she$_i$ counted three.'

4.1.5   Weak Crossover (WCO)

(37)   *Weak Crossover restriction* (after Büring 2005:165)
         An NP in a movement-derived position can be coindexed with only those
         pronouns which it c-commands from its base position

(38)   ??Mike$_i$, I told his$_i$ mother that the police caught ~~Mike~~ smoking pot.

(39)   NP$_i$ [... [# *pro*$_i$] ... [# *ec*$_i$]]

lower empty category is a copy/trace
(40) a.   NP.**PAUC**$_i$ [... [# *pro*$_i$] ... [# ~~NP.PAUC~~$_i$]]
     b.   *Muzeja   oni   vse   pjat'   *pro*   proinformirovali
           museum.**PAUC** they all   five   informed
           čto   delegacija posetit   vsego dva   ~~muzeja~~
           that   delegation will.visit only two
           ('As for museums, they informed all five that the delegation will visit
           only two.')

lower empty category is *pro*
(41) a.   NP.**GEN.PL**$_i$ [... [# *pro*$_i$] ... [# *pro*$_i$]]
     b.   Muzejev   oni   vse   pjat'   *pro*   proinformirovali
           museum.**GEN.PL** they all   five   informed
           čto   delegacija posetit   vsego dva   *pro*
           that   delegation will.visit only two
           'As for museums, they informed all five that the delegation will visit
           only two.'

4.1.6 parasitic gaps

Russian has limited parasitic gaps (Franks 1992, Culicover 2001, Ivlieva 2007)
When a pg is possible, it is preferred to an overt pronoun

(42) a. Kritik$_i$ otpravil etot roman$_k$ v izdatel'stvo
critic sent this novel in publishing_house
do togo kak pročital ego$_k$
before read it
'The critic sent the novel to the publisher before he read it.'

b. Kakoj roman otpravil kritik ~~kakoj roman~~ v izdatel'stvo
what novel sent critic in publishing_house
do togo kak pročital *pg*?
before read
'Which novel did the critic send to the publisher before reading?'

c. ???Kakoj roman otpravil kritik ~~kakoj roman~~ v izdatel'stvo
what novel sent critic in publishing_house
do togo kak pročital ego?
before read it
'Which novel did the critic send to the publisher before reading it?'

(43) a. Kostjuma on otložil srazu tri ~~kostjuma~~
suit.**PAUC** he set.aside at.once three
daže ne merjaja *pg*
even not trying.on
b. ??Kostjuma on otložil srazu tri ~~kostjuma~~
suit.**PAUC** he set.aside at.once three
daže ne merjaja ix
even not trying.on them
'As for suits, he picked three right away without even trying them on.'

(44) a. Kostjumov on otložil srazu tri *pro*
suit.**GEN.PL** he set.aside at.once three
daže ne merjaja *pro*
even not trying.on
b. Kostjumov on otložil srazu tri *pro*
suit.**GEN.PL** he set.aside at.once three
daže ne merjaja ix
even not trying.on them
'As for suits, he picked three right away without even trying them on.'

☞ Only the construction with a fronted paucal shows characteristics of
movement

4.2 Characteristics of HTLD

(45) a. resumption and doubling
b. loose aboutness relation
c. peripheral positioning

☞ Only the construction with a fronted genitive plural shows characteristics
of base-generation (HTLD)

4.2.1 resumption and doubling

Base-generated topics relate to a null pronominal, which can be substituted with an
overt pronominal or nominal, while traces cannot be

(46) a. U Peti bylo tri želanija
by Petya was three wish.PAUC
'Petya had three wishes.'

b. Želanija u Peti bylo (*ix) tri (*štuki)
wish.**PAUC** by Petya was them three piece.PAUC

c. Želanij u Peti bylo (ix) tri (štuki)
wish.**GEN.PL** by Petya was them three piece.PAUC
'As for wishes, Petya had three'.

4.2.2 loose aboutness relation

Hanging topics may introduce a LOOSE ABOUTNESS relationship (van Reimsdijk
1997) in which they do not bind a pronoun. This is not possible for movement-
derived topics, which must bind a trace

(47) a. *Podrugi v to vremja u menja ostalos'
girlfriend.**PAUC** in that time by me remained
vsego liš' odna Tanja
only one.NOM.FEM Tanja
('Of girlfriends at that time I was just friends with Tanja alone.')

b. Podrug v to vremja u menja ostalos'
girlfriend.**GEN.PL** in that time by me remained
vsego liš' odna Tanja
only one.NOM.FEM Tanja
'Of girlfriends at that time I was just friends with Tanja alone.'

(48) Živnosti u nix dve zolotye rybki
animals.MASS.GEN by them two gold fish.PAUC
'Of pets, they have two goldfish.'

See Choo et al. 2007 for further examples

4.2.3   peripheral positioning

(49)   Hanging topics must appear peripheral to the clause. Movement-
derived elements can appear clause-internally

topic precedes a fronted wh-phrase
(50) a.   Maše   nado   segodnja posmotret' celyx   tri   fil'ma
Masha.DAT necessary today   see.INF   entire   three movie.PAUC
'Masha has to watch three entire movies today.'
    b.   fil'm-a/ov   komu   segodnja nado
movie-**PAUC/GEN.PL who**.DAT today   necessary
posmotret' celyx   tri?
see.INF   entire   three
'Of movies, who has to watch an entire three today?'

topic follows a fronted wh-phrase
(51) a.   Maša   dala Pete   tri   apel'sina   i   dva   banana
Masha gave Petja.DAT three orange.PAUC   and two   banana
'Masha gave Petya three oranges and two bananas.'
    b.   Komu   apel'sina   Maša   dala tri,
who.DAT orange.**PAUC** Masha gave three
a   banana   tol'ko   dva?
but   banana   only   two
    c.   Komu   apel'sinov   Maša   dala tri,
who.DAT orange.**GEN.PL** Masha gave three
a   banana   tol'ko   dva?
but   banana   only   two

topic follows both a fronted wh-phrase and the subject
(52) a.   Komu   Maša   apel'sina   dala tri,
who.DAT Masha orange.**PAUC**   gave three
a   banana   tol'ko   dva?
but   banana   only   two
    b.   *Komu   Maša   apel'sinov   dala tri,
who.DAT   Masha orange.**GEN.PL** gave three
a   banana   tol'ko   dva?
but   banana   only   two
'Whom did Masha give three oranges but only two bananas?'

☞   Only the construction with a fronted genitive plural shows
characteristics of base-generation (HTLD)

4.3   Summary

	Paucal form	Genitive plural
Shows island sensitivity	Yes	No
Obeys CSC	Yes	No
Requires number connectivity	Yes	No
Reconstructs for Binding Theory	Yes	No
Shows crossover effects	Yes	No
Licenses parasitic gaps	Yes	No
Can occupy intermediate positions	Yes	No
Can be doubled by a pro-form or epithet	No	Yes
Allows loose aboutness relation	No	Yes
Analysis	movement	base-generation

(53)   For lower numerals, the left dislocated nominal has undergone movement
when there is number connectivity (paucal) and base-generation (HTLD)
when there is no connectivity (genitive plural)

(54) a.   *left dislocation with number connectivity: movement*
Sobora   v   gorodke bylo tri   ~~sobora~~
cathedral.PAUC in   town   was   three
    b.   *left dislocation without number connectivity: base-generation*
Soborov   v   gorodke bylo tri   *pro*
cathedral.GEN.PL in   town   was   three
'As for cathedrals, there were three in that town.'

Minimal syntactic pair is ideal for a processing study
(55)   The construction of syntactic coconstruals requires less effort than the
construction of discourse coconstruals (Reuland 2001, 2011, Koornneef
2008)

6

5   *Self-Paced Reading Study*

☞   Self-paced reading study shows that movement construction is processed more quickly than base-generation (HTLD)
(55) is supported

5.1   *Study design*

(56) a. *movement*
Sobora   v   gorodke   bylo tri ~~sobora~~
cathedral.PAUC in   town   was   three
   b. *base-generation*
Soborov   v   gorodke   bylo tri *pro*
cathedral.GEN.PL in   town   was   three
'As for cathedrals, there were three in that town.'

materials
(57) a. sentences embedded after an introductory phrase so that the LD paucal/plural noun appears as word 4 (W4), to avoid sentence-initial noise
   b. numeral at W9, separated from LD nominal by four words
   c. 24 pairs of stimuli, with 36 grammatical fillers
   d. each sentence followed by a comprehension question
   e. sentences presented in Cyrillic with Russian punctuation using IBEX http://spellout.net/ibexfarm

(58) Maša   skazala, čto   sobor-a/ov   zdes'
Masha   said   that   cathedral-PAUC/GEN.PL here
W1   **W2**   **W3** **W4**   **W5**
snačala   sobiralis'   postroit'
at_first   intended   to_build
W6   **W7**   **W8**
dva ,   no   potom   ne   xvatilo   sredstv
two   but   then   not   sufficed means
W9 **W10** **W11** **W12** **W13** **W14**
'Masha said that at first they were planning to build two cathedrals here but then they ran out money.'

constraints on the stimuli
(59) a. only masculine inanimate nouns
   b. nouns with comparable frequency of PAUCAL and GEN.PL forms
   c. paucal and genitive plural conditions, (56a,b), were rated similarly
   d. stimuli normed by native speakers (non-linguists), those with rating below 3.5/5 were excluded

subjects
(60) a. 37 subjects, 8 eliminated for low comprehension test scores
   b. average age 26.6
   c. right-handed
   d. 17 females

5.2   *Results*

Self-paced reading times were analyzed using linear mixed models with random intercepts for subjects and items and log(raw reading time) as the dependent variable. Tokens more then two standard deviations away from the mean raw reading time of all subjects were excluded from the analysis (89 tokens, 2.1%).
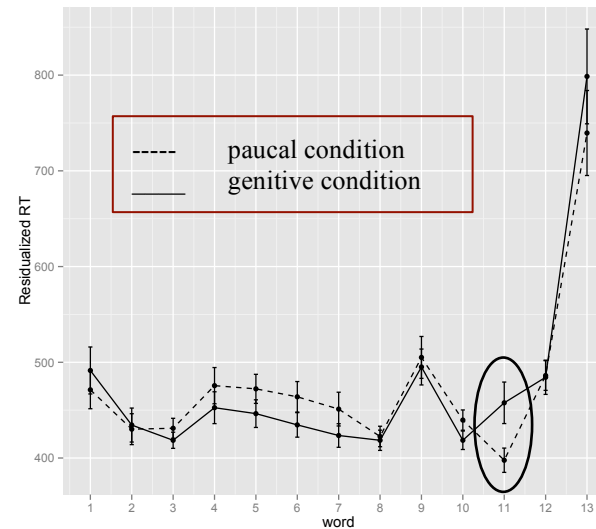

Figure 1. Average word-by-word reading times

results
(61) a. Significant difference at W11, two words after the numeral (p=.025)
   b. no other significant differences
   c. no significant difference at W9, W10, due to two factors:
      i.   shortness of these two words (two or three letters)
      ii. type of task: in self-paced reading paradigm, effects are often delayed one or two words (Mitchell 1984, 2004)

☞ Movement condition read faster than base-generated condition
Supports Reuland's and Koornneef's hypothesis that the construction of syntactic coconstruals requires less effort than the construction of discourse coconstruals

5.3 *Alternative interpretations*

5.3.1 *Morphological mismatch*

background assumptions
(62) Mismatches in case or number cause processing difficulty (Fanselow and Frisch 2006, Molinaro et al. 2011)

alternative explanation based on mismatch
(63) When the fronted form is genitive plural the parser encounters a morphological mismatch at the numeral 2, 3, or 4 (W9). This mismatch causes the slowdown after W9

(64) a. Sobora   v   gorodke   bylo   tri
cathedral.PAUC   in   town   was   three
MATCH
   b. Soborov   v   gorodke   bylo   tri
cathedral.GEN.PL   in   town   was   three
MISMATCH
'As for cathedrals, there were three in that town.'

arguments against the mismatch explanation: ratings; morphological ambiguity of the paucal form

Agreement mismatch stimuli investigated in earlier studies (e.g., Fanselow and Frisch 2006) were rated very low
All our stimuli were rated as equally high, (59d)

processing evidence against morphological mismatch with paucal numerals, possibly due to the morphological ambiguity of genitive sg. and paucal (Xiang et al. 2011)

☞ A morphological mismatch account is not supported

5.3.2 *Early commitment*

background assumptions
(65) Linguistic material that creates an early structural or lexical expectation facilitates the processing of the predicted material (Boston et al. 2011, Vasishth 2003, Yoshida 2006, van Gompel and Liversedge 2003, Lau et al. 2006)

alternative explanation based on early commitment
(66) The paucal form in W4 predicts the numeral more strongly than the genitive plural form, which facilitates the processing at and after the numeral in W9

(67) a. Sobora   v   gorodke   bylo   tri
cathedral.PAUC   in   town   was   three
EARLY   FASTER
COMMITMENT   PROCESSING
   b. Soborov   v   gorodke   bylo   tri
cathedral.GEN.PL   in   town   was   three
NO   SLOWER
COMMITMENT   PROCESSING
'As for cathedrals, there were three in that town.'

argument against early commitment: comparable distribution of fronted genitive singular and genitive plural

The *paucal* form is morphologically ambiguous; it is identical to the form of genitive singular, so the expectations are the same as created by the fronted *genitive singular*

(68) contexts in which genitive can appear (Bailyn 2012: 199-205)
   a. adnominal genitive
   b. genitive of negation
   c. quantificational genitive (with words like 'many', 'few', and numerals)
   d. complement of a preposition
   e. complement of an intensional predicate
   f. partitive genitive

(69)   Statistical distribution of fronted genitive by contexts (Russian National Corpus, http://www.ruscorpora.ru/index.html)

	tokens	Adnominal genitive	Genitive of negation	Quantificational genitive
GEN.SG (= PAUCAL)	2117	82% (1645)	15% (410)	3% (62)
GEN.PL	2448	80% (1968)	18% (432)	2% (48)

(70)   Statistical distribution of fronted genitives corresponding to post-numeral context (Russian National Corpus, http://www.ruscorpora.ru/index.html)

	Post-numeral genitive
GEN.SG (= PAUCAL)	20% (20)
GEN.PL	80% (80)

☞   The distribution of fronted genitives does not support early commitment to the paucal interpretation

6   Conclusions

- Russian numerals trigger number agreement, either singular, paucal, or plural, with a following noun
- Left-dislocated nominals associated with a numeral are structurally ambiguous. The ambiguity is revealed with lower numerals that require paucal agreement
- The construction is either one derived by movement or base-generation (HTLD)

(71) a.   *movement*
Sobora   v   gorodke   bylo   tri   ~~sobora~~
cathedral.PAUC   in   town   was   three
 b.   *base-generation*
Soborov   v   gorodke   bylo   tri   *pro*
cathedral.GEN.PL   in   town   was   three
'As for cathedrals, there were three in that town.'

- Syntactic tests provide evidence for this structural distinction
- The minimal pair can be used to test claims about the relative processing ease of syntactic dependencies versus discourse-derived dependencies

(72)   The construction of syntactic coconstruals requires less effort than the construction of discourse coconstruals (Reuland 2001, 2011, Koornneef 2008)

- A reading-time study confirms that movement relations are read more quickly than discourse relations
- Movement is less "burdensome" than pronominalization (see also Hornstein 2001)

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